# Contents

GoldWave is a sound player, recorder, and editor.   Before using GoldWave, make sure the sound drivers have been installed and configured with Window's Control Panel.   The manual contains more detailed information about GoldWave and sound editing.

To learn how to use help, press F1.

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# New Wave

GoldWave supports a wide range of sound attributes.   These attributes must be specified when creating a new file.   All new files will be saved in standard RIFF WAVE format.

**8 bits vs. 16 bits**
16 bits sounds better than 8 bits, but uses twice as much memory.   Also, more sound devices support 8 bits than 16 bits.   Therefore, GoldWave selects 8 bits as the default.

**Mono vs. Stereo**
Stereo sound uses twice as much memory as mono sound and can take twice as long to edit. You can edit individual channels by using the **Options |** Editing dialog.

**Sampling Rate**
This value determines the quality of the sound.   It is the number of times per second data is sent to or received from the sound device.   The drop down list box provides many standard rates.   Microsoft recommends that this value should be one of 11025, 22050, or 44100.

        11025  Voice and low pitch sounds, relatively small memory usage.
        22050  Medium quality music, medium memory usage.
        44100  High quality music, potentially CD quality, high memory usage.

**Time**
The length of the sound in seconds.

The highest quality sound is produced with 16 bit, stereo, 44100Hz.   Note that this uses 176,400 bytes for every second of sound.

The default rate of 8 bit, mono, 22050Hz uses only 22050 bytes for every second.   This format is good if memory and disk space are limited and quality is not very important.

If you plan to do some recording, make sure you specify attributes that are compatible with your audio device.

For more information, see the Appendix A in the manual.

# Introducing GoldWave



GoldWave is a digital audio editor, player, and recorder.   It can load and edit many different sound file formats and display separate graphs for the left and right channels of stereo sounds.

**Features:**
+ Supports several RIFF WAVE formats: PCM, MULAW, ADPCM
+ Support other file formats: VOC, Amiga 8SVX, Sun, NeXT, Matlab
+ Independent channel editing of stereo sounds
+ A "real-time" oscilloscope, both amplitude and spectral
+ Separate "Controls" window for playing and recording
+ Expression evaluator
+ Intelligent editing
+ Direct editing with the mouse
+ Many effects
+ Fast processing using 32-bit instructions


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See the manual for more information.

# GoldWave Windows

There are three types of windows used by GoldWave: the **Main** window, the **Device Controls** window, and **Sound** windows.   The **Main** window contains a menu bar, a tool bar (sometimes called a speed bar or button bar), and an information/status bar at the bottom. This window keeps all the sound windows grouped together.   It is similar to the main window of a word processor, where you can have several document windows open at once.

The **Device Controls** window contains an oscilloscope and sound device controls.   The oscilloscope displays the sound as it is being played.   The controls determine the volume, left/right balance, and speed at which sounds are played.   A row of standard cassette buttons for playing and recording sounds are kept in this window.   Several features of this window can be configured by using the Setup button.

**Sound** windows are created whenever sound files are opened.   Up to 5 sounds can be opened (provided there is enough memory).   Sound windows display a graph of the sound. Mono sounds are shown with a single green graph.   Stereo sounds are shown using a green graph for the left channel and a red graph for the right channel.

Below the graph is the "Overview Bar".   It provides useful information about what part of the sound is currently selected and what part of the sound is displayed by the graph.   You can zoom in on a section of a sound by using the View Menu Commands.

**See Also**
File Menu Commands
View Menu Commands

# View Menu Commands

View commands allow you to zoom in to and zoom out of the sound graph.   When a sound file is initially opened, the graph shows the entire sound.   By using the View Menu Commands, you can get a more detailed graph of the selection.

**Zoom Block (Block Button)**
Magnifies the selected part of the sound, increasing the detail of the graph.   You can zoom in many times (by selecting part of a sound, then zooming again) until a single sample is shown in the graph.

**Unzoom (Out Button)**
Shows the entire sound.   Sound windows are initially unzoomed.

**Zoom user defined (User Button)**
Magnifies the sound to the level of detail specified under the Options | Settings dialog.   The start marker is used as the zoom location.   The level can be set to any value you find convenient.

**Zoom 20:1**
Magnifies the sound to give a very high level of detail.   At this level, individual samples are easily visible.   The start marker is used as the zoom location.   Direct sample editing with the mouse is possbile at this level.

**Zoom 5:1**
Magnifies the sound to give a high level of detail.   At this level, individual samples are visible.   The start marker is used as the zoom location.   Direct sample editing with the mouse is possbile at this level.

**Zoom 1:1 (1:1 Button)**
Magnifies the sound to give a true representation of the graph of the sound.   The start marker is used as the zoom location.

**Zoom 1:10**
Magnifies the sound to give a rough representation of the graph of the sound.   The start marker is used as the zoom location.

**Zoom 1:100**
Magnifies the sound to give a very rough representation of the graph of the sound.   The start marker is used as the zoom location.

**See Also**
Direct editing of individual samples

# Editing Overview

The GoldWave editor is block based.   A block is defined as the highlighted part of the sound graph between two vertical markers.   Most editing and effects are performed on this highlighted (selected) block.   The vertical markers are cyan lines located at the far left side (start marker) and far right side (finish marker) of the graph; they may be difficult to see.

There are two ways to move the markers, depending on **Options | Settings** setup. GoldWave does not use Windows' standard "click-and-drag" method because it does not allow accurate positioning of the markers.   The methods below allow you to independently set the start and finish markers to the nearest sample (when zoomed in at a 1:1 level or better).

**Method 1, Quick selecting** (default):
To move the start marker:
>        Click the left mouse button on the graph at the point where you want to place the start marker.
To move the finish marker:
>        Click the right mouse button on the graph at the point where you want to place the finish marker.

The drawback of this method is that it is easy to accidently change the start/finish marker when clicking on a sound window.

**Method 2, Grab and drag**:
If the "Quick selecting" check box in **Options | Settings** is not checked, then a grab and drag method is used.
To move a marker:
>        1)       Position the mouse arrow over the marker.   Make sure the mouse is inside the graph area.   You should see the arrow change into a vertical bar with small arrows on either side.
>        2)       Press and hold the left mouse button.
>        3)       Move the mouse to the left or right.
>        4)       Release the mouse button when the marker is at the desired position.

The drawback of this method is that the marker must be inside the graph box before you can move it.   This may not be the case if you are zoomed in.

**See Also**
Edit individual channels of stereo sounds
Direct editing of individual samples
Edit Menu Commands
View Menu Commands

# File Menu Commands

New
Creates a new sound file and allows you to choose the file's attributes.   New files will always be saved with Microsoft's RIFF WAVE format.

**Open**
Opens an existing sound file.   Only 5 files can be opened at one time.   Note that encoded files may take some time to decode.   If GoldWave does not recognize the file's format, the Raw File Format dialog is presented.   See the manual for more details.

**Save**
Saves the current file to the disk.

**Save as**
Saves the current file to the disk under a different name.   Note: Files are saved in their original format.   To save files is a different format, use the **Export** command.

**Export**
Brings up the Export Dialog that allows you to save the current file with a new name and format.

**Exit**
Exits GoldWave.

# Edit Menu Commands

Undo
Reverses the last modification.

Cut
Copies the block into the clipboard and deletes it from the sound window.

Copy
Copies the block into the clipboard.

Paste
Pastes the clipboard into the sound window.

Mix
Mixes the clipboard with the sound window.

Delete
Deletes the block.

Trim
Removes sounds outside the block.

**Insert space (Space Button)**
Inserts a blank space into the sound window of a size you specify in seconds.   The space is inserted at the start marker's position.

**Select view (Sel Vw Button)**
Moves the start and finish markers to the far left and far right of the sound graph.

**See Also**
Edit individual channels of stereo sounds
Direct editing of individual samples
Editing Overview

# Undo (Undo Button)

Reverses the most recent change made to a sound.   Only one undo is possible across all sound windows.   The undo feature keeps a copy of the original data in a temporary file. This file is created in the temporary directory specified by the TEMP environment variable. Since the undo feature has to save large amounts of data, you will notice a slight delay before each edit/effect command is performed.   The undo feature can be disabled via Settings dialog.

# Cut (Cut Button)

Removes the block from the active sound and puts it in the clipboard. The contents of the clipboard can then be pasted into a sound window using **Paste**.   Note that if only the left or right channel is active in a stereo sound, then only that channel is removed.   Since it is not possible for one channel to be larger than the other, the end of the cut channel is padded with silence.
To cut:

1)	Move the start and finish markers to the part of the sound you want to cut.
2)	Choose **Cut** from the **Edit** menu or click on the **Cut** button.

**See Also**
Delete
Trim

# Copy (Copy Button)

Copies the block into the clipboard.   The block is not removed.   The contents of the clipboard can then be placed into a sound window using **Paste**.
To copy:

      1)      Move the start and finish markers to the part of the sound you want to copy.

      2)      Choose **Copy** from the **Edit** menu or click on the **Copy** button.

# Paste (Paste Button)

Places the sound in the clipboard into the active sound.   The sound is inserted at the start marker's position.   The length of the active sound is increased so that the clipboard sound will fit.   The clipboard sound is automatically converted to match the attributes of the active sound.

To paste:

1) Move the start marker to the place where you want to paste the clipboard sound.

2) Choose **Paste** from the **Edit** menu or click on the **Paste** button.

**See Also**
Mix

# Mix (Mix Button)

This is a special editing feature for sounds.   The sound in the clipboard is blended (superimposed) with the active sound.   You are asked for the mix volume.   This volume is applied to the clipboard sound as it is being mixed.
To mix:

       1)      Move the start marker to the place where you want to mix the clipboard sound.

       2)      Choose **Mix** from the **Edit** menu or click on the **Mix** button.

   3)      Enter the volume to mix the clipboard (100 = normal volume).

   4)      Choose **OK**.

**See Also**
Volume
Paste

# Delete (Delete Button)

Delete permanently removes the block from the active sound.   The block is not copied to the clipboard.   Note that if only the left or right channel is active in a stereo sound, then only that channel is removed.   Since it is not possible for one channel to be larger than the other, the end of the deleted channel is padded with silence.

To delete:

1)      Move the start and finish markers to the part of the sound you want to delete.

2)      Choose **Delete** from the **Edit** menu or click on the **Delete** button.

**See Also**

Cut

Trim

# Trim (Trim Button)

Trim permanently removes the parts of the sound that are outside the block from the active sound.   The parts are not copied to the clipboard.   Note that if only the left or right channel is active in a stereo sound, then only that channel is removed.   Since it is not possible for one channel to be larger than the other, the ends of the trimmed channel is padded with silence.
To trim:

1)      Move the start and finish markers to the part of the sound you want to delete.
2)      Choose **Trim** from the **Edit** menu or click on the **Delete** button.

**See Also**
Cut
Delete

# Effects Menu Commands

**Cross-fade**
Fades from the start marker's value to the finish marker's value.

Echo
Produces an echo in the block.

**Exchange channels**
Exchanges the left and right channels.

Filter
Displays a pop-up menu listing several filter related commands.

Mechanize
Adds a mechanical characteristic to sounds.

Pan
Sets internal balance and left/right channel panning.

Invert
Turns the block up-side-down.

**Reverse**
Reverses the block so that it will play backwards.

**Silence**
Silences (mutes) the block.

Volume
Displays a pop-up menu listing several volume related commands.

Playback rate
Changes the rate at which the entire sound is played.

Resample
Changes the sound so that it can be played at a different sampling rate.

Expression evaluator
Brings up the expression evaluator.

**See Also**
Editing Overview
Edit Menu Commands

# Echo

Produces an echo effect with the block.   The echo delay and volume can be entered after choosing this command.   You may want to try the default values first.

The longer the delay, the longer it takes for the echo to "bounce" back.   Try values less than 0.1 for a large room, 0.3 for a baseball stadium, above 0.3 for a canyon echo.

The lower the volume, the quieter the echo will be. Values less than 50 give good results.

The Reverb check box enables or disables regeneration of the echo.

To make the echo sound correct, GoldWave extends the effect slightly outside the block boundary.   This may increase the length of the sound.   If you do not want to modify sound outside the block or you do not want the length of the sound to change, use the **Options | Editing** dialog to disable modification outside the block.

To add an echo:

1)    Move the start and finish markers to the part of the sound you want to add an echo.
2)    Choose **Echo** from the **Effects** menu.
3)    Enter the delay time.
4)    Enter the volume.
5)    Check Reverb if desired.
6)    Choose **OK**.

# Filter

Brings up a pop-up menu listing several filter related commands.   Filters are used to remove a range of frequencies from the sound.   They can produce a variety of effects on the sound.

**Lowpass 50%**
Passes the sound through a lowpass filter.   Frequencies above one half of the Nyquist (or one quarter the sampling rate) are removed.   For example, a sound recorded at 44100Hz will have frequencies above 11025Hz removed.

**Lowpass 25%**
Passes the sound through a lowpass filter.   Frequencies above one quarter of the Nyquist (or one eight the sampling rate) are removed.   For example, a sound recorded at 44100Hz will have frequencies above 5512.5Hz removed.

**Highpass 10%**
Passes the sound through a highpass filter.   Frequencies below one tenth of the Nyquist (or one twentieth the sampling rate) are removed.   For example, a sound recorded at 44100Hz will have frequencies below 2205Hz removed.

**Highpass 25%**
Passes the sound through a highpass filter.   Frequencies below one quarter of the Nyquist (or one eight the sampling rate) are removed.   For example, a sound recorded at 44100Hz will have frequencies below 5512.5Hz removed.

# Fade out

Gradually decreases the volume throughout the block.   The percentage of fade can be entered after choosing this command.   The fade percentage is the amount that the volume should decrease.   A value of 100 fades to complete silence.   A value of 50 fades to half the original volume.
To fade out part of a sound:

1)      Move the start and finish markers to the part of the sound you want to fade.
2)      Choose **Fade out** from the **Effects | Volume** pop-up menu.
3)      Enter the fade percentage, then choose **OK**.

**See Also**
Fade in

# Fade in

Gradually increases the volume throughout the block.   The initial volume percentage can be entered after choosing this command.   A value of 25 starts with one quarter volume and fades in to full volume.   A value of 0 starts at silence and fades in to full volume.
To fade in part of a sound:

1)      Move the start and finish markers to the part of the sound you want to fade in.

2)      Choose **Fade in** from the **Effects | Volume** pop-up menu.

3)      Enter the initial volume percentage, then choose **OK**.

**See Also**
Fade out

# Invert

Reflects the block data about the x (time) axis.   This produces no noticeable effect in mono sounds and has a slight effect in stereo sounds.   Inverting a single channel of a stereo sound will produce a surround-sound effect.

To invert part of a sound:

        1)      Move the start and finish markers to the part of the sound you want to invert.

        2)      Choose **Invert** from the **Effects** menu.

# Maximize

Searches the block for the maximum percent that the volume can be increased without producing distortion or clipping errors.   This volume is then applied to the block.   If the percentage is above 2000% or equal to 100%, no changes will be made.
To maximize the volume of part of a sound:

1)	Move the start and finish markers to the part of the sound you want to increase the volume.

2)	Choose **Maximize Volume** from the **Effects | Volume** pop-up menu.

# Mechanize

Adds a robotic or mechanical characteristic to sounds.   The percentage of quality can be entered after selecting this command.   Low values produce an untuned radio effect.   Higher values give a rough distorted effect.

To mechanize part of a sound:

> 1)      Move the start and finish markers to the part of the sound you want to mechanize.
> 2)      Choose **Mechanize** from the **Effects** menu.
> 3)      Enter the quality percentage, then choose **OK**.

# Pan

You are presented with the <u>Shape Dialog</u>.   For panning, the shape dialog is divided into green and red regions, representing the left and right channels respectively.   The line, initially located between the regions, represents the center for panning.   By bending and/or moving the line, you can alter the sound's left/right balance or pan to and from each channel.

# Playback rate

Changes the playback rate of the entire sound.   The sound will play faster (or slower) and its pitch will be higher (or lower).   Essentially, this just changes the first number in the information bar.   Values of 11025, 22050, and 44100 are the recommended values.
To change the playback rate of the entire sound:

       1)     Choose **Playback rate** from the **Effects** menu.
       2)     Enter the new rate, then choose **OK**.

The **Spd** control in the <u>Device Controls</u> window also affects playback speed.   It only changes the device's playback rate, whereas the **Playback rate** command changes the rate within the sound.   A speed of 1.00 is normal.   The new speed will be used the next time a sound is played.
To change the playback rate of the audio device:

       1)     Move the **Spd** scroll bar thumb to the left or right.   GoldWave will automatically find the closest speed that is compatible with your audio device.

**See Also**
<u>Resample</u>

# Resample

Changes the sampling rate of the entire sound.   Unlike **Playback rate**, this command re-calculates and optionally interpolates all the data so that the pitch and playback time are not affected.   You are prompted to enter a new rate.   Values of 11025, 22050, and 44100 are the recommended values.   If you check the **Interpolate** check box, interpolation is used to re-calculate sample values at fractional positions.   This usually gives a higher quality result.

To change the sampling rate of the entire sound:
        1)     Choose **Resample** from the **Effects** menu.
        2)     Enter the new rate.
   3)     Choose **Interpolate** if required.
        4)     Choose **OK**.

**See Also**
Playback rate

# Change

Modifies the block so that it sounds louder or softer.   The percentage of volume can be entered after selecting this command.   Values less than 100 make the sound softer and values greater than 100 make the sound louder.   A value of 100 has no effect.   Enter 50 to half the volume and 200 to double the volume.
To maximize the volume of part of a sound:

1) Move the start and finish markers to the part of the sound you want to change the volume.
2) Choose **Change** from the **Effects | Volume** menu.
3) Enter the new volume percentage, then choose **OK**.

# Shape

You are presented with the <u>Shape Dialog</u>.   With the Shape Dialog, you can define the amplitude envelope of a sound.   The shape line is initially horizontal at 100.   By bending/moving the line, you can easily change the volume of different parts of the sound.

# Volume

Brings up a pop-up menu containing several volume related commands.   Volumes are usually specified by a percentage of the sound's original amplitude.

The **Vol** (volume) and **Bal** (balance) controls in the Device Controls window also affect volume (if your audio device supports them).   They change the device's output volume, whereas the **Volume** commands actually changes the volume within a sound.
To change the output volume of the audio device:
> 1)      Move the **Vol** or **Bal** scroll bar thumb to the left or right.

Change
Changes the volume.

Fade in
Gradually increases the volume throughout the block.

Fade out
Gradually decreases the volume throughout the block.

Maximize
Increases volume as high as possible without distortion.

Shape
Allows envelope shaping.

**See Also**
Pan

# Options Menu Commands

**Input device**
Allows you to choose a device for recording sounds.   It also shows you the capabilities of your device.

**Output device**
Allows you to choose a device for playing sounds.   It also shows you the capabilities of your device.

**Aux volume**
Sets the output volume on an auxiliary device.

<u>Settings</u>
Allows you to set certain features in GoldWave.

<u>Editing</u>
Allows you to set sound editing options.

# Editing Options

By selecting the menu command **Options | Editing**, you are presented with a dialog box.

The **Channel Editing** group lets you control which channel (or channels) will be edited for stereo sounds.   For example, if you choose "Left channel", all effects and editing will only change or use the left channel.    You can then use **Edit | Copy** to extract the left channel into the clipboard or use **Edit | Mix** to mix the clipboard with the left channel and so on. You can also use the **Chan** button to quickly switch to different channel editing.

The **Modify outside block** option prevents certain effects (like Echo) from changing the sound outside the block markers.

**See Also**
Editing Overview

# Output device

The list shows you the names of output devices/drivers.   Above the list is a table that tells you what sound attributes/formats the driver supports.   All boxes with check marks in them are supported by the currently selected driver.   You can select any driver to see its capabilities.

# Input device

The list shows you the names of input devices/drivers.   Above the list is a table that tells you what sound attributes/formats the driver supports.   All boxes with check marks in them are supported by the currently selected driver.   You can select any driver to see its capabilities.

# Aux volume

This dialog allows you to set the output volume on an auxiliary device.   This may be useful when recording from a CD-ROM.   A list of installed auxiliary devices is displayed at the bottom of the dialog.
To change auxiliary output volume:
> 1)      Select a device.   If the device supports volume control, the "left" control will be enabled.   If the device supports stereo volume control, both the "left" and "right" controls will be enabled.
>
> 2)      Adjust the volume with the "left" and/or "right" controls.

# Settings

**Sound Path**
Used by **File | Open**.   You can specify the directory where you keep your sound files.   If you type "d:\sound\wave", for example, the **File | Open** dialog will automatically list the files in that directory whenever you start GoldWave.

**Save window positions**
If this is checked, the Main window and Device Controls window positions will be saved when you exit GoldWave.   This means you will not have to adjust window positions every time you start GoldWave.

**Decode file to 8-bits**
If this is checked, any encoded files will be converted to 8-bit PCM format.   This will cause some loss of quality, but will allow playback on a larger variety of audio devices.   If the box is not checked, the data is converted to 16-bit PCM format. If your audio device supports 16-bit PCM files, uncheck this box.

**Quick selecting**
This check box allows you to choose which method to use when selecting a block.

**Graph averaging**
If this box is checked, the graphs displayed in Sound windows will be drawn using an average of samples rather than just one sample.   While averaging can give a cleaner display, the amplitude will be somewhat inaccurate.   Averaging is not applied when the zoom level is 1:10 or closer (such as 1:1, 5:1, or 20:1).

**Allow undo**
Enables or disables the undo feature.   Since the undo feature can use large amounts of disk space and slow editing, you may want to disable undo by unchecking this box.

**User zoom**
This is where you specify the level of zoom for the **View | Zoom user defined** command (**User** button).   Values between 0.01 to 100 are valid.

**See Also**
Editing Overview
View Menu Commands

## Playing and Recording Sounds

To play part of a sound:

      1)    Move the start and finish markers to the part of the sound you want play.

      2)    Choose the ▶ button on the **Device Controls** window.

You can pause playback with the ❚❚ button.

The ◀◀ (rewind) button and the
▶▶ (fast forward) button move you quickly through the file.

To record a sound (provided your audio device can record):

      1)    Move the start and finish markers to the part of the sound you want to record over (you can use **Edit | Insert space** to create a place to record the sound).

      2)    Choose the ⬤ button on the **Device Controls** window.

You can use the ■ button to stop playback or recording at any time.

**See Also**
Editing Overview
Device Controls Window

# Raw File Format

The Raw File Format dialog is presented if any of the following occur:
1) The file has no header information.
2) The file does have a header, but the file structure is incorrect for the given format.
3) The file has a new format that GoldWave does not recognize.
4) The file is in a format not supported by GoldWave.

The dialog allows you to specify the attributes for the data in the file.   See the manual for a table of supported formats in the **Open** subsection.

To specify the attributes:
1) Select one of the radio buttons in the **Bits** group.
2) Select the number of channels.   Stereo data must be interleaved (i.e. left and right channel data for a single sample are grouped together).
3) Select the sample rate.
4) Select "Signed" or "Byte swapped" as appropriate.
5) Choose OK.
6) Play the sample to ensure the attributes are correct.

If the attributes are wrong, the sound will play distorted.   You will have to close the sound window and reopen it using a different format.
If the sampling rate is incorrect, the sound will play too fast or too slow.   You can use the **Effect |** Playback rate to quickly fix this.

Warning: If you save the file later, any header information will be lost.   You are encouraged to save the file under a different name using **File | Export** or **File | Save as**.   Be sure to give a meaningful filename extension.

# Convert Attributes

By using **File | New** in conjunction with **Edit | Copy** and **Edit | Mix** or **Edit | Paste**, you can change the attributes of a sound file.

To convert:
1) Use **File | New** to create a new sound window with attributes you need.
2) Use **File | Open** to open the sound file to be converted.
3) Choose **Edit | Copy** to copy the entire file into the clipboard.
4) Active the new sound window by clicking on its title bar.
5) Choose **Edit | Mix** or **Edit | Paste** to convert the sound and place the result in the new sound window.

Using **Edit | Mix** with a volume of 100 is similar to using **Edit | Paste**.   **Paste**, however, will insert the converted sound, leaving 5 seconds of blank space at the end of the new sound window.

You can also use the **File | Export** command to save a file in a different format and with different attributes.

**See Also**

Editing Overview
Edit Menu Commands
File Menu Commands

# Shape Dialog

The shape dialog consists of a graph window and several buttons. The graph window initially contains a single horizontal line with two endpoints (shown as square boxes). By clicking the left mouse button anywhere inside the graph window, you can insert new points to "bend" the line into a variety of zigzag shapes.   You can move points up and down by clicking and dragging them to a new location.

To remove a point (except an endpoint), click the right mouse button over the point. Endpoints cannot be removed.

To remove all the points (except the endpoints), choose the **Clear** button.

The shape dialog is used for <u>volume shaping</u> and <u>panning</u>.

# Direct Editing of Samples

GoldWave lets you directly edit samples with the mouse.   To do this, you must first zoom in so that individual samples are visible (see <u>View Menu Commands</u>).

      1)      Zoom in 5:1 or closer.

      2)      Place the mouse arrow directly over the sample you want to edit.   The arrow will change into a thin horizontal line with two small arrows pointing to it.

      3)      Click and hold the left mouse button.

      4)      Move the mouse up or down to change the sample.

      5)      Move the mouse slowly left or right to change neighbouring samples (if you move too fast, you may skip a sample).

      6)      Release the mouse button.

# Expression Evaluator

The Expression Evaluator is a versatile tool for manipulating and generating audio data.   For example, say you want to generate a sine wave.   The mathematical equation is:

$$y = \sin(2 * pi * f * t)$$   where f is the frequency, t is the time and pi = 3.14159...

To generate this function in the active sound window, you would:
1)   Choose **Effects | Expression evaluator**
2)   Type in the expression in the large Expression edit box:
       **sin(2*pi*f*t)**
3)   Enter the desired frequency in the "f" edit box (500Hz, for example).
       **500**
4)   Choose the **Start** button.

You can also use the expression evaluator to implement new effects.   To create a tremolo effect, you would:
1)   Choose **Effects | Expression evaluator**
2)   Type in the following expression (assuming the active sound is number 1):
       **wave1(n) * (0.6 + 0.4 * sin(2*pi*f*t))**
3)   Enter the tremolo rate in the "f" edit box (4 per second, for example).
       **4**
4)   Choose the **Start** button.

You can alter the depth of the tremolo by changing the values "0.6" and "0.4" (to "0.8" and "0.2" for example).

See the manual for more information.

# Device Controls Setup

The Setup button presents a dialog containing many configurable options for the Device Controls window.   These options are described below.

**Graph type**
The **Graph type** group allows you to set the type of oscilloscope to display.   These include:
      **Amplitude:** the sound is shown as a series of amplitudes.
      **Spectral:** the sound is shown a frequency spectrum.
      **None:** the oscilloscope is disabled.

**Controls**
The **Controls** group lets you configure the speed of the fast forward and rewind buttons. By entering a value of "3.00" for the **Rewind time**, for example, the rewind button will move the current position backwards through the sound three times as fast as regular playback speed.
By entering small numbers (such as "0.01") the rewind and fast forward buttons will move the current position very slowly through the sound.   This is useful for finding pops or clicks, since the oscilloscope will also move slowly through the data.

**Graph length**
The size of the oscilloscope windows can be changed by using the radio boxes in the **Graph length** group.   If **Long** is selected, the graph will show 256 points.   If **Short** is selected, the graph will display 128 points.

**Looping**
**Looping** options allows both playback and recording to be looped continuously.   Record looping is useful when you want to monitor the audio inputs.   This lets you to adjust volumes to prevent clipping.   You can also analyze the input using the Spectral oscilloscope. You may want to use **File | New** to create a working area for record looping.

**Playback**
The **Playback** options define what part of the sound will be played when the play button is pressed.   If **All** is checked, the entire sound is played.    If **Window** is checked, only the visible segment of the sound is played.   If **Selected** is checked, only the sound between the start and finish markers is played.

**Other**
The **Spectral windowed** check box enables or disables windowing of sound data before spectrum processing.
If the **Grid on graph** check box is checked, the oscilloscope windows will have horizontal and vertical gridlines.
If the **Save setup** check box is checked, all the settings will be saved in GoldWave's ".ini" file after the **OK** button is pressed.

**Positioning**
The **Positioning** group lists several methods for determining the current position when a sound is played.   This position is used to synchronize the oscilloscopes and the white "current position" line.   GoldWave relies heavily on correct positioning for many of the device controls such as rewind, fast forward, and speed adjustment.

# Export Dialog

This dialog lets you save a sound in a wide variety of formats.   You are presented with two lists.   Use the left list to specify the file format and the right list to specify the attributes.   Note that not all attributes are supported by some formats.   Pick the format first to see what attributes are available.

After you have selected the format and attributes, choose the **OK** button.   You will then be presented with the standard file dialog where you can specify the filename for the exported file.

When exporting a file in certain formats such as Sun (.au), GoldWave automatically converts the data to a compatible sampling rate.

This command is useful when files must be used on platforms other than Microsoft Windows.

# Keyboard Commands

| Keystroke | Action |
|---|---|
| Shift+Del | Remove block and copy it into the clipboard. |
| Ctrl+Ins | Copy block into the clipboard. |
| Paste | Copy clipboard into the active sound at the start marker's position. |
| Del | Delete the block, permanently. |
| Shift+Ctrl+Ins | Mix clipboard with the active sound at the start marker's position. |
| Ctrl+T | Trim sound.   Removes all data outside the block. |
| Left | Scrolls the active Sound window left. |
| Right | Scrolls the active Sound window right. |
| Pg Up | Scrolls the active Sound window left one screen. |
| Pg Dn | Scrolls the active Sound window down right screen. |
| Home | Redraws the active Sound window at the start marker's position. |
| End | Redraws the active Sound window at the end marker's position |
| Ctrl+Home | Redraws the active Sound window at the beginning of the sound. |
| Ctrl+End | Redraws the active Sound window at the end of the sound. |
| F1 | Starts on-line help. |
| Alt+F6 | Switch between Main window and Device Controls window. |
| Ctrl+F6 | Switch between Sound windows. |

Use the following keys when the Main window is active:

| | |
|---|---|
| Space | Plays a sound. |
| F4, F5, F6, F7, F8 | Plays, fast forwards, pauses, rewinds, and stops respectively. |
| Pause | Pauses a sound. |
| Esc | Stops a sound. |

# Registering

GoldWave is a shareware program.   You may use this program for a trial period of   two weeks.   After this time you can either register the program or delete it from your system. To register and encourage further development, please follow the directions in the ORDER.TXT file included with this program.