

Anvil Studio™ *User's Guide*

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This program allows you to:

- Record, play, and compose standard multi-track MIDI music files,
- Record, play, and edit audio tracks using standard Audio .WAV files,
- Compose rhythm tracks with your own sampled sounds.
- Mix multiple tracks with effects into a single audio file.

To select MIDI synthesizers and Audio devices, select the menu **View / Synthesizers**.

To play, record, or compose a song, select the menu **View / Mixer** and read the instructions at the bottom of the screen.

If you encounter unfamiliar terms such as **Track** or **Patch Library**, select the **Help / Terminology**, **Help / Search**, or **Help / Tutorials** menu.

If you encounter any problems, select the menu **Help / Common Problems**.

To see if you have the latest version of Anvil Studio, and download to the latest release, select the menu **View / Anvil Studio Upgrade**.

To shop for *Anvil Studio* accessories, or to send us email, select the menu **View / Catalog**.

To end the program, select the menu **File / Exit**.

Visit us on-line at www.AnvilStudio.com

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Working with song files (View / Mixer)

The View / Mixer screen shows each of the song's tracks, and lets you control how they are mixed together, or blended, when the song is played.

To open a song: select menu **File / Open**

To rewind, stop, or play the song: click 

To play the same song repeatedly: click  with the right mouse button.

To play several songs, one after the other, read section *Creating a Play List* in the menu **Help / Tutorials**.

To create a new song: **File / New Song**

Initially, every song file is created with a single MIDI Instrument track.

If you are more interested in recording from a microphone or electric guitar, see **Audio Tracks** below.

To create a new track: **Track / Create**


When a song has multiple tracks, that are all played together when you play the song. When you create a new track, you need to decide what kind of track to create. Create an

- **Instrument** track, if you want to edit notes on a musical staff or record from a MIDI keyboard.
- **Audio** track, if you want to record from a microphone, an electric guitar, a tape deck or a music-CD.
- **Rhythm** track, for MIDI Drums and other percussion instruments, as well as Audio Samples and Loops.

Track List

The track list shows information about each track in the song. For example, this track list shows:

<input type="checkbox"/>	Track Name	Type	On	Device	Channel	Instrument
<input type="checkbox"/>	Piano	Instrument	mute	General MIDI - Microsoft GS Wave	1	Acoustic Grand
<input checked="" type="checkbox"/>	Vocals	Audio 24 bit	on	Line In (TASCAM US-144 MKII)	Left	mic / line-in
<input checked="" type="checkbox"/>	Lead guitar	Audio 24 bit	on	Line In (TASCAM US-144 MKII)	Right	mic / line-in

- the song has one MIDI Instrument track named "Piano", and
- two 24-bit Audio tracks named "Vocals" and "Lead guitar".
- The Piano track is muted, meaning when  is clicked, the track will be silent. If it wasn't muted, it would be played on MIDI Channel 1.
- Lead guitar is the **active track**, because it has the white background. Many actions on this and other screens only affect the single **Active Track**.
- The red checks in the left column indicate that Vocals and Lead guitar are *record enabled*, i.e., they will both be recorded when the REC button is clicked.
- Vocals and Lead guitar will both be recorded from device Line In (TASCAM), with Vocals coming from the TASCAM's Left jack (channel), and Lead guitar coming from TASCAM's Right jack.


To make a different track active, click its left column.

To rename a track, click its Track Name column.

To erase the content of the active track: **Track / Erase**.

To delete the active track, removing it from the song: **Track / Delete**.

To record to the active track from a MIDI keyboard: click 

To turn the metronome on or off before recording, click 

To change the sound of the metronome, **View / Metronome** or right-click the metronome.
If the metronome is turned on when you record a track, a three-count lead-in will be displayed before recording begins.
To change the song's tempo, click the tempo button.

You can change any of the following track properties while a song is stopped, or playing.

- To change the instrument used to play an Instrument track, click the track's **Device** or **Instrument** column.
- To temporarily silence a single track during playback, click the Track's **On** column with the *left* mouse button.
- To temporarily make a track the **SOLO** track, or the only track played, click the Track's **On** column with the *right* mouse button.
- To control a track's **Left/Right stereo balance** (also called Pan), or **volume**, adjust the sliders in those columns for the track you want to change.


To adjust the width of any of a Track List column, drag the edge of the column right or left while pressing the left mouse button.

Editing a track

To edit the active track: click **Edit track**, or **View / Composer**, **Piano Roll Editor**, or **Audio Editor**.

To see a symbolic list of the active track's MIDI events: **View / Event List**

To edit comments that you want to associate with the active track: **View / Comments**

To edit the properties of the synthesizer associated with the active track, click .


To **copy or paste measures from one track to another** using this screen, select the track's measures in the right-most column, and then select an item from the **Edit** menu.

Select **Paste Over** if you want the clipboard to replace sound on the current track.

Select **Paste Mix** if you want the clipboard to be mixed with the current track. For audio tracks, Paste Mix reduces the volume, preventing the possibility of distortion. If you want to preserve the volume, and accept the possibility of distortion, hold the Shift key while selecting the Paste Mix menu item.

To edit individual notes or samples: click **Edit track** or **View / Composer**.

Positioning a song

The song's current position is displayed in the time field .

Initially, this is shown in Minutes:Seconds:SMPTE-Frames. To change to Measures:Beats:MIDI-Ticks

format, click .

To move to a different position in the song, drag position slider  in the upper-left corner.

To remember the song's current position with a new **Cue Point**, click .

You can quickly return to the same position later by selecting the desired Cue Point from the Cue list.

Volume Controls

As described above, each track has a volume control that determines how loud the track is relative to the song's other tracks.

When **Audio Mix Vol** is checked, each track's volume is reduced to ensure that no audio distortion will be introduced when mixing tracks. When not checked, you can squeeze more volume out of the mix at the risk of introducing some distortion.

REC Monitor lets you hear the audio tracks as they are being recorded. When using this, it is important to monitor them with headphones so that the recording doesn't pick up speaker feedback. If your audio adapter has a monitor headphone jack, use that instead since it has no latency or delay.

To change the MIDI and Audio hardware used to record and play songs, or to add more MIDI or VST-I

synthesizer's, **View / Synthesizers...** or click  .



To return to the previous screen, click the **Back** menu.

Audio Tracks

To record from a microphone or electric guitar instead of a MIDI keyboard, click the track's **Type** column to change the track-type from Instrument to **Audio-16** or **Audio-24**. Audio-24 uses more memory, but sounds better.

To select which device an Audio track will be recorded from, click the track's **Device** and/or **Channel** columns.

On Windows XP and earlier, follow these steps to switch that device's audio source between Mic/Line, Audio CD, etc. This is not necessary on Windows Vista and later.


1. **View / Audio Volume Controls / Recording controls** (or click  beside **Edit Track**).
2. Select the sound card you want to use if it is not already selected.
3. The audio sources listed below  control which hardware devices contribute to the audio signal that will get recorded. Different sound cards support different audio sources. Most sound cards can only record from a single audio source at one time. They have a **Selected** box beside each audio source like this:




4. If you want to record from a Microphone, make sure the Mic's Selected box is set, and its Volume control is set to full (all the way to the right).
5. If you want to record from a guitar or an audio tape deck, make sure the Line-In's Selected box is set, and its left and right volume controls are set to full.
6. If you want to record from a Music CD, make sure the Music CD's Selected box is set, and its left and right volume controls are set to full.
7. Some sound cards can record from a mixture of audio sources.


8. They have a **Mute** box beside each audio source to control which sources are not to be recorded.
9. Find the audio source you want and make sure its **Select** box is set (or its Mute box is unchecked).
10. Adjust that source's volume.


For maximum flexibility, set each audio track's channel to Left, Right, or Mono but not Stereo. After all tracks have been recorded, you can adjust each track's Volume and Left/Right Balance so that the final mix's stereo field is just how you want it.


To test microphone levels before recording an Audio track, click . A VU meter will appear in the track's Instrument column, showing the microphone's peak volume. If the VU meter is barely moves, or if it goes into the red zone and you don't want to record distorted sound, adjust the microphone's volume. On Windows XP, adjust the Mic's audio source volume slider (pictured above) while continuing to observe Anvil Studio's VU meter.

On Windows Vista and later, the audio source volume is adjusted by:

1. **View / Audio Volume Controls / Recording controls** (or click  beside **Edit Track**).
2. Select the input device (Microphone, Line-In, etc.)
3. Click Properties
4. Select the Levels tab
5. Adjust the volume slider while continuing to observe Anvil Studio's VU meter

Clicking  before clicking REC can also be used to *warm up* the sound card, which eliminates the popping sound that some sound cards introduce when they start to record.

To change which audio devices to use for playback, **View / Synthesizers, MIDI + Audio ports** (or click ) and change the **Audio Out Port**

Under Windows XP, you may also need to **View / Audio Volume Controls / Playback controls** (or click  beside **Edit Track**) and select a device from the list.

To control playback quality, click **Audio Out**.

Select **View / Options** if you want to:

- change the number of Audio Buffers,
- control Record/Play/Stop functions remotely from a MIDI keyboard, or
- define keyboard shortcuts for common operations.

To add **VST** or **DirectX** audio effects like **Reverb**, **Delay** or **Echo** to an Audio track, click the **fx** (effects) column for the track you want to change.

To edit a track's Effects settings, click the track's **fx** column with the right mouse button.

To add **VST** or **DirectX** audio effects that affect all tracks in the song, click the **fx** button at the top of the screen.

To install VST or DirectX Effects, go to your favorite shareware site and search for VST or DirectX.

To cause one audio track to play later than the other tracks, change its **Time Shift** column, to the right of the **fx** column.

If you notice that audio tracks are not played back in sync with Instrument or Rhythm tracks,

View / Latency of MIDI + Audio devices.

To create a single .WAV file that captures the mix of all tracks: **File / Export Mixed Audio.**

If you have trouble with recording or playing back songs or want to learn more: **Help / Tutorials** or **Help / Common Problems.**

The free version of Anvil Studio allows songs to have two audio tracks, that can last up to 1 minute. The optional **Multi-Audio 1/8 accessory** allows you to create songs with up to 8 audio tracks. Each track can be up to 60 minutes long, limited only by the amount of free disk space on your computer. This accessory also allows you to create up to 32 sampled audio sounds on a rhythm track where the free version of Anvil Studio only supports rhythm tracks with two sampled sounds per song.

The optional **Multi-Audio 8/16 accessory** allows you to simultaneously record up to eight audio tracks. When that accessory is installed, you can enable recording on multiple tracks by pressing the Shift key while clicking on each track to be recorded.

All tracks with a red check in their left column will be recorded when  is clicked.

To see descriptions of optional accessories: **View / Catalog.**

View / Composer (Staff editor)

This screen shows the music for the active track, selected in the **Mixer** screen.

Since the track's **Type** attribute is set to **Instrument**, it shows sheet music. If you would rather edit a Piano Roll format, click the field that says **Staff** and change it to **Piano Roll**.

If you would rather enter notes using **guitar frets** rather than piano keys, or if you would like to see note-name labels on each piano key, click the on-screen piano with the right mouse button.

While editing a track, you will get better results if you change the **--no grid--** field to the smallest time period you want to work with, e.g. **16th notes**. The staff will be divided by equally-spaced vertical grey lines. This makes it easier to insert new notes and drag existing notes to the exact spot you want them. To insert new notes with the mouse, click on a note in the palette above the Insert Rest button, e.g. a 16th note, and then click anywhere on the staff where there is not an existing note, and a new one will be inserted. To make this process even easier, try changing the **Zoom** field from 100% to 150%. When you are done editing, you can change it back to **--no grid**.

To change the song's current **position**, try any of these actions:

- Drag the scroll bar at the top of the screen.
- Move the mouse to the desired note and press the left mouse button.
- Press the **left** or **right** arrow keys to move one note or rest.
- Press the **left** or **right** arrow keys while holding the **Ctrl** key to move one measure.
- Press the **Page Down** or **Page Up** keys to scroll one screen to the right or left.
- Press the **Home** or **End** keys to move to the first or last measure on the current screen.
- Press the **Home** or **End** keys while holding the **Ctrl** key to move to the start or end of the track.
- You can extend a selection by holding the Shift key while pressing any of these keys.

To delete a note or rest to the left or right of the cursor, press the **Backspace** or **Del** key.

To **insert** a new note,

- set the cursor to the place to insert the note,
- select a note symbol from the palette by clicking on it,
- set the volume control to the desired volume for the new note,
- play the desired note on the on-screen keyboard or your synthesizer's keyboard.
- To **build a chord** while composing, hold the Shift key down before entering the first note of the chord, and release the shift key after entering the last note in the chord.

To have Anvil Studio automatically generate chords that follow your lead,

- Press the **Harmonize** button.
- Enter a note by pressing a key on the on-screen keyboard or an external MIDI keyboard.
- A chord in the current key will automatically be generated.
- To cycle through a set of alternative chords, press the **Another** button that appears to the right of the **Harmonize** button.

To **insert** a rest, press the **Insert Rest** button. To insert several measures of rests, press the Whole Note symbol above the Insert Rest button, and then double-click on the Insert-Rest button. To build a chord using the guitar fret window instead of the piano keyboard,

- press the shift key,
- click the mouse on all of the frets you want to press,
- click the far left of open strings that you want played,
- don't click strings that you want to remain silent,
- when you release the shift key, the chord will be inserted.

You can also drag a note from the palette to a desired location on the staff.

You can also sing a note into your microphone and press the button with the picture of a microphone to insert the note on the staff. If this does not seem to be working, try turning to the Mixer screen and selecting a different Audio In port.

Changing note properties

To change the volume for a range of notes to a constant value, select the range of notes with the mouse and then adjust the **Vol** slider.

To change a **note's properties** such as pitch, volume, duration, staccato, or stem direction, or to **delete a note**, click on the note with the **right mouse button**.

For example, if you want to change a note's accidental from Bb to A#,

- click the note on the staff with the right mouse button,
- select the Properties popup menu, and
- click the **Enharmonic** checkbox.

To change properties for a group of notes

- select the range of notes you want to change,
- with the right mouse button, click anywhere in the selected range *except* on a note,



- then, select the **Properties...** pop-up menu



When one of the checkboxes is *checked*, e.g. **Force stem to point down**, that property will be turned on for each selected note.

When one of the checkboxes is *unchecked*, e.g. **Force stem to point up**, that property will be turned off for each selected note.

When one of the checkboxes is *grayed*, e.g. **Move note to other clef** in the picture above, that property will be left as it is for each selected note.

To lengthen or shorten a single note or range of notes, select **Lengthen** or **Shorten** from the pop-up menu.

To cause a note to be the first note of the next measure, select **Stretch** from the pop-up menu.

To cause a note to be the first note of the current measure, select **Compress** from the pop-up menu.

A tutorial describing this process can be found at **Help / How to align notes in a song before printing sheet music**.

A more powerful way to lengthen or shorten a selection of notes is with the **Edit / Stretch or Compress time...** menu. For example, it can be used to change 3 quarter notes to 3 triplets.

If you find yourself changing note properties very often, consider adding a keyboard shortcut. To do this, select the menu **View / Options** and set the appropriate values for **Anvil Studio Action to cause by Ctrl key** and **Computer Key that should trigger the action**. Then, you can simply press that key instead of bringing up the Note Properties window.

For example, to proportionately increase or decrease the relative volume of a range of notes,

- select the menu **View / Options**,
- assign a Ctrl key to the action *Make selected note(s) louder*, or *quieter*,
- then on this screen, select the range of notes and press that Ctrl key.

Similarly, to proportionately increase or decrease the relative duration of a range of notes,

- select the menu **View / Options**,
- assign a Ctrl key to the action *Lengthen* or *Shorten selected note(s)*,
- then on this screen, select the range of notes and press that Ctrl key.

To change the stem direction for a range of notes, select the range of notes with the mouse or shifted-cursor keys, then press the Ctrl-Key that you assigned to the Stem-Up or Stem-Down function on the Options screen.

To change a note's start time, click the note with the right mouse button, and then select the **Shift note's start time...** pop-up menu.

A short-cut way to do this is to press the **Ctrl** key and then drag the note right or left while pressing the left mouse button and the **Ctrl** key. Then, release the mouse button before releasing the **Ctrl** key.


To delete an individual rest, and shift the notes that follow it to the left, press the mouse's left button and to the left of the rest, and drag the mouse to the right while the button remains pressed until the staff looks like:



Then, press the **Del** key.

To move a note up or down on the staff, drag it straight up or down with the mouse while pressing the left mouse button. If you drag it beyond the top of the staff, it will leave the note unchanged. If you drag it beyond the bottom of the staff, it will remove the note from the song.

- Press the **up** or **down** arrow keys to raise or lower the pitch of the selected notes or the notes at the insertion point, while keeping the notes in key.
- Press the **up** or **down** arrow keys while holding the **Shift** key to raise or lower the pitch of the selected notes or the notes at the insertion point by one half-step.
- Press the **up** or **down** arrow keys while holding the **Ctrl** key to make the previous/next track active.

If you click the toolbar button  you can hear the note played as you drag it.

To manipulate a range of notes, drag the mouse over the desired range while pressing the left mouse button, and then select one of the following items from the Edit menu:

- Cut -- removes selected notes, copying them to the clipboard
- Copy -- copies selected notes to the clipboard
- Paste Mix -- mixes notes from the clipboard with notes at the current position
- Paste Insert -- inserts notes from the clipboard at the current position
- Delete Selection -- remove all selected notes, shifting the notes that follow to the left
- Silent -- remove all selected notes, leaving the notes that follow where they are

Sometimes it is easier to select a range of notes using the keyboard's arrow keys. To move the cursor, press the left or right arrow key. To select notes as you move the cursor, hold the Shift key down while pressing the left or right arrow. To move the cursor all the way to the start or end, hold the Ctrl key, and optionally the Shift key, while pressing the left or right arrow.

To insert **Slurs**, **Crescendos**, **Decrescendos**, and **Repeat** symbols:

- Drag a symbol from the palette (to the right of the Lock Score checkbox) and drop it where you want it on the staff, or

position the cursor where you want the symbol added (or select a range of notes if you want the symbol to apply to a range) and select one of the **Edit / Insert Notation...** menu items.

- click on the new symbol to move it up, down, right, or left within the measure or change its size.

Note that inserting the notations described above only affects how the song is displayed on the screen and printed, not how the song is played.

To display a chord label above the staff,

- move the mouse to the note you'd like the label to go with,
- press the right mouse button, and
- select Chord.

To automatically generate chord labels on the staff, select the menu **Track / Add Chord Labels**.

If you don't want this done for the entire track, select a range of notes with the mouse first.

To edit the active track's lyrics, click the field named **Staff** and change it to **Staff + Lyrics**.

To edit the track's lyrics:

- Click the left mouse button on the note you want the lyrics to go with,
- click the lyrics text field above the Lyrics Font button,
- enter the text of that note's lyrics in the field under the control **Lyrics line 1**,
- press the Enter key to advance to the next note,
- enter the text for the next note's lyrics followed by the Enter key.
- To enter the lyrics for second verse, change **Lyrics line 1** to **Lyrics line 2**.

Another way to change a note's lyrics is to move the mouse to a note, press the right mouse button, and select Lyrics. For multi-verse lyrics, type several lines in this field. They will all be displayed when printed, but only one line of the verse will be shown on the screen-staff.

If the last letter of a lyric is a hyphen (-), when printed, it will appear half way between the note and the following note.

Another way to enter lyrics is to select the menu **View / Lyrics in a window without notes**.

Frequently, standard MIDI songs have lyrics stored on their own track. If you have loaded such a song, select the menu **Track / Merge** to merge the lyrics track into track that has the notes you want displayed with lyrics.

To change the song's tempo, select the menu **View / Metronome**.

To cause 8th notes in this track to be played with a *Swing* rhythm, select the menu **Track / Play track with a Swing rhythm**.

To insert Time Signatures and Key Signatures in the middle of a track, position the cursor within the measure that you want to change, and then change the Key: or Time: field in the panel below the staff.

If you would like to use your computer keyboard to enter notes, the keys between **Q** and **]** can be used as a row of *white* piano keys, while the keys between **2** and **=** can be used as the *black* piano keys between them.

Similarly, the keys between and **Z** and **/**, and **S** and **;** can be used as another row of piano keys. To **change the octaves** that they represent, move the mouse over the piano keyboard and press the Right mouse button.

To change note duration from the keyboard, press keys **F1** through **F6**.

To toggle the Dotted Note checkbox, press **F7**.

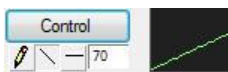
To toggle the Staccato checkbox, press **F8**.

To toggle Insert Mode, press the **Ins** key.

With Anvil Studio's optional **Print-Sheet** accessory, this notation can be printed with the **File / Print** menu.

View / Track Automation

If the Pro-Mix accessory is installed, the menu **View / Track Automation** displays this graph, used to edit the active track's parameters like Volume, Balance, reverberation level etc.



To select a different parameter, click **Control**.

Use the mouse to alter the values within the graph.

The **Pencil tool** draws free-form.

The **Line tool** draws straight lines. When used while pressing the Shift key, it draws horizontal lines, so that the control has the same value for a long period of time.

The **Flat line tool** prompts for a constant value for the parameter for the entire track.

For more detailed information, use the menu **Help / Search** to search for **Automation**.

Editing Lyrics

This window is shown when you select the menu **View / Edit lyrics in a window without notes**.

The lyric editor allows you to edit a track's lyrics, one verse at a time. Note that only the first verse is displayed on the staff. All verses are shown when printing with the Print-Sheet accessory.

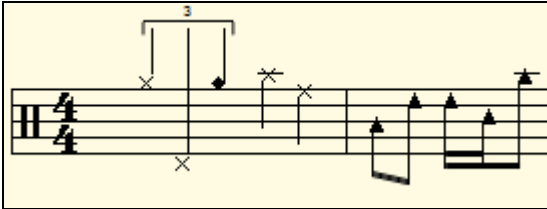
When editing the lyrics, separate individual phrases with - (hyphen) or = (equal sign). The hyphen is displayed on the score, while the equal sign is not. Insert extra = characters if you want two or more notes to have no phrase. For example, if the first measure of a song has 4 quarter notes, and the first and last quarter notes are to have phrases "Some" and "day", and the middle two quarter notes are to have no phrases, the text in the lyric editor would look like: Some = = = day.

The equal sign is used as a phrase separator because it is easy to see. If you would prefer to have spaces separate phrases, then check the box named **Space bar is phrase separator**. If you want to paste text that has spaces between words, check this box before pasting the text.

If you would prefer to edit an individual note's lyrics, right-click on the note and select the Lyrics... popup menu item.

View / Composer for percussion tracks

You can use Anvil Studio to edit a percussion track with standard percussion symbols on a staff.



To create a new track of this kind, select the menu **Track / Create / Rhythm track (Staff editor)**.

To change an existing track to this kind, select the menu **View / Composer** and change its **Style** field to Percussion.

This editor displays a palette of percussion instruments instead of piano keys or guitar frets.

To change the layout of this palette, drag any instrument to a new location.

To delete an instrument from the palette or change its properties, right-click the instrument and select the appropriate pop-up menu item.

To add an instrument to the palette, or copy/paste an entire palette, right-click anywhere on the palette.

Changes that you make to the palette will be saved in the current song's active track.

View / Composer (for Instrument tracks with a Piano Roll view)

Adding an Instrument

This screen shows the notes on an Instrument Track in **Piano-Roll** format.

To add a note, click the left mouse button anywhere on the grid.

To add a note and control its duration, press the left mouse where you want the note to start, then drag the mouse while holding the left mouse button, then release the mouse button where you want the note to end.

To change a note's properties, move the mouse over the note and click the right mouse button.

To remove a note, either click the note with the left mouse button, or hold the shift key while clicking the right mouse button on the note.

Drag the left edge of a note to change its start time.

Drag the right edge of a note to change its duration.

Drag the center of a note to change its pitch.

To hear a note without inserting it, click on its name.

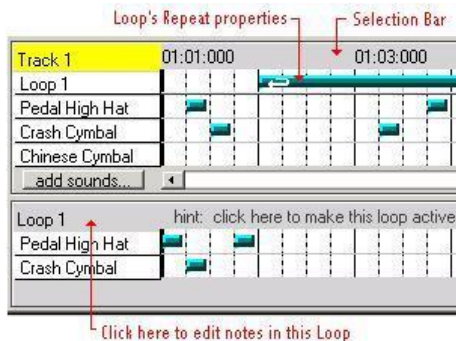
To change which notes and octaves get displayed on the grid, press the **Add Sounds** button.

To insert a rest at the current position, press the button with the rest symbol.

Edit Operations

To select notes for Cut, Copy, or Paste, press the left mouse button anywhere on the Selection Bar to the right of the track's yellow-highlight name, slide the mouse on the bar to the end of the range of notes you want to select, and release the mouse button.

Creating Loops



If you want to repeat a sequence of notes several times, select the notes on the Selection Bar as described above, select the menu **Edit / Repeat selected notes in a Loop**.

You can then cause this set of notes to be played anywhere in the song, by clicking to the right of the loop's name the same way you would play a single note.

To change how many times the set of notes gets repeated, right-click the note (labeled *Loop's Repeat properties* in the diagram above), and select the Properties menu item.

To change the sequence of notes in the new loop, you need to first make it active. To make the new loop active, click where it says *hint: click here to make this loop active*. You can tell that it is the *active* loop because its name, Loop1, is highlighted in yellow.

Now that it is active, you can add notes, or edit it the same way you would edit the track's notes in any of ways described above.

To rename the loop, right-click on the yellow-highlighted Loop1, and select **Rename Loop**.

To control which loops are visible on the screen, press the **Show Loops** button.

To add sampled audio sounds to your track, press the **Add Sounds** button, then press the **Audio Samples** tab, and then press the **Edit Samples** button.

If you have the optional Multi-View accessory, and if you want to see two tracks at the same time, press the **Show Loops** button and check the desired tracks.

To play notes from your computer keyboard while recording or not, press the following keys:

1 2 3 4 5 6 7 8 9 0 - =

Q W E R T Y U I O P []

A S D F G H J K L ; ' Enter

Z X C V B N M , . /

Creating and changing audio samples

These operations are available when you press the **Edit Samples** button from the Rhythm or Piano Roll composer screens.

- To create a new sample, press the **Add New Sample** button.
- To record a new sound from the microphone into the current sample, press the **Record** button.
- To load an existing .WAV file into the current sample, press the **Import** button.
- To copy a recorded sound from the clipboard into the current sample, press the **Paste** button.
- To copy a recorded sound from the current sample to the clipboard, press the **Copy** button.
- To hear the current sample, press the **Play** button.
- To filter, reverse, trim, adjust the volume or pitch of the current sample, press the **Edit** button.
- To delete the current sample, press the **Delete** button.
- To adjust the volume or balance of this sample, relative to other samples, change the **Vol** or **Pan** control.

After creating your samples, you can insert them into the rhythm track the same as any other drum sound.

There are several things you can do to increase the volume of a sample. Experiment with one or more of the following until you get the sound you want.

- In the window brought up by **Create Sampled Sounds...** or **Edit Samples...**, set Volume all the way to the right.
- In that same window, press the Edit... button to edit the waveform. Then, press the Louder button until it warns you that doing so would introduce distortion.
- On the Composer screen for the Rhythm track, set the volume control all the way to the right.
- On the Mixer screen, set the volume for the rhythm track all the way to the right.
- On the Mixer screen, set the volume for Audio all the way to the right.

Editing audio samples

This window is shown when you press the **Edit** button for an audio sample. It lets you edit the audio wave for the selected sample.

Initially, the entire sample's wave is shown. To see the wave in more detail, zoom in by scrolling the horizontal and vertical Zoom scroll bars.

Click the **Audio Out** button to change quality and memory requirements of your recording. 16 bit 44.k kHz (CD-Quality) consumes 88,200 bytes per second, or 5 million bytes per minute. With the left mouse down, drag the mouse over the sound window to select part of it.

To hear only the selected sound, press the **Play Selection** button.

To copy the selected sound to the clipboard, select the menu **Edit / Copy**.

To paste the clipboard, click the mouse where you want it to go and select the menu **Edit / Paste**.

To delete the selected part of the wave, select the menu **Edit / Delete**.

To set the selected part of the wave to complete silence, select the menu **Edit / Silent**.

To replace the selected sound with the same sound played backward, select the menu **Edit / Reverse**.

To filter the entire sample, press the **Filter** button. If you only want to filter part of the sample, select the desired time period before pressing the Filter button.

You can make the sample, or part of it, **Louder** or **Softer** in volume, or **Higher** or **Lower** in pitch by pressing one of those buttons.



To help you synchronize with recorded MIDI instruments, vertical *tempo* lines are drawn at the start of each 16th note.

Editing Audio tracks (View / Audio Editor)

This screen shows the active track, as selected in the **View / Mixer** screen's Track List.

Since the track's **Type** is set to **Audio**, it shows the audio track's wave data.

Initially, the entire track's wave is shown. To see the wave in more detail, adjust the **Zoom** slider and/or uncheck **Auto Scale**.

To record this track, click , and then when you are finished recording, click .

To copy the contents of an audio (.WAV) file into this track: menu **File / Import Audio from...**

A copy of the file is made, so that any changes you make will not affect the imported file.

To copy all of this track to a new audio (.WAV) file: menu **File / Export Active Track as audio file**.

To select a portion of this track, move the mouse to the start of the selection, press the left mouse down, drag the mouse to the end of the desired selection, and release the mouse.

If nothing is selected, most operations affect the entire track.

To hear only this track without the other tracks, click **Play track**.

To copy part of this track to a new audio (.WAV) file, select some audio you want to copy, or position the cursor where you want to split the track and then select the menu **Track / Split track into multiple .WAV files**. If you want to divide the audio track into several .WAV files, it is fastest to do this multiple times, starting at the right end of the track, and repeatedly saving the right-most portion while selecting the option to delete that portion from the current audio track.

To copy the selected sound to the clipboard: menu **Edit / Copy**.

To paste the contents of the clipboard into the song, click the mouse where you want to insert the new sound, and select one of the following from the **Edit** menu:

Paste Over if you want the audio in the clipboard to replace sound on the current track. For example, if the clipboard contains 1 second of audio, and the song's current position is 0:10:00 (10 seconds), then the current track from 0:10:00 to 0:11:00 is replaced with the contents of the clipboard.

Paste Mix if you want the clipboard to be mixed with the current track. Paste Mix reduces the volume, preventing the possibility of distortion. If you want to preserve the volume and accept the possibility of distortion, hold the Shift key while selecting the Paste Mix menu item.

Paste Insert if you want the clipboard inserted into the current song.

To delete the selected part of the track: menu **Edit / Delete**.

To set the selected part of the track to complete silence: menu **Edit / Make Selection Silent**.

To replace the selected sound with the same sound played backward, menu **Edit / Reverse**.

To filter the entire track, click **Filter...** If you only want to filter part of the track, select the desired time period with the mouse, and then click **Filter...**

To eliminate clicks and pops from the start or end of an audio track, click **Filter...**, set the filter kind to **Zero-Average** and click **Apply**.

Then, set the filter kind to **Normalize** and click **Apply**.

Then, if there is a high-pitch hiss, and set the filter kind to **Low-Pass** and click **Apply**.

Then, if there is a low-pitched hum, set the filter kind to **High-Pass** and click **Apply**.




To change the volume of a selection or the entire track, set the filter kind to **Volume**, adjust the slider, and click **Apply**.

As a short-cut, you can make the track, or part of it, twice as loud by clicking **Louder**. You can adjust the track's relative volume without modifying the recorded signal by selecting the menu **View / Mixer**.

To adjust the pitch of a selection or the entire track, set the filter kind to **Pitch...**, adjust the slider, and click **Apply**.

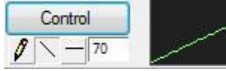
To help you synchronize with recorded MIDI instruments, vertical *tempo* lines are drawn at the start of each 16th note, quarter note, and measure.

If you make a mistake while recording Audio, you can re-record over the mistake (sometimes called **Punch In**) as follows.

1. Select the part of the recording you would like to re-record.
2. Menu **Edit / Set Record+Play Start+End Times** (or click on the top of the  field
3. click the resulting window's **Start / End positions** button),
4. set the options **Record / Play from** and
5. **Only affects which part of the song gets Recorded - not played back**
6. Then click **OK**.
7. A yellow line will appear in the edit window for the selection to be re-recorded.
8. This lets you control the positions where song playing and recording start and stop.
9. Position the cursor several seconds before the part you want to re-record.
10. Click  so the Sound Card is *warmed up*.
11. Click .
12. Sing or play along with the song.
13. Recording will automatically start when the yellow section is reached, and stop when the end of that section is reached, and only the yellow *punch-in* range will be replaced with what was just recorded.

View / Track Automation

If the Pro-Mix accessory is installed, the menu **View / Track Automation** displays this graph, used to edit the active track's parameters like Volume, Balance, reverberation level etc.



To select a different parameter, click **Control**.

Use the mouse to alter the values within the graph.

The **Pencil tool** draws free-form.

The **Line tool** draws straight lines. When used while pressing the Shift key, it draws horizontal lines, so that the control has the same value for a long period of time.

The **Flat line tool** prompts for a constant value for the parameter for the entire track.

For more detailed information, use the menu **Help / Search** to search for **Automation**.

View / Synthesizers, MIDI + Audio Ports

This screen lets you:

- Choose devices connected to your computer to use for controlling MIDI devices.
- Choose devices connected to your computer to use for recording and playing Audio.
- Choose which synthesizers you want to connect to your computer.
- View a Patch Library for a particular synthesizer.
- Test all MIDI Input and Output ports connected to your computer.

Anvil Studio accessories are available that support other synthesizers.

View / Metronome & Tempo settings

Changing the value in the **Tempo** field speeds up or slows down the current song. This value gets saved and re-loaded with the song file.

You can also change the tempo by pressing your keyboard's space bar 4 times at the desired tempo.

Check the **Metronome turned on** box if you want the metronome on all the time.

Check the **Silent when not playing or recording** box if you only want it on while you are playing or recording a song.

Press the **Advanced Settings** button to see more fields.

Change the values of the **Synthesizer** and **Channel** values to control which synthesizer(s) are to play metronome sounds.

Try different values in the **MIDI Note** field until the metronome sounds ok.

Press the **Create Click Track** button to create a track of metronome beats that will be part of the song. This can be useful while recording new tracks, and can be removed from the song when it is finished.

View / Latency

This lets you keep your Audio and Instrument tracks in sync during playback.

See **How to keep all tracks in sync** for a description of *latency* and situations where device latency interferes with music production.

You can have Anvil Studio automatically compute device latency values for all of your MIDI and Audio output devices by pressing the **Analyze** button, or

You can enter values manually:

- click an entry for a synthesizer or audio device,
- set its latency property to the number of milliseconds it delays its output, e.g. 500 for half a second.

Another way to test your device latency values is with your ear.

If you want to play MIDI Instrument or Rhythm tracks with Audio tracks, try this:

1. Create a new file.
2. Select **View / Mixer**.
3. Click the track's Instrument column to change it from Acoustic Grand to Woodblock (#116).
4. Select **View / Composer**.
5. Insert about 8 quarter notes.
6. Create an Audio track.
7. Hold your microphone close enough to your speakers that you don't get feedback.
8. Record the Audio track (this will record the Woodblock sounds onto the audio track).
9. Select **View / Mixer**.
10. Set the Pan for the Instrument track to 0 (far left).
11. Set the Pan for the Audio track to 100 (far right).
12. When you play them back, try to hear if one track is playing earlier than the other.
13. If the Instrument track is playing earlier than the Audio track, it means the Audio device has some latency, so you need to:
 - return to the **View / Latency of MIDI + Audio Devices** screen,
 - click the Audio Out device you have assigned to play the Audio track,
 - set its latency a little higher (250 = a quarter second, 100 = a tenth of a second), and
 - repeat the process.

If the Audio track is playing earlier than the Instrument track, it means the MIDI device has some latency, so you need to:



- click the Synthesizer you have assigned to play the Instrument track,
- set its latency a little higher, and
- repeat the process.

If both the Audio and Instrument tracks sound like they are playing in sync, you have the device latency properties set properly.

View / Performer

You can create special effects by *wiring* tools together to create a MIDI program. The first program shown, and the program created when you press the **New** button, is a simple one that sends all Synthesizer input to all Synthesizers and Sound Modules.

Running a program


Your program will not do anything until you start it running by clicking the **Run** button. When the program is running, any keys received from any MIDI keyboard connected to your computer will be sent to the  tool. Any notes sent to the  tool will be sent to all synthesizers connected to your system. You can test a program by pressing keys on the on-screen piano.


Adding a new tool to your program

You can add tools to the program by clicking on one of the buttons at the left of the screen that identifies the tool you want, and then clicking anywhere on the right half of the screen, where you want the tool to be placed.


More tools can be added to the toolbar by purchasing any of these optional accessories from www.AnvilStudio.com: the Performance Toolpack, Combo Accessory Pack, or Anvil Studio Works. Select **View / Catalog** for details.

Connecting the output of one tool to the input of another tool

Tools that can accept input have a blue arrow pointing into them. Tools that can produce output have a red arrow pointing out of them. For example, a tool that looks like this  can accept input from another tool, and generate output for other tools.

To connect the output of one tool to the input of another, move the mouse over the blue arrow of one tool until the cursor looks like , a hand grabbing a wire. Now, press the left mouse button, and hold it down while you drag the mouse to the tool that you want to connect it to. When you release the mouse button, a line will be drawn between the two tools.

Moving a tool on the screen

Move the mouse over the tool to be moved until the mouse cursor looks like this . Now press the left mouse button, and hold it while you move the mouse to the location that you want to move the tool.

Changing what a tool does

You can change the behavior of any tool. Move the mouse over the tool to be modified, click the right mouse button, and choose the **Properties...** menu item.

Saving a program

Select the **Save** or **Save As** menu item to save your program to disk. If this is a new program, or if you select Save As, you will be prompted for a filename. Otherwise, it will be saved back to the same file it was loaded from.


Loading a program

Select the **Open** menu to load your program from disk.

Remove a tool from the program

Move the mouse over the tool to be removed, click the right mouse button, and choose the Remove Tool menu item.

Disconnecting the link between two tools

Move the mouse over a tool's blue arrow until the mouse cursor looks like this . Now, click the left mouse button.

Recording the output from the Performer screen program

You can record a real-time performance by connecting the output of your program to the Staff tool, available with the Performance Tool Pack described below. Set the Staff tool's properties for the track you want to record to. Press the Run button and start playing your keyboard. When finished, save your program and select **View / Mixer** and play back what you have recorded.

View / Audio Lab

This screen lets you experiment with audio waveforms by creating them with the above tools, and then listening to them. These three pictures show different ways sound might look if you could see sound with your eyes.

- The first window shows the fundamental waveform that gets repeated thousands of times per second.
- The second window shows the sound's pitch over time.
- The third window shows the sound's volume over time.

While the left mouse button remains pressed, drag the mouse within any of the above windows.

To draw a horizontal line, press the shift key and the left mouse button while dragging the mouse.

To hear the resulting waveform, press the **Play** button.

To insert this sound into your song:

- press the **Copy** button,
- select **View / Mixer**,
- create or select an Audio track or Rhythm track,
- select **View / Audio Editor** to edit that Audio track,
- select the menu **Edit / Paste**.

Note that this screen only supports an Audio Quality setting of **CD**.

View / Options

General Tab

The **Font** button lets you select the font used by Anvil Studio.

Uninstall All Accessories causes Anvil Studio to forget about optional accessories that have been installed, such as Anvil Studio Works.

Reset All Options to Factory Default Settings restores Anvil Studio to its state when it was first installed. This can be useful if something used to work better than it does now, and you are not sure why.

If **Reload most recent song at start-up** is checked, then whenever Anvil Studio starts, it loads the song file you last loaded and displays the screen you were last working on.

If **Show Help at the bottom of the screen** is checked, Anvil Studio uses Internet Explorer to display help information at the bottom of each screen.

If **Always create a diagnostic file** is checked, Anvil Studio generates a trouble-shooting log file every time it is run. This causes Anvil Studio to run a little slower, so it should only be used when trying to track down an problem that seldom occurs.

If **All volumes range from 0 to 127** is checked, all volume controls range from 0 to 127, the true MIDI standard. If it is not checked, all volume controls range from 0 to 100, but are converted to range from 0 to 127 before being sent to MIDI devices.

If **Enable Full-Duplex Soundcard test** is checked, Anvil Studio checks your audio/MIDI hardware every time a configuration change occurs, and reports possible problems. You can uncheck this if you think you have a full-duplex sound card, but Anvil Studio says that you do not, but do this with caution as problems may go undetected.

If **Show notes for all tracks on Mixer screen** is checked, a zoomed out view of notes for all tracks appears on the Mixer screen. You can drag the mouse over the notes to hear them played, which can be useful when trying to locate a desired position in the song. It can also be used to copy and paste measures between tracks.

If **Delay Recording start time** is checked, whenever the REC button is pressed, you will be prompted to enter the time when recording should begin. This can be used for things like unattended recording of a web broadcasted radio program.

If **Enable ReWire mixing** is checked, when Anvil Studio starts, it acts as a *ReWire* master application and coordinates with other ReWire applications so the applications can share audio and MIDI.

Set the **Undo count** to any number between 0 and 50. Higher numbers let you undo more edits with the Edit/Undo menu item. Setting this number higher also consumes more memory.

Shortcut keys let you associate actions with Ctrl keys. For example, if you need to change several note stem directions on the Composer screen, assign Note Stem Up to Ctrl+U to and Note Stem Down to Ctrl+D. Then, on the View/Composer screen, press Ctrl+D or Ctrl+U to change the stem direction of the selected notes.

If you assign a Ctrl key to the action *Lengthen note(s)* when that Ctrl key is pressed, the selected notes will be made proportionately longer.

If you assign a Ctrl key to the action *Make selected note(s) quieter* when that Ctrl key is pressed, the selected notes will be made proportionately lower in volume. **Recording** assigns Ctrl keys to recording actions.

Menu **File / New Song** creates a single track. To customize it:

Create a song with tracks assigned to devices you typically use

Save it, naming it *4-track setup* for example

Uncheck **none** below **Customize File / New Song**

Press **Browse** to select *4-track setup*

File / New Song creates files that are identical to it, until you Uncheck **none**.

Default folder for loading and saving songs lets you specify the folder where new songs created by the **File / New Song** menu are to be saved.

Audio Tab

The **ASIO, DirectX, VST Effects plug-ins...** button brings up a window that lets you choose between the following audio in and out device drivers:

Core Audio (available in Windows Vista and later),

DirectX Audio, or

ASIO Audio,

Windows Audio (WDM drivers),

It also lets you add Anvil Studio and third-party VST and DirectX audio effects processors (like reverb, chorus, etc.) to your song.

Increasing the **Number of input audio buffers** makes sure you don't miss anything while you are recording Audio. It also requires more RAM-memory.

The program will tell you if you need to increase the number of audio input or Output buffers.

Increasing the **Number of output audio buffers** makes Audio output more smooth on slow systems, or systems that have other programs running. It also requires more RAM-memory and increases the delay you hear when using VU-Monitoring.

If **Warn if memory limits record time** is checked, Anvil Studio warns when starting to record an Audio track if recording time will be limited by available memory.

If you have the optional Multi-Audio accessory installed, there is a list with options in the lower-left corner of this screen lets you control when to automatically stop recording when an audio track is being recorded. By default, it is set to **Stop recording audio after 1 hour**. Change it to **Stop Audio Recording after 2 gigabytes** if you want audio recording to stop when the track's .WAV file grows to 2 gigabytes. If you set it to **Record audio to multiple song files** Anvil Studio will create a sequence of several song files while recording the same session. This is useful because song files longer than 30 minutes can become unwieldy to edit.

If **Enable master playback VU meter** is checked, it causes the Mixer screen to show a Master playback VU meter if the song has any Audio tracks.

Enable per-track VU meters shows a VU meter for each audio track on the **View / Mixer** screen.

Monitor audio sources when VU is pressed causes the sound captured by the microphone or other audio source connected to the active Audio track to be played on the current output device when VU is pressed.

Monitor audio Effects when VU is pressed is similar to *Monitor audio sources*, but the sound is routed through Anvil Studio's mixer's Volume and Pan controls, and any audio effects that are connected to the song. The audio processing causes a delay between the microphone and the speakers, which can be reduced by sliding the **Number of audio output buffers** control to the left.

The **Test for Full-Duplex Soundcard** button will tell you if your soundcard can Record and Play MIDI and Audio at the same time. This is an important feature for multi-track recording.

Press the **Create Audio Diagnostic File** button to create a diagnostic file that you can email to support@AnvilStudio.com along with a description of any audio problems you are having.

MIDI Tab

New files created by Anvil Studio are always saved in MIDI-Format-1, where each track has its own MIDI channel/instrument. Files are saved in this format can be edited by other MIDI editing programs, however editing song files with another MIDI editor may cause loss of some important information. Anvil Studio stores Sequencer-Specific MIDI events to remember things like links to audio files and some staff note properties. These special events are part of the MIDI standard and do not interfere with how the song gets played by other MIDI player programs. Some other MIDI editors delete these Sequencer-Specific MIDI events from song files. Anvil Studio preserves Sequencer-Specific MIDI events created by other editors.

It is always a great idea to create backup copies of your song files, but it is especially important to do so before editing them with another editor.

If **Close MIDI Out when not in use** is checked, other programs can use the MIDI Out to play MIDI music while Anvil Studio is not using it, but it can cause clicks or short sounds in Compose mode.

If **Record no Rests** is checked, the duration of notes is not determined by when a note is released, but by which notes are still down when a new note is pressed. This sometimes produces more pleasing results when recording a score for display as sheet music.

If **Echo incoming MIDI events to all synthesizers** is checked, This has no effect if your computer has no external MIDI port.

When Anvil Studio runs for the first time, Echoing MIDI events is initially disabled.

You will want to turn this on if you are recording a MIDI track, and you want to play notes on one synthesizer keyboard, but have them played by a different synthesizer or your computer's sound card. In this case, the synthesizer keyboard you are playing will remain silent, and the recorded notes will be echoed, and later played back, on the synthesizer assigned to the track being recorded. For example, try turning this check box on and then select **View / Mixer** and create a Rhythm track. Now, press keys on an external synthesizer to hear drum sounds. While still on the Mixer screen, press the Record button and press keys on your synthesizer to record a rhythm track.

You will want to turn this off for any of the following reasons:

If your computer's Sound Card is not *Full Duplex*, that is, it cannot send and receive MIDI events at the same time.

If your computer's Sound Card is the type that cannot listen to the MIDI port and Audio-in port at the same time.

If you do not have enough MIDI cables to connect:

the synthesizer's MIDI OUT port to the computer's MIDI IN port, and

the computer's MIDI OUT port to the synthesizer's MIDI IN port.

In this case, you need to re-connect a MIDI cable to different ports depending on whether you are recording or playing back.

If you notice delays between the time you press a note and when you hear the note played.

If you don't here anything when you press a key on the synthesizer keyboard.

Program behavior when Echo MIDI Events is enabled

During start-up the program opens MIDI OUT and MIDI IN ports, and immediately sends LocalControlOff messages to all channels.

When not recording, it simply echoes any MIDI event to all MIDI OUT ports.

When recording, it echoes the received notes, after changing the channel number to the active track's channel number.

Program behavior when Echo MIDI Events is disabled

The program only opens MIDI IN ports when recording a MIDI track, or when Anvil Studio is showing a screen that needs to listen to MIDI events.

The program only opens MIDI OUT ports when playing one or more MIDI tracks, or when Anvil Studio is showing a screen that needs to play MIDI notes.

If **Record and Play SysEx MIDI Events** is checked, MIDI System Exclusive messages are recorded to the track being recorded, and sent to MIDI devices during play back. Otherwise, System Exclusive messages are ignored by Anvil Studio.

If **Enable SoundFont support** is checked, it enables SoundFont support if your sound card supports it. This allows Anvil Studio recognize which instruments are currently loaded into your sound card. It also allows you to load different .SF2 files into your sound card, just like a stand-alone MIDI Sampler. For more information, select **Help / Tutorials (How do I)...**, and then read the section on SoundFont ® support. SoundFont ® is a registered trademark of E-mu Systems, Inc.

If **Anvil Studio is the player of .MID files** is checked, when you double-click on a .MID file from Windows Explorer, Anvil Studio is launched to play the song. Since the Anvil Studio program is larger and slower to load than simple MIDI file players, you might not want to do this.

Tracks can have multiple Program Change events should only be set in rare circumstances. Typically, Anvil Studio assigns a different MIDI Program (or instrument) to each track. When this checkbox is set, it allows multiple MIDI programs on a single track, but it is more difficult to assign, requiring the menu **Edit / Insert MIDI Event** instead of simply clicking on a column on the **View / Mixer** screen.

The **MIDI Ticks per quarter note** allows you to control the MIDI ticks per second that get sent to MIDI devices. It is initially set to 240.

The **Default volume of new note** field lets you control how loud new notes are when composing in the staff editor.

The **MIDI Master / Slave Sync properties** button lets you use Anvil Studio to control the MIDI clock (tempo) for external synthesizers, or to let an external synthesizer's MIDI clock control Anvil Studio. You can also let a soundcard's audio clock control Anvil Studio's MIDI playback speed. This makes it easier to keep all MIDI synthesizers and audio tracks in sync during playback and avoiding *drift*.

By default, **Record events from all channels to the active track** is selected which means that when recording MIDI, all events are recorded to the active track, and given the active track's MIDI Channel, regardless of which MIDI channel they were recorded from.

If **Only record events from the active track's channel** is selected, When recording MIDI, any events from other MIDI channels are ignored. For example, if the active track is assigned to MIDI Channel 3, when a note is recorded on MIDI Channel 3, that note is inserted into the active track. Events from channels other than 3 are ignored in this mode.

If **Record each channel to its own track** is selected, When recording MIDI, this causes each MIDI channel to be recorded to a different track, instead of all channels getting recorded to the active track. For example, when a note is recorded on MIDI Channel 3, that note is inserted in the track whose channel is 3. New tracks are created as necessary when recording in this mode.

It isn't always easy to reach the mouse and computer keyboard while you are trying to record at your Synthesizer. This screen lets you control some parts of Anvil Studio's user interface from your MIDI keyboard. For example, you can use it to start/stop recording when you step on a MIDI foot-switch, or

wiggle a Modulation wheel, or press the lowest note on the keyboard.

First, select the **Anvil Studio Action to cause by MIDI Event** you want to control remotely. Then, press a note, step on a foot switch, or trigger any other MIDI event.

If the MIDI event you select is a switch, like Sustain, then a **On starts, Off stops** checkbox appears. For example, if this box is checked for Sustain controlling Stop/Start Recording, then you need to press the sustain pedal to start recording, and release the pedal to stop recording. If it is not checked, then you need to press the pedal once to start recording, and then press it again to stop recording.

Staff Tab

Use DO, RE, ME... causes notes to be named this way instead of with the letters C, D, E...


If **Play notes when mouse moves over staff** is checked, Anvil Studio plays notes when you drag the mouse over them on the Composer and Mixer screens.

If **Show Dotted Rests** is not checked, smaller rests are displayed instead.


If **Enable Beam lines** is not checked, adjoining 8th...64th notes are not drawn with beam lines.

Help / Common Problems and Questions

I hear no sound when playing a song

1. Select **View / Mixer**.
2. Select the menu **View / Audio Volume Controls / Playback controls** (or as a shortcut, press the button beside the Edit Track button).
3. Select the sound card you want to use if it is not already selected. Examine the various volume controls. These determine which audio sources contribute to sound produced by the speakers connected to your sound card.
4. Make sure that the **Mute** check boxes beside **Audio tracks** and **Synth tracks** are **NOT** checked.
5. Set the volume for **Audio tracks** and **Synth tracks** to full (all the way to the right).
6. Press the play  button.

If you are trying to play a song with **Audio Tracks**:

1. Select **View / Synthesizers**.
2. Try selecting different **Audio In port** or a different **Audio Out port**.
3. Select **View / Mixer**.
4. Press the play  button.

If you are trying to record an **Audio Track**, and are unable to monitor what you are recording through your headphones:


1. Select **View / Mixer**.
2. Select the menu **View / Audio Volume Controls / Playback controls** (or as a shortcut, press the button beside the Edit Track button).
3. Make sure the Mic's selected box is checked, or its Mute box is not checked.
4. Adjust the volume to a level that sounds good for monitoring.
5. Make sure you are using headphones instead of a speaker if the microphone is close to your speakers, or you will hear feedback.

If you are trying to play a song with **Instrument and Rhythm Tracks** (MIDI):

1. If you are using the **Microsoft GS Wavetable Synthesizer**,
 - a. open the Windows Control Panel's Sounds and Audio Devices folder.
 - b. Select the Audio tab.
 - c. Make sure the Sound Playback Default device is set properly. This tells the Wavetable synthesizer where to send its audio output.
2. You need to decide if you are trying to get songs to play on an external Synthesizer attached to your computer by a MIDI cable, or through your computer's sound card.
3. If you do not have the Pro-Mix accessory installed,
 - a. Select **View / Synthesizers**.
 - b. Try changing the **Midi Out Port** to a different value.

- c. This field controls which device on your system is to be used to play MIDI notes.
 - d. Values like *MIDI Out* would send it to synthesizers connected to your computer by MIDI cables.
 - e. Values like *MIDI Synth* would send it to the internal synthesizer built into your computer's sound card.
4. If you DO have the Pro-Mix accessory installed, select **View / Mixer** and make sure that each track's device column is assigned to the correct synthesizer.
 5. If the REC or Play buttons are yellow, it is waiting for an external Sync MIDI event to begin recording. You probably set this by mistake. That should only be set if you want to start recording/playing when you press the Start button on your synthesizer. To turn it off,
 - a. Select **View / Mixer**.
 - b. Press the **Sync** button just below the **Time:** field.
 - c. Uncheck the box named **Record and Play wait for external MIDI Start event to begin**.
 - d. Press the OK button.

If you cannot get a song to play on an **external synthesizer** after installing Anvil Studio's optional **Pro-Mix** accessory:

1. If you want to hear the music played on a synthesizer connected to one of your external MIDI ports, you need to do the following:
2. Select **View / Synthesizers**.
3. Click on the MidiPort your synthesizer is connected to
4. Now, click the New Patch Library button.
5. In the dialog window, type the name of your synthesizer in the field named "Unique name you want to use when referring to this synthesizer"
6. Click the OK button.
7. Repeat the above steps for every synthesizer you want to add.
8. Select **View / Mixer**.
9. Next to each track, click on the Synthesizer you want the track to be played on.
10. Press the play  button.







If none of these tips fix the problem, try updating or re-installing your soundcard device driver as follows:

1. In the Windows Control panel, open **System**,
2. select the Hardware tab,
3. select Device Manager,
4. right-click on the name of your soundcard,
5. select the properties popup menu item,
6. select the Driver tab,
7. click the Update Driver... button.

If this does not fix the problem, [please send us a diagnostic log file](#)

Audio recording does not seem to work

First, read the section on creating audio tracks in the menu **Help / Tutorials (How Do I...)**. If that does not help, try these steps.

1. If you are recording from a high-impedance microphone, like the ones designed to be plugged directly into a computer's sound card, make sure that it is plugged into your sound card's **mic** jack.
2. If you are recording from a low-impedance dynamic or condenser microphone, like the ones designed to be plugged into a PA system, you need to either run them through a microphone pre-amp or mixer with *line level* output, and connect the pre-amp's or mixer's output to your computer's SoundCard's **line-in** jack.
3. If you are recording another audio source, such as the output of a tape deck, connect its *line level* output to your sound card's **line** jack.
4. Select **View / Mixer**.
5. Add a new Audio track to your song by selecting the menu **Track / Create / Audio Track**.
6. Select the menu **View / Audio Volume Controls / Recording controls** (or as a shortcut, press the  beside the Edit Track button).
7. Select the sound card you want to use if it is not already selected.
8. Examine the various volume controls. These control which hardware devices contribute to the Audio signal that will get recorded.
9. Make sure that the **Selected** check box beside **Mic** is checked.
The **Selected** check boxes under all other sources like **Music CD**, **Phone**, etc. are NOT checked.
10. Set the volume for the device you want to record from, like **Mic** to full (all the way to the right).
11. Select the Audio Track by clicking on it and making a green dot appear at its left.
This makes it the active track - the track that will get recorded.
12. Erase the track by selecting the menu **Edit / Erase**.
13. Press the **VU** button to *warm up* the audio device, so you don't record *power-on* noise.
14. Press the  button.
Because of the settings in the button, this causes the audio source plugged into your sound card's Mic or Line jack to be recorded onto the new Audio track.
15. Press the stop  button, or the  button again when you are ready to stop recording.
16. Right-click the audio track's **On** field so that it changes to **solo**.
17. This makes it the only track that will be played when the Play button is pressed.
18. Press the play  button.
19. Press the stop  button and right-click on the track's **solo** field, so that all tracks are enabled again.
20. If the track is too quiet, increase the Mic / Line-In's volume and go back up to step 12.
21. If the track has static noise, decrease the Mic / Line-In's volume and go back up to step 12.

I hear no sound while recording an Audio track

1. Select **View / Mixer**.
2. Make sure the active track Type column is Audio and not Instrument or Rhythm.
3. Select the menu **View / Audio Volume Controls / Playback controls** (or as a shortcut, press the beside the Edit Track button).
4. Select the sound card you want to use if it is not already selected.
5. Examine the various volume controls. These determine which audio sources contribute to sound produced by the speakers connected to your sound card.
6. Make sure that the **Mute** check boxes beside **Mic** and **Line-In** are **NOT** checked.
7. Set the volume for **Mic** and **Line-In** at about half volume (in the middle).
8. To avoid feedback and to keep each track clean of signals from other tracks, connect headphones to your SoundCard's speaker jack rather than speakers.
9. Try recording again.

When I record a second audio track, it contains sound from other tracks

Anvil Studio is capable of producing independent audio tracks with no *bleed-through*.

1. Make sure that you are listening to headphones while recording the second audio track, so the speakers are not *bleeding* into the microphone and getting recorded onto the new track.
2. Select **View / Mixer**.
3. Select the menu **View / Audio Volume Controls / Recording controls** (or as a shortcut, press the beside the Edit Track button).

The audio sources listed below the button control which hardware devices contribute to the audio signal that will get recorded.

Different SoundCards support different audio sources.

Some SoundCards can only record from a single audio source at one time.

They, have a **Selected** box beside each audio source like this:



Other SoundCards can record from a mixture of audio sources at the same time.

They have a **Mute** box beside each audio source to control which sources are not to be recorded.

Make sure that the **Mute** box is set for all but the source you want to record.

If this does not help, select **View / Options**, then select the Audio tab and press the button: **Create Audio Diagnostic File** and email the resulting file to support@AnvilStudio.com.

Instrument (aka MIDI) tracks don't sound good

When creating MIDI tracks in Anvil Studio, your soundcard most likely uses the **Microsoft GS Wavetable Synthesizer** to generate sound. You don't need to get a new soundcard to create more beautiful MIDI

sounds. If you have a SoundBlaster soundcard, you can use SoundFont files which are widely available for free on the Web. You can also use VST-Instruments, which are downloadable software modules that work with any soundcard. Our current favorite free VST-Instrument is SFZ+. It has low latency (almost no delay) and works with SoundFont files, making it infinitely customizable.

My song sounds different when played by Windows Media Player or a Web Browser

If you use SoundFonts or VST-Instruments, and you want others to hear your songs with these same sounds when played by Windows Media Player or a Web browser, you need to mix the song down to a .WAV file using the menu **File / Export Mixed Audio**. If you want to burn the song to an Audio CD, use Windows Media Player or iTunes to burn that WAV file as an audio track. If you want to email or post it to the web, compress the WAV to an MP3 file using your favorite WAV to MP3 converter, e.g. iTunes.

Playing Audio tracks on Web Browsers

When you record Audio tracks, Anvil Studio creates a different .WAV file for each track. These .WAV files are saved in the same folder as the song's .MID file, and have the same first 4 letters of its filename. For example, if the song is named "ThisIsMySong.mid", the audio tracks will be saved in files with names like "Thisg_a.wav", "Thisg_b.wav", etc. The filename of each track's .WAV file is displayed on the Mixer screen in the Instrument column. These .WAV files can be emailed and played by any Audio player, including the Windows Media player and Web Browsers. If you load the .MID file into another application, such as a Web Browser, you will only hear the Instrument and Rhythm tracks. That is because there is no standard for storing audio data within .MID files, so Anvil Studio simply stores references to the .WAV files inside the .MID files.

See the section: [Mixing all tracks down to a single .WAV file](#) for a description of how to mix all of your Audio, Instrument and Rhythm tracks down to a single .WAV file. The single .WAV file can then be played by any application, including Web Browsers.

While Anvil Studio does not yet support creation of .MP3 files, you can use a variety of shareware/freeware tools to convert the .WAV file to an .MP3 file, which can be 1/10th the size of an equivalent .WAV file. Our current favorite free .WAV/.MP3 conversion software is available at <http://www.apple.com/itunes>.

A song sounds good when played on my computer, but is too quiet when played on my cell phone

It is probably because the way the song is composed. It may require 10 or more notes to be played at the same time and your phone might only play a maximum of 4 notes at the same time. You need to reduce and/or prioritize the notes within the song.

Select **View / Mixer** and experiment with Muting various tracks by pressing their On column until it says Mute.

See if you can live without that track. If so, you want to make it lowest priority.

Select **View / Ring Tone (SP-MIDI)...**

If one of the tracks is less important to you, click it and press the Move Down button until it is on bottom (lowest priority).

Make the top track active. Select **View / Active Track's Highest Polyphonic Demands**.

It will show a place where 5 notes are played at the same time.

Maybe you could live with 3. If so, delete a couple of notes by right-clicking the note head and selecting Remove Note from the pop-up menu.

Press the **Analyze** button.

You can see how many **voices** the song needs to play each track, and all the tracks above it (i.e. all the tracks that have *higher priority*).

If you are surprised that one of the tracks requires so many voices (so many notes being played at the same time), go back to the previous step and remove some notes.

The Audio and Instrument tracks of my song play back out of sync

This is caused by *Device Latency*. To fix this, read the **Help / Tutorial / How to keep all tracks in sync**.

I hear distortion when playing audio tracks

Try selecting **View / Composer** and examining each audio track. If the signal touches the top or bottom of the window very often, that track was recorded with too high an input volume and will sound distorted when played back. In that case:

1. select **View / Mixer**
2. Select the menu **View / Audio Volume Controls / Recording controls** (or as a shortcut, press the beside the Edit Track button).
3. Set the volume(s) for the selected input source (e.g. Mic) a little lower.
4. Try recording the track again.

If all of the audio tracks have clean signals:

1. Select **View / Mixer**.
2. Look for the controls.
If the **Auto Mix Volume** box is checked, Anvil Studio does everything it can to keep clean signals from getting distorted when mixed.
3. Sometimes, setting this checkbox causes the output to sound too quiet. For some applications, you want to add a little distortion to the mix. In either of these cases, uncheck the **Auto Mix Volume** box. This causes the **Audio Mix Vol** slider to appear. Sliding the **Audio Mix Vol** slider to the right increases the mix's volume. Sliding it too far to the right introduces distortion.

Does it make a difference in the quality of the audio whether I apply FX equalizer during the recording process or apply it after the song is complete?

It has no effect while recording. It only affects playback. It is non-destructive, in that the original tracks remain unchanged, so you can experiment with different EQ settings during playback, without altering the sound of the recorded track.

My track's .WAV file doesn't sound the same as when I play the song in Anvil Studio. For example, I don't hear the effects of equalization.

Disable any tracks that you don't want included (by clicking the track's On column on the Mixer screen), then select **File / Export Mixed Audio**. The resulting .WAV file will contain a mix of all tracks, including the FX. It will sound the same as when you press Play in Anvil Studio.

Using the staff editor, how do I cause two or more notes to play at the same time?

Hold the Shift key to enter several notes in a chord. You can also change --no grid-- to 16th notes, and then drag notes from the note palette exactly to where you want them on the staff.

I cannot load SoundFonts

Select **Help / Tutorials (How do I)...** and read the section on using SoundFonts.

I can't delete a rest on the Composer screen

To delete a rest, hold the mouse down to the left of it, and drag the mouse right until the entire rest (or rests) have a dark background. **Make sure** that **both** the treble and bass clefs are selected by holding the mouse between the two clefs. Then, release the mouse button and select the Edit/Cut or Edit/Delete menu.

The notes on the screen don't look the way I expected

There are two types of MIDI files

- *recorded* files, which are intended to sound good when played by a MIDI player, and
- *aligned* files, which are designed to look correct when printed as sheet music.

Recorded files are created by someone playing a MIDI keyboard while recording with a program like Anvil Studio, or using a program like [intelliScore Ensemble](#) to convert an audio performance into a MIDI file. With *recorded* files, notes sometimes do not fall exactly on measure or beat boundaries. When played, you can hear the expression exactly as it was originally played and recorded. If you select **View / Event List**, you can see the wide variety of note durations.

Aligned files can be created by someone dragging notes to a staff in a MIDI editor, or by converting a *recorded* file to an *aligned* file. The notes in an *aligned* file begin and end exactly where they should. These songs may sound a little mechanical, or less expressive when played by a MIDI player.

The majority of MIDI files you are likely to find are *recorded* MIDI files because they are easier to produce.

Anvil Studio has tools to help you convert *recorded* MIDI files into *aligned* ones that can be printed. These tools cause notes to *snap* to a timing grid. A tutorial describing this process can be found at **How to align notes in a song before printing sheet music**. If it is a song file you plan to record yourself, see the tutorial

How to record a song for printing sheet music.

Every time I change the instrument on one track, it changes on the instrument on another track

Select **View / Mixer**.

Make sure that each track is assigned its own Channel.

You can only have one instrument per MIDI channel.

I got an error saying my computer is not fast enough. The song keeps jumping forward while playing and doesn't respond.

If you are working with Audio, it may help to tell windows to increase the amount of Virtual Memory (from the Control Panel / System / Advanced / Performance / Settings / Advanced / Virtual Memory / Change).

Then, select **View / Options** and:

1. Uncheck the check box named "Show Help at the bottom of the screen". (You can turn this back on when you need help, but it can slow down a slow computer).
2. Uncheck "Show notes for all tracks on Mixer screen".
3. Select the Audio tab and increase the number of audio buffers.
4. Uncheck "Enable master playback VU meter" and "Enable per-track VU meters".

Select **View / Mixer**.

Select the menu **Edit / Set Record+Play Start+End Times**.

Uncheck the box "Show large position indicator in upper-right corner" and press Close.

Make sure no other applications are running while recording / playing back.

When recording and playing, have the **View / Mixer** screen visible rather than the **View / Composer** screen.

Disabling the click sound that occurs when changing screens

- Open the Start Menu / Settings / Control Panel / Sound.
 - Select the Sounds tab.
 - Scroll down in the Program window to Windows Explorer / Start Navigation or Complete Navigation or Navigation Completed.
 - Click Start Navigation and then set Sounds field to (None).
 - Press OK.
-

Reporting a problem with Anvil Studio

To help us diagnose the problem you are having, please do the following:

- Press either shift key while starting *Anvil Studio*, and continue to press it until you see Anvil Studio's initial screen.

This causes *Anvil Studio* to create a log file named **AnvilStudioLog.txt** in your *My Documents* folder.

- Then repeat the steps that demonstrate the problem you encountered in Anvil Studio.
- Close Anvil Studio if it hasn't already crashed.
- If the program did not crash, a file named **AnvilStudioLog.txt** will be displayed on your screen. Please email that file to us at support@AnvilStudio.com
- If the program crashed while producing the log file, email the file AnvilStudioLog.txt from your My Documents folder (e.g. c:\program files\anvil studio\AnvilStudioLog.txt) to us at support@AnvilStudio.com
- If you cannot find the file AnvilStudioLog.txt, download and run the program www.AnvilStudio.com/DrSetup.exe which will find the log file and gather setup information and send it to us.
- If the program crashes, could you also include any error message or number displayed on the screen when the program stopped.

If you encounter a Setup problem, download and run our Setup Diagnostic tool from:

www.AnvilStudio.com/DrSetup.exe

(It is very small and just take a few seconds to download.)

Help / Tutorials (How do I...)




Create a new song

This example creates a MIDI song file with three tracks:



- a MIDI keyboard track,
- an audio track, and
- a rhythm track.

Anvil Studio lets you record to these tracks, either one at a time, or several at the same time. All of the tracks can be played back simultaneously, or you can Mute or Solo individual tracks for playback.

Step 1: Creating a MIDI track

1. If you have an external MIDI keyboard, ensure that it is connected to your computer's USB port, or by MIDI cables as described at **Help / Connections**.
2. Select **View / Mixer**.
3. Select **File / New Song**. This new song has one MIDI instrument track. If you wanted to add a second MIDI instrument track, you could select the menu **T**rack / **C**reate / **I**nstrument Track.
4. If you'd like a countdown to synchronize your recording, click the metronome  in the upper right corner of the screen.
5. Press the  button to begin recording this track.
6. Press the stop  button when you are ready to stop recording.
7. To **edit** this track, select **View / Composer** and follow the instructions on that screen.

Step 2: Adding an Audio track


1. Audio tracks are used to record from a microphone or other audio source connected to your computer. If your computer has no audio input device, skip to step 3.
2. Go back to the **Mixer** screen.
3. Save the song file by selecting **File / Save Song...**
4. Select the menu menu **T**rack / **C**reate / **A**udio Track.
5. Select **View / Audio Editor**.
6. Click on the **Quality** button to select the audio quality you want.
7. Press the record button  to **record** to this track.
8. Press the stop  button when you are ready to stop recording.
9. Press the **Filter** to filter out noise from this track.
10. Follow the instructions on the Composer screen to experiment with other Audio processing.
11. If you hear no Audio, try selecting a different Audio In or Out device.
 - Select **View / Synthesizers**.
 - Click the down-arrow to the right of the Audio In or Audio Out Port fields.
 - Select the desired device.

- Go back to the beginning of Step 2 and try again.

Step 3: Adding a rhythm track

1. Go back to the **Mixer** screen.
2. Save the song file by selecting **File / Save Song...**
3. Select the menu **Track / Create / Rhythm Track**.
4. Select **View / Composer** to edit the rhythm track.
5. Click anywhere on the grid with the left mouse button to add various drum sounds.
6. For more precision, click the **Note:** drop-down field and select **1/64 Note**.
7. To remove a drum sound, click with the right mouse button on the note to be removed from the grid.
8. Click the **Add Sounds** button to select different sets of drums.
9. Click the **Sampled Sounds** tab to add sampled sounds to your song.
10. Press the **Create Sampled Sounds** button.
11. Press the **Help** button, and experiment with the options it describes.

Step 4: Playing all of the tracks






- Go back to the **Mixer** screen.
- Press the play button 

Record an Audio track from a Microphone, Guitar, Music CD, or Audio Tape

1. Select **View / Mixer**.
2. Add a new Audio track to your song by selecting menu **Track / Create / Audio Track**.
3. Select the menu **View / Audio Volume Controls / Recording controls** (or as a shortcut, press the beside the Edit Track).
4. Select the sound card you want to use if it is not already selected.
5. The audio sources listed below the button control which hardware devices contribute to the audio signal that will get recorded. Different SoundCards support different audio sources. Most SoundCards can only record from a single audio source at one time. They, have a **Selected** box beside each audio source like this:



6. If you want to record from a Microphone, make sure the Mic's Selected box is set, and its Volume control is set to full (all the way to the right).
7. If you want to record from a guitar or an audio tape deck, make sure the Line-In's Selected box is set, and its left and right volume controls are set to full.
8. If you want to record from a Music CD, make sure the Music CD's Selected box is set, and its left and right volume controls are set to full.

9. Some SoundCards can record from a mixture of audio sources. They have a **Mute** box beside each audio source to control which sources are not to be recorded.
10. Select the Audio Track by clicking on it and making a green dot appear at its left. This makes it the active track - the track that will get recorded.
11. Erase the track by selecting the menu **Edit / Erase**.
12. If you are recording from an electric guitar, and if the output of your guitar is line-level (usually is), connect it to your sound card's line-in jack, getting an adapter if necessary from someplace like Radio Shack.
13. If you are recording from a Music CD, put one into your computer's CD-ROM drive.
14. Press the **VU** button to *warm up* the audio device, so you don't record *power-on* noise.
15. Press the  button on the Mixer screen.
16. Play your guitar, sing into the microphone, or play your music CD or audio tape.
17. Press the stop  button, or the  button again when you are ready to stop recording.
18. Right-click the audio track's **On** field so that it changes to **solo**.
19. This makes it the only track that will be played when the Play button is pressed.
20. Press the play button .
21. Press the stop  button and right-click on the track's **solo** field, so that all tracks are enabled again.
22. If the track is too quiet or too loud, adjust the audio source's volume at the bottom of the Mixer screen.

Import an existing .MP3 file into an Audio track

Anvil Studio does not yet directly support .MP3 files. You can use Windows Media Player or www.Apple.com/itunes to convert .MP3 files to .WAV files you can use with Anvil Studio. After you convert the .MP3 file to a .WAV file, read the next section to see how to import a .WAV file into Anvil Studio.

Import an existing .WAV file into an Audio track

To load an existing .WAV file into an Audio track:



- Select **File / New Song**
- Select **View / Mixer**
- Click the **Type** field of **Track 1**, changing it from **Instrument** to **Audio**
- Select **File / Save** to save the new song
- Select **File / Import**, and then select a .WAV file to import.

You can also import .WAV files as individual drum sounds on a rhythm track as follows:

- Select **View / Mixer**,
 - Select the **Track / Create / Rhythm track** menu,
 - Press the **Edit track** button, or select **View / Composer**,
 - Press the **Add Sounds** button, then
 - Click the **Samples** tab, then
 - Press the **Create Sampled Sounds** button.
-

Creating a song with Audio Effects

This example creates a WAV file with Audio Effects:

1. Select **View / Mixer**.
 2. Select **File / New Song**
 3. On this screen's track list, there is a row for every track in the song, showing that track's name and other attributes of the track. Now, change track 1's **Type** from instrument to audio by clicking on **Instrument** and selecting **Audio** from the list.
 4. Select **View / Audio Editor**.
 5. Save the song file by selecting **File / Save Song...**
 6. Press the record button , sing into the microphone, and then press the stop  button when you are ready to stop recording.
 7. Press the **Filter** to show the filter window, and press its Ok button to filter noise from this track.
 8. With the left mouse down, drag the mouse over part of the window to select part of the recorded song.
 9. Press the **Play Selection** button to hear the selected sound.
 10. Select the menu **Edit / Reverse** to replace the selected sound with the same sound played backward.
 11. Press the **Volume** and **Pitch** buttons to adjust the volume and pitch of the selected sound.
 12. If you have the Multi-Audio accessory, add another Audio track to this song by selecting the menu **Track / Create / Audio Track**.
 13. Record some sound onto this track.
 14. Real-time effects like Reverb, Equalizer(EQ), VST and DirectX effects are described below.
-

Split a stereo track into to mono audio tracks

- Select **View / Mixer**.
 - Click on the stereo audio track that you want to split, to make it the active track.
 - Select **Track / Split Track into two Mono Audio Tracks** menu.
-

Merge two mono tracks into a single stereo audio track

1. Select **View / Mixer**.

2. Click the On column of all other tracks, so that the only two tracks that are On are the two you want merged.
 3. Set the left track's Pan column all the way to the left.
 4. Set the right track's Pan column all the way to the right.
 5. Select the menu **Track / Create / Audio track by mixing all enabled audio tracks**.
-

Make my own songs by recording my own instruments with a microphone to 8 different tracks

This requires the optional Multi-Audio 1/8 accessory. With that accessory installed:

1. Select **File / New Song**.
2. Select **File / Save** to give your song a name.
3. Select the menu **Track / Create / Audio track**.
4. Press REC ... press Stop. Now, track 1 is recorded.
5. Repeat steps 3 and 4 for each new audio track

When you play the song, all 8 audio tracks, as well as any MIDI tracks will be played together at the same time. You can select **View / Mixer** and adjust the various track's Volume, Pan, and FX columns to create a richer sound.

Record 8 hours or more of audio.

Recording an audio track longer than 1 minute requires Anvil Studio's optional Multi-Audio 1/8 accessory, which we sell from www.AnvilStudio.com for US\$19.

With that accessory installed:

1. Select **View / Options**.
 2. Select the Audio tab.
 3. Change the **Stop recording Audio after 1 hour** field to **Record audio to multiple song files**.
 4. Set the maximum record time for a single audio file, e.g. 1:0 for 1 hour and 0 minutes.
 5. Set the maximum total record time, e.g. 24:0 for 24 hours.
 6. Several song files will be created, starting with the current song file's name, and adding "1", "2", etc. to the filename.
-

Choose different audio sources for two or more audio tracks recorded at the same time

This requires the optional Multi-Audio 8/16 accessory.

Select **View / Mixer**.


Try clicking on an audio track's Device column. If more than one source is shown, your soundcard supports recording from more than one.

If your soundcard only supports a single source, you can still record two audio tracks from different sources by clicking one audio track's Channel column and setting it to the Left stereo channel, one clicking another audio track's Channel column and setting it to the Right stereo channel. Then using a Y-jack (like Radio

Shack's #274-879) to feed two mono microphones into the single stereo Line-In jack on your soundcard. Now, to record the audio tracks at the same time: Select **View / Mixer**. One track should have a green dot in its left column. That indicates which track will be recorded next. Now, hold the shift key down and click the left column of the 2nd track you want to record. Now, there should be two tracks with green dots (they will both get recorded). You can do the same for a third and fourth audio track.

Using ASIO or DirectX with Anvil Studio

Create a Rhythm track

1. Select **View / Mixer**.
 2. To the right of **Track 1**, click on **Instrument** and change it to **Rhythm**.
 3. Click the **Edit track** button at the bottom of the screen, or select **View / Composer**.
 4. Click on the grid where you want various drum sounds.
 5. Press the play button .
 6. Select **File / Save** to save the song.
 7. The file you save can now be played on any standard MIDI player, copied to a web page, sent by email, etc.
-

Record a rhythm track

If you want to record from your external MIDI Synthesizer keyboard (or MIDI drum keypad): select the menu **Track / Create / Rhythm track** record onto the rhythm track. For most soundcards, if a track's MIDI Channel is set to 10, it plays Drum sounds rather than other MIDI instruments. Note that you can also record a Rhythm track using your PC keyboard keys. Press the REC button and try pressing various keys on your computer keyboard. If you want to assign a particular drum sound to a particular key, right-click the drum's name on the Composer screen and select the popup menu **Assign this sound to a key...**. Then, press the key you want the drum sound assigned to, and press the OK button.

Use your own recorded drum or sample sounds in a Rhythm track

1. Select **File / New Song**.
2. Select the menu **Track / Create / Rhythm Track**
3. Press the Edit Samples... button
4. Press the Add New Sample... button
5. Give the new sample a name and press OK.
6. Press Record or Import... to give the sample some sound.
7. Repeat the previous 3 steps for each new sample.
(The optional Multi-Audio 1/8 accessory lets you define 16 samples)
(The optional Multi-Audio 8/16 accessory lets you define 30 samples)
8. When done, press the dialog's Close button.

9. Press the Add Sounds button.
10. Click the Audio Samples tab.
11. Press the Select All button.
12. Press the OK button.
13. Now, create rhythm patterns that reference the samples.
14. If you want the sample to be a loop that you can repeat, right-click on the yellow track name and press the Move these notes to a New loop menu.

Add a metronome click to the song's final mix

Select from the menu **Track / Create / Metronome Click Track...**

Then enter a value like 3:0:0 for 3 minutes.

Change the drum sounds that occur when a song is played on an external synthesizer

Anvil Studio generates Standard General MIDI drum sounds. If you don't have a patch library that describes your synthesizer, you can still change the drum note-value assignments as follows:

1. Select **View / Composer** while a Rhythm track is visible.
2. Select the menu **Edit / Change Notes**.
3. Enter the MIDI Note number that you want to change from, and the value you want it to change to. (Save a copy of your song file before doing this).
You will need to read the MIDI section of your synthesizer's user's guide to learn what note they assign Acoustic Bass, Crash Cymbals etc. to.
4. To see what drums are referenced from your track, you can also select **View / Event List**.

The General MIDI drum notes are:

- 35 = Acoustic Bass Drum
- 36 = Bass Drum 1
- 37 = Side Kick 3
- 38 = Acoustic Snare
- 39 = Hand Clap
- 40 = Electric Snare
- 41 = Low Floor Tom
- 42 = Closed High Hat
- 43 = High Floor Tom
- 44 = Pedal High Hat
- 45 = Low Tom
- 46 = Open High Hat
- 47 = Low Mid Tom
- 48 = High Mid Tom

49 = Crash Cymbal 1
50 = High Tom
51 = Ride Cymbal 1
52 = Chinese Cymbal
53 = Ride Bell
54 = Tambourine
55 = Splash Cymbal
56 = Cowbell
57 = Crash Cymbal 2
58 = Vibrastrap
59 = Ride Cymbal 2
60 (i.e. MIDI Middle C) = High Bongo
61 = Low Bongo
62 = Mute High Conga
63 = Open High Conga
64 = Low Conga
65 = High Timbale
66 = Low Timbale
67 = High Agogo
68 = Low Agogo
69 = Cabasa
70 = Maracas
71 = Short Whistle
72 = Long Whistle
73 = Short Guiro
74 = Long Guiro
75 = Claves
76 = HighWood Block
77 = LowWood Block
78 = Mute Cuica
79 = Open Cuica
80 = Mute Triangle
81 = Open Triangle

Record instrument tracks from a MIDI synthesizer or sequencer

Ensure that your MIDI cables are connected as described in the **Help / Connections** menu.

Select **View / Synthesizers**.

Change the **MIDI In** port to the one your synthesizer is connected to. Depending on what SoundCard you have, it might be named something like MPU-401 or MIDI In.

If you want to record more than one MIDI channel at the same time:

1. Select **View / Options**.
2. Click the *Record Multi-Track MIDI* box.
3. Select **View / Mixer**.
4. Select **File / New Song**.

If it is more important that the recorded notes look good on the staff, than it is for the music to sound exactly the same as you played it,

1. Consider setting the option **Record No Rests** on the View / Options / MIDI screen.
2. Turn the metronome on by clicking its ICON in the top-right corner of the screen.
3. Play the notes along with the metronome as accurately as you can.
4. When you finish, if some notes don't look right, read the section **The notes on the screen don't look the way I expected, and How to record a song for printing sheet music**.

Press the  button and begin playing.

If you set the Record Multi-Track MIDI option, each of the 16 tracks will record all of the MIDI events sent to its MIDI channel. Otherwise, all MIDI events will be recorded to the active track.

When you are finished, you might want to turn off the *Record Multi-Track MIDI* box on the View / Options screen.

If nothing is getting recorded:

1. you could double-check your MIDI cables or try selecting a different MIDI In port.
2. you may have unintentionally set **MIDI Sync**, which should only be set if you want to start recording/playing when you press the Start button on your synthesizer. To make sure it is turned off,
 1. Select **View / Mixer**.
 2. Press the **Sync** button just below the **Time:** field.
 3. Uncheck the box named **Record and Play wait for external MIDI Start event to begin**.
 4. Press the OK button.
 5. Try recording again.

Try selecting **View / Synthesizers** and press the **Test MIDI Connections...** button.

If you have the Pro-Mix accessory installed, press the **Test MIDI Connections...** button. you may need to try selecting a different MIDI In port, or double-check your MIDI cables.

Record a song for printing sheet music

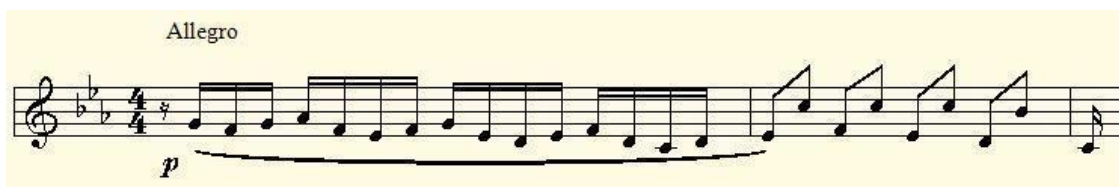
To record a track so that it looks good when printed requires more effort than recording it so that it sounds good when played back.

1. Connect your MIDI Cables as described in the Help / Connections menu.

2. Select **File / New Song** to create a new song.
3. Turn the metronome on (by clicking the picture of the metronome)
4. Adjust the tempo as needed (**View / Metronome**)
5. Select **View / Options**.
6. Press the MIDI tab and check the box **Record no rests**.
7. Select **View / Compose**.
8. Press the REC button.
9. Play the song on your MIDI keyboard
10. Press Anvil Studio's stop button (or press REC again to turn it off).
11. Continue into the next section to see how to clean up the recorded song.

Align notes in a song before printing sheet music

This example demonstrates editing a recorded MIDI track so that it looks good when printed. Let's assume you recorded these notes by playing them on a MIDI keyboard:



but when you finished recording, you the notes instead looked like this:



Step 1) Mark measure boundaries

Working from the start of the song, indicate which notes should be at the start of a measure. Using the picture above as an example, the first note circled in red should be the first note in the next measure, but it was played a little too early. To correct this, move the mouse to that note, press the right mouse button, and select the menu item **Stretch to start of measure**. This lengthens all notes in the current measure so that the selected note will be the first note in the next measure.

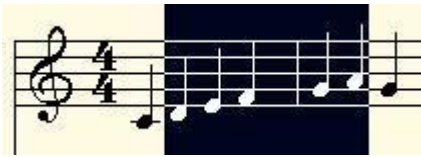
The second note circled in red should be the 1st note in its measure, but it was played a little late. To correct this, move the mouse to that note, press the right mouse button, and select the menu item **Compress to start of measure**. This shortens all notes in the previous measure so that the selected note will be the first note in the current measure.

After this step, the track looks like this:



5. from the start of the track, press the right-arrow to advance to each next note,
6. if a note should be the first in its measure, but was played a little early, press Ctrl+E.
7. if a note should be the first in its measure, but was played a little late, press Ctrl+L.
8. If you would like to affect all tracks rather than only the active track, in the **View / Options** screen, assign those keys to the actions: **Stretch to start of measure (all tracks)** and **Compress to start of measure (all tracks)**.

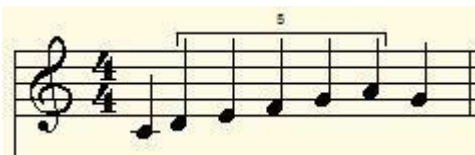
As another example of how you may want to change times within a track, assume that you recorded these notes:



but you wanted five of the notes to be quintuplets (5 notes played in the time of 2 quarter notes). To do this:

1. select those five notes, as shown above
2. select the menu **Track / Align notes to measures (quantize)**
3. change the fraction fields from 1 / 1 to 2 / 5, OR
4. change the duration field from 01:01:000 to 00:02:000
5. press OK.

The track will now look like:



In the same way, you could select 3 quarter notes or 3 eighth notes and change them to triplets by changing the fraction field from 1 / 1 to 2 / 3.

If you don't want triplet or quintuplet notes displayed on the staff, select the menu **Track / Properties...**

If you are seeing 32nd or 64th rests that you don't expect, try changing the **Show** field from 64th notes to 16th notes.

Play more than one instrument in a song

Anvil Studio assumes that each track in a song plays a single instrument on a single MIDI channel.

If you want a song to play two instruments, create an instrument track for each instrument you want to play. On the Mixer screen, you can change which MIDI channel and Instrument each track plays.

If you already have the whole song on a single track, select the menu

Track / Split track into single-channel tracks.

Change the instrument used to play a track

To change the instrument associated with the current Instrument track:

1. Select **View / Mixer**.
 2. click the track's Instrument column
 3. select a different instrument
-

Get songs to play on your MIDI synthesizer

1. Select **View / Synthesizers**.
 2. Click the down-arrow to the right of the Midi Out Port field.
 3. Select the port your synthesizer is connected to, e.g. one that has MIDI Out as part of its name. Now, all songs played by Anvil Studio will be sent to that MIDI port.
 4. Anvil Studio can also support multiple MIDI Out ports, with the optional **Pro-Mix** Accessory. Select **View / Catalog** for details.
 5. Ensure that your MIDI cables are connected as described in the **Help / Connections** menu.
-

Make notes longer than 1 measure

In the Piano-Roll view, simply drag the right edge of the note to the right.

In the Staff view, enter the same whole note several times, and then right-click on each but the last and select the pop-up menu option named **Tie to next**

Insert a note on the staff without shifting all notes that follow it

To insert a note without shifting all notes that follow it, uncheck the Insert Mode box on the **View / Composer** screen.

Enter several notes as a chord on the staff

To enter several notes as a chord, hold the shift key down until the last note has been entered.

Delete notes on the staff

To delete a single note, point to it with the mouse, hold the right mouse button down, and select the **Remove Note** menu item.

If you want to delete one or more notes, and cause all following notes to shift left, point to the left of the notes with the mouse, hold the left mouse button down and drag the mouse right until the entire group of notes to be deleted has a dark background. **Make sure** that **both** the treble and bass clefs are selected by holding the mouse between the two clefs. Then, release the mouse button and select the Edit/Cut or Edit/Delete menu.

Deleting rests on the staff

To delete a rest, hold the mouse down to the left of it, and drag the mouse right until the entire rest (or rests) have a dark background. **Make sure** that **both** the treble and bass clefs are selected by holding the mouse between the two clefs. Then, release the mouse button and select the Edit/Cut or Edit/Delete menu.

Shift a note right or left within a measure on the staff

To shift a note right or left within a measure, right-click on the note and select the "Shift Note's Start time" pop-up menu.

Print only the Treble Clef

1. Select **View / Composer**.
2. Then, you need to get rid of the low notes, which you can do by selecting **Track / Split Track Using Keyboard Split Point...** menu, and then press Middle C on the on-screen piano keyboard. That will divide the track into two different tracks.
3. Next, select the track that has the high notes.
4. Next, change the staff style field from Treble+Bass to Treble.

Tie two notes together

Right click on the first and select the pop-up menu **Tie to next**.

Insert a blank measure (bar) so you can enter new notes

Position to where you want to insert the blank bar, change the note type to whole note (by clicking the whole note above the Insert a Rest button), and then press the Insert a Rest button.

Create Triplet notes on the staff

Select **View / Composer**. Set the Triplet Note checkbox. Make sure the Insert Mode checkbox is set. Click one of the note symbols above the message **Select a symbol above, ...** Press three piano keys.

Transpose a song to a new key

To change the key of a song or track,

1. First, select **View / Mixer** and for any drum tracks, change them from Instrument to Rhythm, so that Anvil Studio won't try to transpose them.
2. Next, select the menu **Track / Transpose / Entire Track...** or **All Tracks in song...**

3. To change the key, e.g. from C to G, select the Chromatic option and set the number of half-steps to 7.
4. Later, you can change the displayed key signature for each track using the **View / Composer** menu.
5. To shift notes within the current key, keeping all notes in the current key, select the Diatonic option.

Change the tempo of a song

You can change the tempo of all Instrument and Rhythm tracks in the song by selecting **View / Metronome** and changing the Tempo field.

With the optional Pro-Mix accessory, you can do either of the following:

- Select the menu **Edit / Insert Midi Event** and set the control type to Tempo (BPM). The tempo will now be that new value from the current point until the end of the song.
- Graphically edit the tempo over time as follows:
 1. Select **View / Composer**.
 2. Position the cursor where you want to change tempo.
 3. Click the right mouse button on the first note of the measure where the change is to occur.
 4. Select MIDI Effects... from the pop-up menu.
 5. Set the control at the top of the pop-up window to Tempo (BPM) where BPM stands for Beats Per Minute.
 6. Move the mouse up and down in that window, and watch the number at the bottom go from 1 to 300.
 7. Move the mouse up and down until the number is the one you want.
 8. Hold the shift key down (to keep the line on the graph horizontal), and drag the mouse from the left edge of the window to the right edge.
 9. Press OK.

The optional **Pro-Mix accessory** is described at, and can be ordered from, our website: www.AnvilStudio.com for US\$29.

Trim a midi file. E.g. to upload it to a cell phone for use as a ring tone.

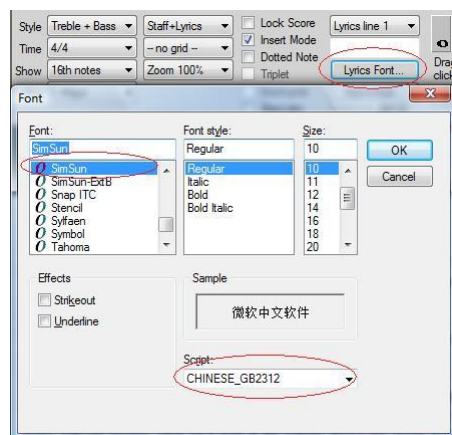
1. Load the song file.
2. Position the cursor at the start of the section of interest.
3. Select **File / Truncate / From Start Of File To Current Position**.
4. Now, position the cursor at the end of the section of interest.
5. Select **File / Truncate / From Current Position to End Of File**.
6. To make the song file even smaller:
 1. try splitting the song into different tracks by selecting **Track / Split Track into Single...**

- Then, delete unessential tracks. You can test which tracks to delete by selecting **View / Mixer** and clicking various track's On columns to Solo or Mute.
- Select a track to delete and then select **Track / Delete** menu.
- Save the song to a new filename, so as to not destroy the original song.

Changing the lyrics font to Chinese, Japanese, or Korean

Anvil Studio can display and print lyrics in any language supported by Windows.

In the **View / Composer** screen, click the **Lyrics Font...** button and in the resulting window, select the desired font, and Script.



In the Windows Task Bar, click the Input Method Editor to select the desired input language.



In Anvil Studio's lyrics field, located above the Lyrics Font button, enter the text using the Input Method Editor.



All you need to know about MIDI Volume

There are several variables that contribute to the volume of a MIDI song. On the **View / Mixer** screen, the Master Vol and Internal Synth Vol settings let you control the master volume and the volume of the internal MIDI Synthesizer. These are identical to Control Panel / Sound settings. Also on the **View / Mixer** screen, each track's Vol slider controls that track's overall volume, by storing a ChannelVolume MIDI Event at the start of the track. Each individual MIDI note has its own volume, which is stored as a parameter in the NoteOn MIDI Event. Read the next section to learn various ways to control each note's volume.

Change the volume of notes on the staff

When composing, each note's volume is determined by the VOL slider to the right of the Staccato box. You can later adjust a single note's volume by right-clicking the note and editing the note's properties, or by selecting **View / Note Properties** and then clicking a note.

You can adjust the volume of a selection of notes by selecting a range of notes with the mouse and moving the same VOL slider. All selected notes will be set to that volume.

If you would rather let each note's volume remain different, but increase or decrease the volume of a selection of notes,

- select **View / Options**,
- set the field "Anvil Studio Action to cause by Ctrl key" to "Make selected notes Louder/Quieter",
- set the "Computer key that should trigger the action" field to any key, e.g. Ctrl+L, Ctrl+Q.
- back on the **View / Composer** screen, select a range of notes, e.g. with the menu **Edit / Select All**,
- press Ctrl+L or Ctrl+Q to make all of the selected notes 33% louder or quieter.

Using SoundFonts

Anvil Studio has special support for sound cards like **SoundBlaster Live!** that support SoundFonts as well as VST-Instruments which load the same SoundFont sampled instrument sounds. These cards can dynamically load different set of instrument sounds from files with the file extension **.SF2**. SoundFont (.SF2) files are widely available for free on the internet.

To load a new set of instrument sounds:

1. Select **View / Options**.
2. Click the MIDI tab.
3. Make sure the box named **Enable SoundFont Support** is checked.
4. Select **View / Synthesizers**.
5. Change the MIDI Out port to a sound card that supports SoundFonts, like **A: SB Live! MIDI Synth**
6. Press the **Load SoundFont File...** button
7. Select the file you want to load
8. Press the **Open** button
9. Select **View / Mixer**
10. Click the **Device** column of any Instrument or Rhythm track
11. In the resulting window, set the Synthesizer field to your SoundFont sound card

12. Set the Bank field to any value

13. Click on the instrument that you want that track to be played on.

SoundFont is a registered trademark of E-mu Systems, Inc.

Loading a patch library that describes an external MIDI synthesizer



With Anvil Studio's optional **Pro-Mix** accessory, Anvil Studio lets you load patch libraries that define external MIDI synthesizers. To create a patch library:

1. Select **View / Synthesizers**
2. Click the **Add a synthesizer** button
3. Type the name you want to give the patch library in the **Name that describes...** field
4. Select the MIDI Out port the synthesizer is connected to
5. Change the General MIDI field to **Patch Library** and then
6. Press the **Create a new Patch Library of type:** button
7. Now, on Anvil Studio's View Synthesizers screen, press the **Edit Patch Library** button.
8. Press the Help button and follow the steps described.

If you have an Instrument Definition File (.ins) that describes your synthesizer, you can import the .INS file to create a patch library by pressing the **Import an Instrument Definition File** button instead of the **Create a new Patch Library** button.

Adding VST, DirectX and Native effects processors to the mix

After all of the tracks in your song have been recorded and edited, you can still do a lot of things to improve the song, including adding effects processors, use *automation* to change various sound parameters over time, and finally, mix the song down to a single .WAV file.

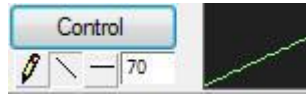
The free version of Anvil Studio lets you route your audio through a reverberator and/or equalizer(EQ) to a track or the entire song. When either of Anvil Studio's optional **Pro-Mix** or **Multi-Audio 8/16** accessories are installed, you can also add third-party VST or DirectX effects such as Flangers, Chorus, Compressors, etc. to your song. To do this: Select **View / Mixer**. Click the **fx** column for any track to add an effect to, or Click the **fx** button in the upper-right corner of the screen to add an effect to the mix of all audio tracks. Press the **Browse for VST plug-ins** to locate the VST's .DLL file on your system. You can select **Help / Links...** for a list of Shareware VST and DirectX pluggins to get you started. Press the play  button to hear all the tracks played together. Experiment with the Track Volume, Delay Intensity and Time controls, pressing the **Play** button  to hear the effect of the change.

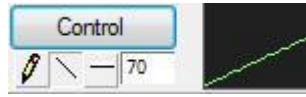
Using Automation to control faders and other parameters while song is playing

When Anvil Studio's optional **Pro-Mix** accessory is installed, you can add adjust faders, VST parameters, and other audio and MIDI parameters either graphically, or automatically while a song is playing.

To adjust values for these controls graphically:

1. Select **View / Composer** or **View / Audio Editor**, and then select **View / Track Automation** if that menu item is not already checked. To edit values for several controllers at the same time, select **View / Mixer Automation**.



1. An image like  will appear to the left of a graph of the parameter's value over time.
 2. Click the **Controller** button to select which track and effect you want to automate.
 3. Click the pencil to *freehand* draw values on the graph, the diagonal line to draw ramps, or the horizontal line tool to set the parameter to a constant value for the entire track.
2. To adjust values for these controls using *Automation*:
 3. Change the **Auto Play** field near the top of the screen to one of these values:
 1. **Auto Off** - plays the song *without* using any saved control values, so you can hear how the song sounds in its raw form.
 2. **Auto Play** - plays the song using saved automation values.
 3. **Auto Write** - records all changes to controller sliders and dials while playing the song. When the song stops in this mode, it automatically changes to Auto Touch mode so you will not accidentally overwrite existing saved data.
 4. **Auto Touch** - is the same as Auto Write mode, but it starts recording changes to parameters as soon as the mouse button goes down on a control, and stops recording the values as soon as the mouse button is released.
 5. **Auto Latch** - is the same as Auto Touch mode, but once it starts recording controller changes, it continues to until the song is stopped.
 6. Click the **Controller** button to select which track and effect you want to automate.
 7. Check the box **Allow a MIDI Controller to control this parameter** if you want to use a MIDI Keyboard's Modulation wheel, or dial, or a fader on a Tascam 428 Mixer to control this parameter while the song is playing. If you use an external MIDI Controller in this way, Auto Touch mode will be treated as if the system was in Auto Latch mode.
 8. Set the Automation Mode to Auto Write, Touch, or Latch.
 9. A slider will appear to the right of the graph. Changing this slider while the song is playing adjusts the sound parameter in real-time, and the changes will be remembered and reapplied every time you play the song.

Get better sound quality by using a VST-Instrument

Some sound cards' built-in synthesizers sound bad and have high latency. To get more realistic instrument sounds with low latency, try using **VST-Instruments**. There are a large number of downloadable software synthesizers that support the VST-Instrument protocol, and many of them are free.

VST-Instruments can be used with Anvil Studio's optional [Pro-Mix](#) accessory. There are two ways to connect a VST-Instrument to Anvil Studio:

Option 1: **View / Synthesizers** menu (this is the preferred method)

This option should be used when the VST-I is *multi-timbral*, that is, it is able to play different instrument sounds on each MIDI channel. In this example, we'll use the free SFZ VST-I, but you can use any VST-I

you'd like.

Using this method, the VST-I's properties are saved and restored every time you start Anvil Studio, so you only need to set it up once.

The VST-I's settings are not be saved with the song file, so if you change the properties and later load a song file, it will be played using the synthesizer's most recent settings.

First, download SFZ.dll from www.kvraudio.com, or www.rgcaudio.com.

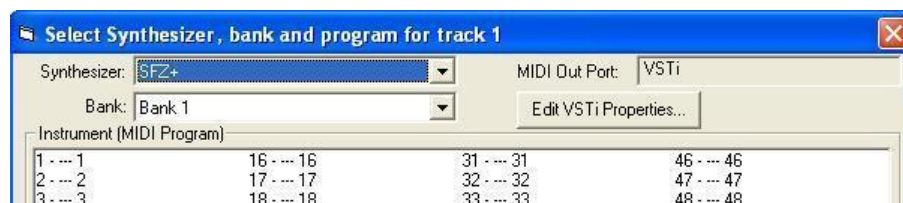
It is most convenient if you download all of your VST-I DLL files into the same folder.

2. Next, if your VST-I plays SoundFont files, download some from www.sf2midi.com/soundfonts/ soundfonts.homemusician.net/, or search the web for *free soundfonts*. Again, it is most convenient if you download all of your soundfont files into the same folder.
3. Select Anvil Studio's **View / Synthesizers** menu.
4. Press the **Add a synthesizer** button.
5. Press the **Load a Virtual Instrument** button.
6. Locate the VST-I's .Dll file that you downloaded (e.g. SFZ+.dll) and press Open.
7. This *Synthesizer* will be available every time you start Anvil Studio, until you later press the **Remove synthesizer** button.
8. Next, you must adjust the VST-I's properties by selecting the VST-I in the Synthesizer list and pressing the **Properties...** button.
9. With SFZ, you need to set its properties for each MIDI Channel you want to use. Each VST-I does this differently, but using the SFZ example,
 1. Click the Channel field (circled in red in the picture below) and select the MIDI Channel you want to use (1 to 16).
 2. Click the file field (also circled below) and browse for the SoundFont file you want played on this MIDI channel.
 3. Click the program field (also circled below) and browse for the SoundFont file you want played on this MIDI channel.



10. Next, select Anvil Studio's **View / Mixer** menu.

11. assign tracks to the VST-I, as shown below:



We would like to display the MIDI Program names in this window, but unfortunately, the VST-

Instrument protocol does not include that information. If you forget the program numbers, you can press the **Edit VSTi Properties** button to see Channel->Bank, Program assignments.

Option 2: For single-channel VST-Instruments

Using this method, the VST-I's properties are saved as part of the track in the song file. When adding a VST-I using this method, Anvil Studio creates a separate VST-I instance for each track assigned to this VST-I, and then mixes all of their outputs with audio tracks.

1. Select the **View / Mixer** menu,
2. click the track's FX column for the track you want to be played by a VST-Instrument,
3. make sure the only box that is checked is **Include VST Instruments**.
4. click the "Browse for VST plug-ins to add..." button.
5. search your system for where the VST-I's .dll file is, and click it.
6. click the **Add->** button.
7. You can then adjust the VST's properties by clicking the Properties button.

Another *free Multi-timbral* VST-Instrument you might try is [Short Circuit](#), which also has very low latency and plays sounds from SoundFont (.SF2) files.

VST is a trademark of Steinberg Media Technologies GmbH.
SoundFont is a registered trademark of E-mu Systems, Inc.

Using Anvil Studio's Pro-Mix accessory to control synthesizers during a live performance

With Anvil Studio's Pro-Mix accessory, the challenge of changing synthesizer settings between songs during a live performance can be reduced to a mouse click.

First, use the **View / Synthesizer** menu to define each synthesizer you plan to use during the performance. Next, even if you don't use Anvil Studio for *sequencing* songs, create a file for each song you will be performing. This file will hold the synthesizer configuration information for the song. To do this,

- Select **File / New Song**.
- Select **View / Mixer**.
- For each MIDI channel of each synthesizer that will be used in the performance:
 1. Select **Track / Create / Instrument** to add a track to the song.
 2. Set that track's Device column to the synthesizer / MIDI bank / and MIDI program to be used.
 3. Set that track's Channel column to the MIDI Channel you want the synthesizer to use to play that instrument.
 4. If, during this song, you want one MIDI keyboard to send Controller or Note events to another MIDI keyboard or MIDI sound module, or even a VST-Instrument, that can be configured by following these steps:
 1. Select **View / Synthesizers**.
 2. Press the button **Edit MIDI Routing for this song**.
 3. Press the Add... button.

4. Select the MIDI In port your keyboard is connected to.
5. Select the MIDI Out port you want to forward or *route* controller or note events to.
6. Select the MIDI Channel(s) you want to send.
7. Select the range of notes that you want sent.
8. You can add as many routing commands as you want.
9. You can send overlapping ranges of notes to different MIDI targets so that a given range of played notes can be sent to several synthesizers.

If a synthesizer needs to be configured with special System Exclusive MIDI events for a particular song, they can be inserted by selecting **View / Event List**, and then **Edit / Insert MIDI Event**, and setting the kind of event to System Exclusive.

Now, save the file using the **File / Save** menu. Even if the *song* file has no notes, it contains all of the instrument setup information needed to configure all of the synthesizers used during the live performance. During the live performance, select the menu **File / Open and Play**.

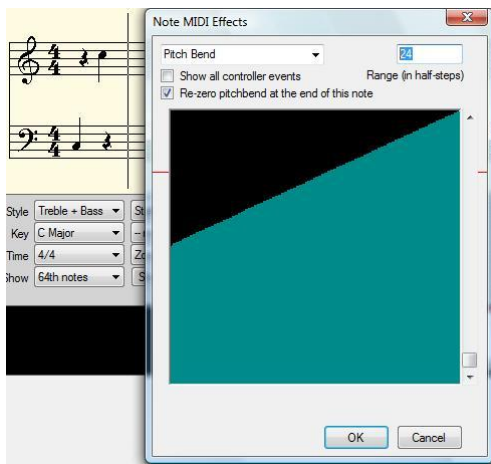
This displays a screen showing all of the songs in the current folder. Press the Change folder... button to display songs from a different folder.

When this screen is displayed, any song that you click will be immediately loaded, any configuration information will be sent to the synthesizers, and if the song contains any notes, they will be played.

If you are certain of the order of the songs that you will play, you can instead create a playlist (see section *Creating a Play List*), where the playlist has a Pause command before each song.

Using Anvil Studio's Pro-Mix accessory to create fade-in, fade-out, glissando, and other effects

1. Select **File / New Song**
2. **View / Composer**
3. Enter 2 quarter notes, e.g. C4 in the bass clef and C6 in the treble clef.
4. Right-click the 1st note,
5. Select the MIDI Effects popup menu
6. Select Pitch Bend if it is not already selected
7. Set the range to 24 half-steps
8. Press the Ctrl key and draw a ramp as shown in this picture



You can do the same thing to control Channel Volume, Modulation, or other MIDI effects. You can control these parameters over a range of notes by selecting the menu **View / Track Automation**.

Using ReWire with Anvil Studio

Rewire is a system developed by www.propellerheads.se for transferring audio data between two computer applications, in real time. As they say, you can view ReWire as an *invisible cable* that streams audio from one program into another. To use Rewire, you need:

a Rewire Master or Host application such as Anvil Studio with its optional Pro-Mix accessory, and a Rewire Slave application that generates audio, such as:

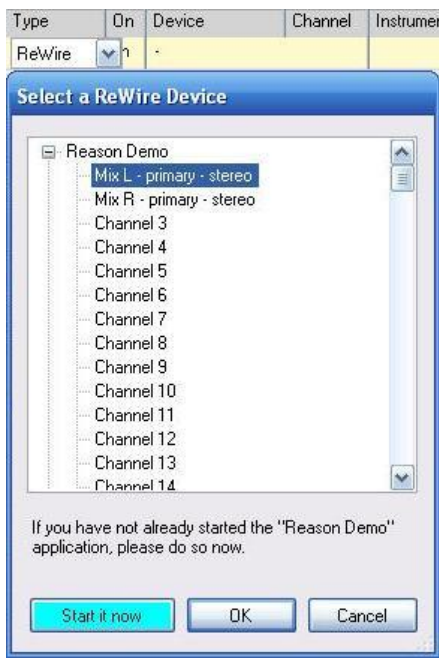
- ReBirth, which is available for free from www.rebirthmuseum.com, and
- Reason, which has a free demo version at www.propellerheads.se.

The ReWire slave application generates audio that gets routed to, mixed and played by the ReWire host application. Together, the two (or more) applications coordinate to generate a song, allowing you to access the strengths of each application. ReWire helps keep all of the applications in perfect sync.

If you install the demo version of Reason on your computer, you need start it once while Anvil Studio is not running so you can configure it for use as a ReWire slave.

Step 1 - Getting started using Reason (or any other ReWire slave application)

1. Start Anvil Studio before starting Reason.
2. Press the FX button at the top of the screen and set Anvil Studio's Audio Subsystem to ASIO, and select the driver ASIO4ALL which is described in a different Tutorial.
3. Select **File / New Song** which will show the **View / Mixer** screen with 1 track in a new song.
4. Change the Type of Track 1 from Instrument to ReWire.
5. You will see a window like this:



6. This lets you select which of Reason's many outputs to be played by this track.
 7. As shown, select Mix L - primary - stereo
 8. Press the **Start it now** button to launch the Reason application.
 9. Reason will see that a ReWire Host application is running and it will automatically enter ReWire slave mode, where any audio output that it generates is mixed and played by Anvil Studio.
 10. Select the menu **Track / Create / ReWire**, and this time, select Mix R - primary - stereo.
 11. Check Anvil Studio's Stereo checkbox to the right of Master Vol.
 12. Change track 1's Pan column slider to be all the way to the left.
 13. Change track 2's Pan column slider to be all the way to the right.
 14. If you change Anvil Studio's Tempo field, Reason's tempo will change as well.
 15. If you change the song position in either program, the other program will respond, always remaining in sync.
 16. Press Anvil Studio's play button, and whatever Demo song was last loaded by Reason will begin playing through Anvil Studio.
 17. Select Anvil Studio's **File / Save** menu, and all of these settings will be saved in the song file.
 18. Close the Reason application first, then close Anvil Studio.
- Step 2 - Loading an existing Reason song file**
1. Start Anvil Studio before starting Reason.
 2. Use the **File / Open** menu to load the song created in Step 1.

3. Start the Reason application, either from the Windows Start menu, or by pressing Anvil Studio's **Start Rewire Apps** button.



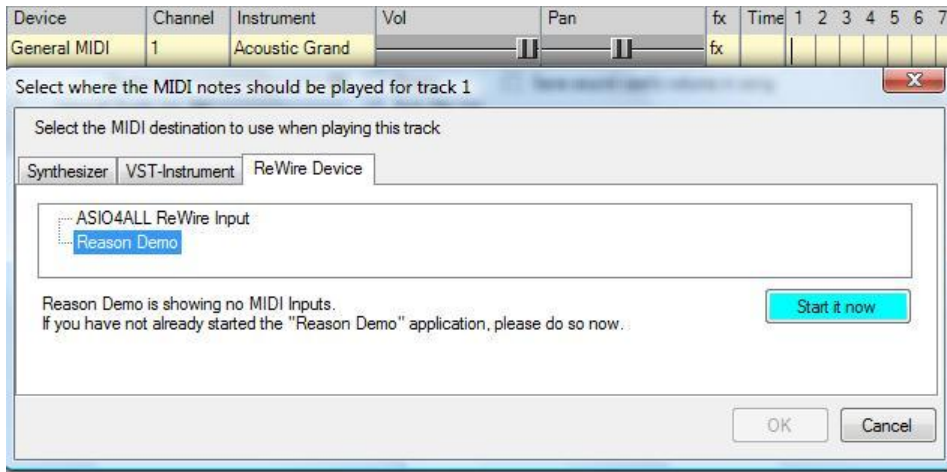
4. Add a new Instrument or Audio track to the song file and add sound to it by composing, recording or importing.
5. Now, when you press the Play button, Reason's tracks will be played back in sync with Anvil Studio's tracks.
6. In Reason, select the menu File New to create a new instance of Reason.
7. Close the original Demo Song instance of Reason.
8. Select Reason's Create / Create Instrument menu and select House Organ 1 (though any instrument will do).
9. Note which Synthesizer got added to Reason's rack, which is Sub Tractor 1 in the case of House Organ 1.
10. Select Anvil Studio's **Track / Create / Instrument track**.
11. Click the new track's new track's Device column.
12. Select the ReWire Device tab, and select Sub Tractor 1, which is the Reason synthesizer used to generate sounds for House Organ 1.
13. Add notes to the new track using Anvil Studio's **View / Composer** menu.
14. Now, when you press the Play button, Anvil Studio will route MIDI notes to Reason, and capture Reason's generated audio, and mix it with your other Anvil Studio tracks.

Step 3 - Recording Reason's Audio output to an Anvil Studio audio track

1. Start Anvil Studio and Reason just like you did in Step 2.
2. Select Anvil Studio's **Track / Create / Audio Track**.
3. Click the new track's new track's Device column.
4. Click the ReWire Device... drop-down menu, and select one of Reason's Audio Outputs that you want to record, e.g. Mix L - primary - stereo.
5. Experiment with Reason's patch routing by pressing the Tab key to see the back side of the Reason rack. Each input jack in the Reason Hardware Interface corresponds to a separate ReWire audio channel, and any of them can be routed as an audio input to Anvil Studio.
6. You can create several Instrument tracks that each send their output to a different Synthesizer in Reason.
7. You can create several ReWire tracks that each capture Audio Output from one or more ReWire Synthesizers.
8. You can mix all of those tracks with other Anvil Studio audio and MIDI tracks.
9. When you are finished, you can mix all of the tracks together to generate a single Audio mix by selecting **File / Export Mixed Audio**.

Step 4 - Using Rewire to send Anvil Studio's MIDI output to be played by another app

1. Select Anvil Studio's **File / New Song** menu.
2. Click the new song's Instrument track's Device column.
3. Select the ReWire Device tab.
4. Click Reason Demo, or any other app you want to act as this track's MIDI Synthesizer.
5. Click Start it now if the app has not already been started.



6. Configure the other app's synthesizer(s) to be the way you want them.
7. When you return to Anvil Studio, its ReWire Device window will change to list all available MIDI Busses and Channels.
8. Select the Channel that you want this track's MIDI Output to be sent to, and press OK.
9. You should hear a short note played by the selected ReWire synthesizer.
10. Select Anvil Studio's **Track / Create / Rewire Track**.
11. Click that new track's Device column and set it to Reason Demo - Mix L.
12. Select Anvil Studio's **Track / Create / Rewire Track**.
13. Click that new track's Device column and set it to Reason Demo - Mix R.
14. Make sure the Stereo box is checked. Your screen should now look similar to this:



15. The last 2 tracks tell Anvil Studio to mix Reason's Mix L and Mix R audio channels into Anvil Studio's playback mix.
16. You can add other MIDI and audio tracks and they will all get mixed together.
17. Now, you can compose or record notes on track 1, and they will be played by the ReWire synthesizer.

Mix all tracks down to a single .WAV file

After your song sounds the way you want it, you can mix the entire song down to a single .WAV file by following these steps.

1. Select **View / Mixer**.
2. Open the song you want to work on using the **File** menu.
3. Select **File / Export Mixed Audio...** to save the mixed audio track to its own .WAV file.

If your song has any MIDI notes, and your SoundCard does not support mixing audio and MIDI to an Audio file, it will ask you:

Your song has some MIDI notes, and your SoundCard does not support converting these to an audio file.

Do you want to just mix your song's audio tracks and sampled rhythms?

If you reply Yes, it will just mix the audio tracks. Otherwise, it will do nothing.

or it might tell you:

A new .WAV file will now be recorded for export.

Wait until the whole song is finished playing.

It may ask you if you would like to download a free MP3-to-WAV audio format converter.

It will then ask you what audio format you want to produce.

If you eventually want to copy the resulting file to an Audio CD, set the Attributes field to:

44.100 kHz, 16 Bit, Stereo

If you are not sure, just press that window's OK button.

It will then ask you where you want to save the exported audio (.wav) file.

How to keep all tracks in sync

When a speaker or MIDI device is asked to make a sound, a small amount of time passes before that sound is actually heard. This time lag is called *Device latency* and it is measured in milliseconds. A high-latency MIDI device, such as the **Microsoft GS Wavetable Synthesizer**, has latency of up to a 300 milliseconds to compute the wave forms it will play.

If you use a high-latency MIDI device and your song also has audio tracks, you may hear the Instrument (MIDI) tracks lagging behind the Audio tracks.

Similarly, if some tracks are played by a high-latency synthesizer, they will lag behind other tracks that are played by a low-latency synthesizer.

If you record a new MIDI or Audio track while listening to existing tracks in the song, even if you play in perfect sync while recording, latency can cause the tracks to be out of sync during playback.

In spite of this, Anvil Studio can keep all of your tracks in sync if you follow these steps:

1. Select **View / Synthesizers...**
2. Make sure the MIDI Out port and Audio In/Out ports are set to the devices you want to use for recording and playback.

3. Select the menu **View / Latency of MIDI + Audio Devices**.
4. Press the Analyze button.
5. Press the Start button.
It will play some sounds and record those sounds, to determine the latency for several devices.
6. When it finishes, if it reports errors, or you want to see if the reported values are consistent, press the button **Try again**.
Otherwise, press the button **Use these values**, and then **Close results window**.

The remaining steps will verify that the latency values are set correctly.

1. Select **File / New Song**.
2. Click the Time button at the top of the screen, make sure Time is shown as Measures:Beats:Midi-ticks, and close that window.
3. Select **Track / Create / Metronome Click Track...** and enter a value like 20:0:0 to create a track that is 20 measures long.
4. Select **Track / Create / Audio track by mixing enabled MIDI tracks**.
If prompted, set the Record volume to 100.
5. Press the Edit Track button to examine the newly-recorded audio track.
6. Uncheck the autoscale box so you see the un-magnified recorded signal. If it is nearly a straight line, press the Louder button until it warns you that doing so would add distortion to the track.
7. Select **View / Mixer**.
8. Set L/R Balance column for the Click track all the way to the left, the audio track all the way to the right, so you can hear each track from a different speaker.
9. Play the song so you can hear if both tracks are in sync. Using headphones makes this step easier.
If they are not in sync, select **View / Latency**, click a device to manually adjust its latency and repeat these steps until they are in sync.
10. To ensure there are no sync problems when you record a new audio track while listening to a mix of existing audio tracks,
select **Track / Create / Audio track by mixing enabled MIDI and Audio tracks**.
11. Another audio track will get recorded along with the existing MIDI and Audio track.
12. After it finishes, play the song to ensure that all 3 tracks are in sync.

Another situations where latency can interfere is if you want a MIDI keyboard to generate sounds through your computer during a performance. If the MIDI device has latency above 50 milliseconds, you will notice the delay. The best solution here is to use a **VST-Instrument** or other MIDI device that has lower latency.

Files that get created by Anvil Studio

Every song created by Anvil Studio is saved in a file that ends with .MID. For some songs, additional files get created that are referenced from the .MID file. You can generally ignore those files. You need to be aware of them when, outside of Anvil Studio, you rename, copy or move them to another folder. These extra files are always created in the same folder as the .MID file, with a similar file name, and a different ending, as described below:

- .WAV - for every Audio track, a standard .WAV file is created to hold that track's audio.

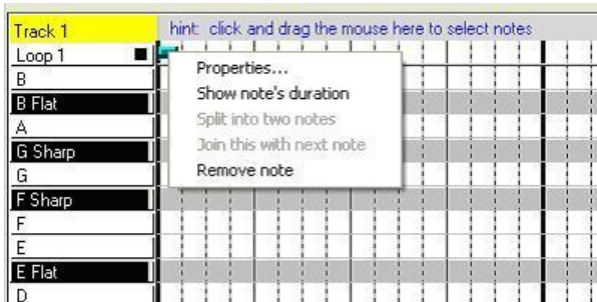
- .MFX - when an audio track or VST-Instrument track has audio effects, the effects parameters for all tracks are saved in a single .MFX file.
- .AFX - when a track has VST-Effect or VST-Instrument, the parameters for the VST are saved to an .AFX file. One file is created for each referenced VST.

Creating a looping sound in the Piano-Roll or Rhythm editor

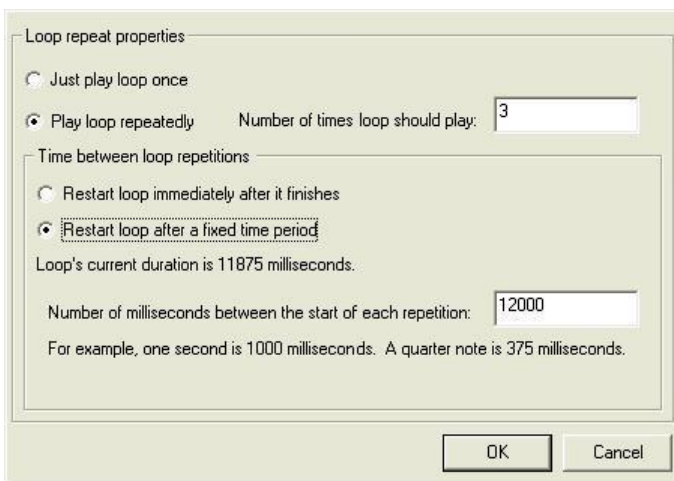
If a track contains a set of notes you would like to loop, or repeat, bring up the Piano-Roll or Rhythm editor, and then right-click on the yellow track name so the following pop-up menu comes up. Then, click on Move these notes to a New loop.



Now you have two grids - one that represents the track, and one that represents a Loop that can be played in this track. Next, right click on the only note in the new track grid as shown below. Then, click the pop-up menu **Properties**.



Then, fill in the properties dialog as follows:



Cause Anvil Studio to always load and save songs from a particular folder

Select **View / Options** and uncheck the box named **same folder where last song was loaded or saved**. Then, press the Browse... button to select the folder.

Cause Anvil Studio to always load and save songs from the same folder where the last song was loaded or saved

Select **View / Options** and check the box named **same folder where last song was loaded or saved**.

Create sound files for Web Browsers

When you record Audio tracks, Anvil Studio creates a different .WAV file for each track. These .WAV files are saved in the same folder as the song's .MID file, and have the same first 4 letters of its filename. For example, if the song is named "ThisIsMySong.mid", the audio tracks will be saved in files with names like "Thisg_a.wav", "Thisg_b.wav", etc. The filename of each track's .WAV file is displayed on the Mixer screen in the Instrument column. These .WAV files can be emailed and played by any Audio player, including the Windows Media player and Web Browsers. If you load the .MID file into another application, such as a Web Browser, you will only hear the Instrument and Rhythm tracks. That is because there is no standard for storing audio data within .MID files, so Anvil Studio simply stores references to the .WAV files inside the .MID files.

See the section: **Mixing all tracks down to a single .WAV file** for a description of how to mix all of your Audio, Instrument and Rhythm tracks down to a single .WAV file. The single .WAV file can then be played by any application, including Web Browsers.

If you want a .WAV or .MID file to be played by your website, you need to use FTP to transfer the file to your website. Be sure to use the Binary transfer mode. Then, include this text in your webpage:

```
<BGSOUND SRC=xxx.mid LOOP=0 AUTOSTART=TRUE>
```

where your webpage and xxx.mid are in the same folder on your website's server.

You can use a variety of shareware/freeware tools to convert the .WAV file to an .MP3 file, which can be 1/10th the size. Anvil Studio does not yet support creation of .MP3 files.

Increasing memory for Audio Recording

Your audio recording time may be limited by the amount of virtual memory Windows has allocated. It may help to tell windows to increase the amount of Virtual Memory from the Control Panel / System / Advanced / Performance / Settings / Advanced / Virtual Memory / Change.

Increasing volume for Recorded Samples

There are several things you can do to increase the volume of a recorded sample. Experiment with one or more of the following until you get the sound you want.

1. In the window brought up by **Create Sampled Sounds...** or **Edit Samples...**, set Volume all the way to the right.
 2. In that same window, press the Edit... button to edit the waveform. Then, press the Louder button until it warns you that doing so would introduce distortion.
 3. On the Composer screen for the Rhythm track, set the volume control all the way to the right.
 4. On the Mixer screen, set the volume for the rhythm track all the way to the right.
 5. On the Mixer screen, set the volume for Audio all the way to the right.
-

Cause the current song to play when I press a Computer key

- select **View / Options**
 - at the bottom of the window, change the **Anvil Studio Action:** field to Play and change the **Computer key...** field to Ctrl + P (or any other value).
-

Cause the current song to play when I press a synthesizer key or button

- Select **View / Options**.
 - Near the bottom of the window, change the **Anvil Studio Action:** field to **Start/Stop Play** and press the desired Synth key/button until the MIDI Event field reflects that value.
-

Hear a small section of a song played repeatedly

This is useful when you are learning a song.

1. Select the range of notes you want to practice with the mouse
 2. Select the menu **Edit / Set Record+Play Start+End Times**.
 3. Click the Start / End positions button.
 4. Click the **Record / Play** from option.
 5. Set the option **Affects which part of the song gets Recorded and Played back**
 6. If you want, check the **When playing, Loop...** box
 7. Press the OK button, and then the Close button.
-

Add a copyright message to a song file

To add a Copyright message to your song,

- select **View / Comments**.
 - Set the Track field to .
 - Add the Copyright message.
-

Create a Play List

1. A playlist is a file that can be opened by Anvil Studio's **File / Open Play List...** menu item.

Using your favorite text editor, make a copy of the file `autoplay.ply` in your My Music folder.

2. Replace `air.mid`, and all of the other lines that have `.MID` with the names of MIDI songs you want to play.
3. In Anvil Studio, select **File / Open Play List**. It will play all of those songs.
If the last line of the `XXX.PLY` file has a line naming itself, i.e. `XXX.PLY`, it will loop and play all the songs forever.
4. A skip button also appears when a Play list is playing that lets you skip forward in the play list.

In addition, you can add any of the following lines to a playlist file:

- **PAUSE**
This waits until you press the `>>` button to resume playback.
You can tell it is paused because Anvil Studio's window title changes.
- **PAUSE FOR *hh:mm:ss***
This pauses playback for the specified number of hours, minutes and seconds. For example,
`PAUSE FOR 30` would wait for 30 seconds between songs,
`PAUSE FOR 15:0` would wait for 15 minutes,
`PAUSE FOR 1:0:0` would wait for 1 hour between songs.
- **PAUSE UNTIL *hh:mm:ss***
This pauses playback until the specified time, expressed in 24-hour format.
If the specified time has already passed, it waits until the next day at that time. For example,
`PAUSE UNTIL 17` would wait until 5 PM to resume playback.
`PAUSE UNTIL 17:30` would wait until 5:30 PM to resume playback.
`PAUSE UNTIL 17:59:45` would wait until 5:59:45 PM to resume playback.

Sound card, Microphone, Keyboard, and website recommendations

A good sound card is the first step. Fortunately, there are many good ones that can record 2 lines in (stereo) and play 2 lines out for under \$30.

Make sure it is Full-Duplex, which means it can record and play at the same time. The SoundBlaster Live! Value is reasonably priced, has good sound, and lets you load SoundFont files with different sets of instrument settings, just like a MIDI Sampler. If you want to record from more than 2 audio lines at the same time, consider [Lexicon Omega](#) or soundcards sold by [m-audio.com](#).

You can use a MIDI keyboard to record tracks with Anvil Studio. Consider starting with a VERY inexpensive MIDI keyboard, like a Yamaha or Casio from Costco, K-Mart, etc. for around \$70. They have very good sound for the money. Make sure that it has full-size keys - not 3/4 size miniature keys. The next step up would be to get a synthesizer with weighted keys, so it feels like a real piano. Something like the Kurzweil PC88, but expect to spend over \$1000.

The best *reasonably priced* microphone out there is the Shure 57, which you can by used for \$50 and new for around \$80. They are the workhorse of garage bands everywhere. For optimal recording of voice, you need to then advance to a condenser mic, which can cost around \$400. The good news is that the Shure 57

won't go to waste after you do buy a more expensive mic. You can always use more mics.

www.HarmonyCentral.com has a wealth of recording information, from the theoretical to the practical, including a great classified ad page for buying used equipment, as well as reviews of equipment. It is a good jumping-off point. For more website recommendations, select **Help / Links...**

Download an upgrade version of Anvil Studio

The version of *Anvil Studio* you are running may be outdated, even if you recently downloaded it. This is because Shareware WEB sites sometimes take a while to upgrade to the latest version. To see a list of new features and bugs fixed in the latest version of *Anvil Studio*, select the menu **View / Upgrade...**

When you download a new version of Anvil Studio, the new version automatically tells you if your optional accessories are up-to-date. It will tell you how to upgrade them if new ones are available.

How to uninstall Anvil Studio

We would appreciate [hearing](#) why you want to uninstall Anvil Studio. We promise not to try to *sell* you on keeping it. We just want to learn how we failed, so we can improve it.

To uninstall Anvil Studio:

- select **Settings / Control Panel** menu item from the Windows Start menu,
- double-click **Add / Remove programs** in Windows XP, or **Uninstall a Program** under Windows Vista or later,
- select Anvil Studio 2011 from the list,
- click the Add / Remove button

Help / Terminology

A **Track** contains a description of each note to be played by an instrument. Using an orchestra as an analogy, a track is the same as one musician's sheet music.

A **channel** is a number from 1 to 16 that connects a MIDI controller, and thus, the computer, to a particular instrument on a particular synthesizer. In *Anvil Studio*, each track is played on a single channel. Using an orchestra as an analogy, a channel is the same as one musician in the orchestra.

Each MIDI cable can carry up to 16 **channels** of MIDI events. Most synthesizers are **Multi-Timbral**, that is, they can make sounds for several different instruments at the same time. A **MIDI Sequence** is a file that contains a song to be played by *Anvil Studio*, or any similar program. A single MIDI Sequence contains one or more tracks of music; one track for each instrument in the song. Using an orchestra as an analogy, a MIDI Sequence contains the entire orchestra's sheet music for the song to be played.

A **Patch**, is the information a particular synthesizer needs to sound like a particular musical instrument.

Using an orchestra as an analogy, a patch is the same as an instrument. Within *Anvil Studio*, a patch is usually referred to as an **Instrument**. Patches can be either *Factory Preset* or *User-Created*. **Factory Preset** patches are read-only patches that your synthesizer had when it arrived from the factory. **User-Created** patches are patches you create.

A **Bank** is a set of patches that can be held in a synthesizer's memory at one time. Different synthesizers can hold different numbers of patches at one time. Some synthesizers have only one bank with a fixed set of patches that can never be changed. Others allow new banks and patches to be created. Using an orchestra as an analogy, a bank is the same as the set of all instruments used by the orchestra.

An Anvil Studio **Patch Library** is a disk file that contains information you want to save for one of your synthesizers, including a set of Banks and Patch for one of your synthesizers, including:

- Bank and Patch names,
- Controller names
- Comments you would like to remember about particular patches,
- Which Patches or Channels your synthesizer uses for Drum sounds,
- Names of Drum Notes, used when creating Rhythm Tracks.

Anvil Studio automatically assign patches to channels that you have assigned to it on Anvil Studio's Mixer screen.

The standard version of Anvil Studio ships with a **General MIDI** Patch Library that describes patch names and Drum Notes for synthesizers that conforms to the General MIDI standard.

To view or edit the contents of a patch library, select **View / Synthesizers**. Then, press the button **Show Patch Library...** button.

To import an industry-standard **Instrument Definition** from a file with an extension **.INS**, e.g. MySynth.ins,

- select **View / Synthesizers**,
- press the *Load Patch Library...* button or *Existing Patch Library...* button,
- change the file type field from Patch Libraries to Instrument Definition Files, and
- select the .INS file that you want to import.

A new Anvil Studio patch library with the file extension **.MLB** will be created for this synthesizer.

If you have a *Patch Library* for a synthesizer, but no *Patch Controller*, you can only refer to *Factory Preset* Patches, and not *User-Created* Patches. A *Patch Controller* allows you to manipulate and refer to both *Factory Preset* and *User-Created* Patches.

An Anvil Studio **Patch Controller** does everything a patch library does, and in addition, it allows you to use Anvil Studio to:

- Create and manage new banks of *User-Created* patches.
- Copy patches between your synthesizer and computer over MIDI cables. This lets you save them in a Patch Library on your computer.
- Automatically cause your synthesizer to listen to only those MIDI channels that you have assigned to it on Anvil Studio's Mixer screen.
- Set the synthesizer's volume for each channel as you have indicated on Anvil Studio's Mixer screen.
- Split your synthesizer keyboard into different ranges of keys, or split points, each with:
 - the MIDI channel those keys are to be sent to
 - the number of semi-tones to transpose keys in that range

A Patch Library or Patch Controller does not add sounds to your soundcard. It only tells Anvil Studio what sounds are already built into your soundcard or external MIDI synthesizer. If you have a SoundBlaster Live soundcard, SoundFont files can be used to add sounds to your soundcard.

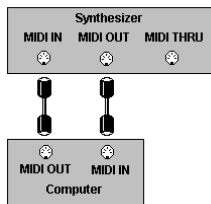
Help / Connections

This screen describes how to connect synthesizers to your computer.

Connecting One Synthesizer to your Computer

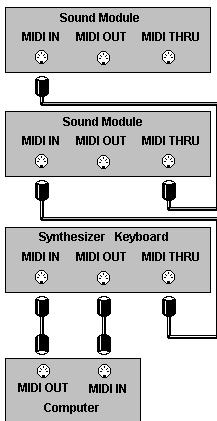
Your computer communicates with synthesizers and sound modules through a **MIDI Adapter** which sometimes connects to a USB port, and sometimes is part of your computer's soundcard. Many MIDI Adapters also have a built-in Internal Synthesizer, used for playing MIDI music on your computer. Select **View / Synthesizers** to see all of the MIDI Adapters and Internal Sound Card Synthesizers that are connected to your computer.

The MIDI Adapter might connect to your synthesizer with MIDI Cables as shown in the following diagram.



Connecting multiple Sound Modules to your computer

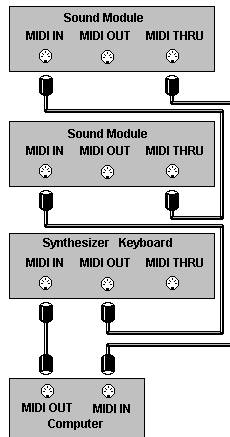
The difference between a synthesizer and a sound module is, a synthesizer has a keyboard while a sound module does not. One MIDI Adapter can communicate with several synthesizers and sound modules connected to it through a series of MIDI Cables. The recommended way to do this with Anvil Studio is shown below.



The MIDI cables that let your computer make sounds through your synthesizer and sound modules run: from the MIDI Adapter's MIDI OUT port to the first synthesizer's MIDI IN port, and from the first synthesizer's MIDI THRU port to the next Sound Module's synthesizer's MIDI IN port, and so on to the last Sound Module's MIDI IN port.

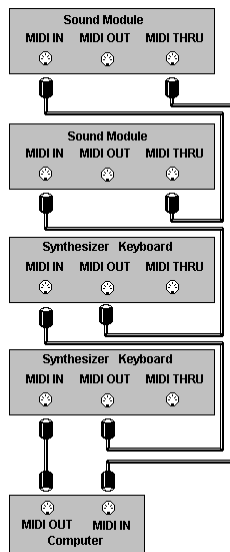
The MIDI cables that let your computer listen to and record the keys that are pressed on your synthesizer keyboard run from your synthesizer's MIDI OUT port to the MIDI Adapter's MIDI IN port.

Some synthesizers have a mode that causes the MIDI Out port to echo all MIDI In events as well as locally generated ones. Some synthesizer manufacturers call this **MIDI Thru mode** or **MIDI Merge mode**. If your synthesizer supports this feature, then follow the synthesizer manufacturer's directions for putting the synthesizer in this mode, and connect your MIDI equipment as shown in the diagram below:



Connecting multiple synthesizer keyboards with only one MIDI Adapter

Some synthesizers have a mode that causes the MIDI Out port to echo all MIDI In events as well as locally generated ones. Some synthesizer manufacturers call this **MIDI Thru mode** or **MIDI Merge mode**. If your synthesizers support this feature, then you can connect multiple synthesizers and sound modules to a single MIDI Adapter as shown below:



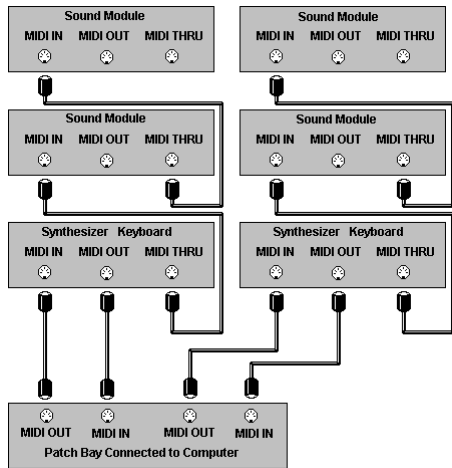
Care must be taken to ensure that each keyboard connected to the same MIDI Input Adapter generates notes on a different MIDI channel.

If your synthesizer does not support MIDI Thru mode, or MIDI Merge mode, the best way to connect multiple synthesizer keyboards to your computer is with multiple MIDI Adapters, as described below.


Connecting multiple MIDI Adapters to your computer

Your computer may have several MIDI input / output ports installed in it, each with a unique name. Select **View / Synthesizers** to see all of the MIDI Adapters that are connected to your computer.

If you have Anvil Studio's optional **Pro-Mix** accessory installed, then Anvil Studio can play music over more than 16 MIDI channels through multiple MIDI Adapters connected to your computer, as shown in the diagram below:



Echo incoming MIDI events to all synthesizers

The **Mixer** screen has a button that looks like  , and the **Synthesizers** screen has a check box named **Echo incoming MIDI events to all synthesizers**. These have no effect, and are not even visible, if your computer has only a Sound Card's internal synthesizer and/or audio, but no external MIDI port. In this case, you can ignore this section.

When Anvil Studio runs for the first time, Echoing MIDI events is initially disabled.

Why you might want to enable echoing MIDI events

You would want to turn this on if you are recording a MIDI track, and you want to play notes on one synthesizer keyboard, but have them played by a different synthesizer or your computer's sound card. In this case, the synthesizer keyboard you are playing will remain silent, and the recorded notes will be echoed, and later played back, on the synthesizer assigned to the track being recorded. For example, try turning this check box on and then select **View / Mixer** and create a Rhythm track. Now, press keys on an external synthesizer to hear drum sounds. While still on the Mixer screen, press the Record button and press keys on your synthesizer to record a rhythm track.

Why you might want to disable echoing MIDI events

You will want to turn this off for any of the following reasons:

If your computer's Sound Card is not *Full Duplex*, that is, it cannot send and receive MIDI events at the same time.

If your computer's Sound Card is the type that cannot listen to the MIDI port and Audio-in port at the same time.

If you do not have enough MIDI cables to connect:

the synthesizer's MIDI OUT port to the computer's MIDI IN port, and

the computer's MIDI OUT port to the synthesizer's MIDI IN port.

In this case, you need to re-connect a MIDI cable to different ports depending on whether you are recording or playing back.

If you notice delays between the time you press a note and when you hear the note played.

If you don't here anything when you press a key on the synthesizer keyboard.

Program behavior when Echo MIDI Events is enabled

During start-up the program opens MIDI OUT and MIDI IN ports, and immediately sends LocalControlOff messages to all channels.

When not recording, it simply echoes any MIDI event to all MIDI OUT ports.

When recording, it echoes the received notes, after changing the channel number to the active track's channel number.

Program behavior when Echo MIDI Events is disabled

The program only opens MIDI IN ports when recording a MIDI track, or when Anvil Studio is showing a screen that needs to listen to MIDI events.

The program only opens MIDI OUT ports when playing one or more MIDI tracks, or when Anvil Studio is showing a screen that needs to play MIDI notes.