

# Lyra Help Topics

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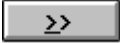
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# Introduction

Welcome to Lyra! This program is designed to be an easy way to compose music on your PC. Lack of music keyboard skills is not an impediment. You can easily write or transcribe music using a mouse. The music is displayed in standard notation, just like sheet music. Or you can use the program to just play music.

A quick way to become acquainted with Lyra is to read the help pages in sequence by clicking on the  button or pressing the period (.) key which will advance the display to the next page. You also can position the cursor on different parts of the Lyra window and get a description of the area by pressing the F1 key. If you are unfamiliar with how the Windows help system works, please select the **How To Use Help** command from the **Help** menu above or press the F1 key.

# Shareware Information and Credits

This Windows version of Lyra is being distributed as "shareware". If you find the program to be useful, please help support its continued development by paying a registration fee of \$20. In return, you will be sent a copy of the latest version and given the opportunity to receive updates for a small fee. See the [Registration Form](#) topic. Your input is welcomed; if you have suggestions for new features or notice that things don't seem to work right or are unnecessarily difficult to use, please let me know. See the [Diagnosing Problems](#) topic for more information.

Please direct all comments, suggestions, and inquiries to:

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MusicWare  
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Special thanks to the folks at Borland International for their excellent Pascal compiler, to Ed Baker of Bakersfield, California for his painstaking work on the included music files, and to the many users who have provided feedback and the impetus to make improvements.

# What you need to run Lyra

Lyra requires a computer that can run Windows 3.1 (or a later version); if you wish to play music, you must have a Windows compatible sound card such as a Sound Blaster or a MIDI interface card such as an MPU-401 and a MIDI capable synthesizer.

Windows comes with the necessary software needed to work with a Sound Blaster or MPU-401 card. All that you have to do is to follow the directions in the Windows manual to make sure that the needed driver is installed and properly configured. More information in the [Installing a Music Device Driver](#) topic.

If you are using a different sound card or MIDI interface, you may need to install special drivers. These drivers are usually supplied by the manufacturer on a disk. If you don't have such a disk, contact the manufacturer.

This version assumes that Windows is running on a VGA monitor with a resolution of 640x480 or higher.

# What Lyra Can Do

Lyra is like a musician's word processor. With it, you can enter music into the computer and then play it back. Since you are working with standard musical notation, it is easy to work with if you already know how to read music; if you don't, you will find that you will learn quickly! If you can play a keyboard, you can use the player piano display at the bottom of the window to enter notes.

Lyra is a playback sequencer. That is, it will play a sequence of notes but cannot record music from a MIDI keyboard. The best way to think of Lyra is as an eight voice choir. Each voice in the choir corresponds to a track in Lyra. Just as a voice can sing only one note at a time, each track is limited to one note at a time. Chords are possible, but you have to split the notes up between the tracks. This may seem limiting, but you will find that it makes editing music very simple.

Lyra has provision for controlling how your music will sound. You can easily vary the tempo (the speed at which it is played), the volume, and the instruments sounds produced by each track. This means that you can play music that has a good deal of expression.

# Window Description

The Lyra window is divided into five main areas:

- the menus at the top
- the current file name just below the menus at the left,
- the tape controls to the right of the file name
- the track selection boxes on the far right,
- the music score in the middle,
- the tool box in the middle below the music score,
- the player piano keyboard,
- and the help bar at the bottom.

# File Name Area



The file name area at the top left tells you the name of the file you have opened. It is changed when you open or save a file.

Clicking on the file name will bring up the **File Load** dialog box, giving you a short cut to loading in a new music file. Clicking on it with the right mouse button is a shortcut for saving music.

# Tape Controls



The tape controls, which are located at the top of the window in the middle, give you controls that are similar to the traditional tape recorder controls that most people are familiar with. There are six controls: **reverse** (jump to the first measure of music), play, **stop**, **forward** (jump to the end of music), **go to** a bar number, and turn all notes off. If you're not sure what each control does, simply point the cursor at the control in question and look at the help bar at the bottom of the window. If no description appears, it is because the control is disabled until music playback is started.

While music is playing, the controls that cannot be selected turn gray and the **go to** control turns from green to red. While it is red, clicking on it will stop the music at the currently displayed bar number. If you stop music by clicking on the **stop** button, the music display will return to the measure that you started from.



# Track Selection Boxes



The track selection boxes are at the top right. Lyra uses eight tracks, and each one can be thought of as a vocal part in a choir, or an instrument in a band (such as a flute, sax, or trumpet). In order to enter or edit music, you must first select a track so that Lyra knows where the music is supposed to go.

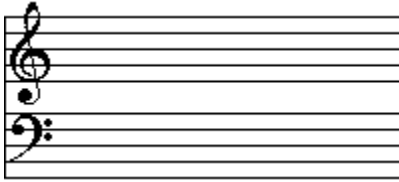
Clicking on a box makes the color reverse for that box; clicking again restores the color to what it was. When a box is black, that track is selected and the music display changes so that only the notes for the selected track are black, and all the rest are grey. Only one track may be selected at a time. This can be used to simplify the display when you have a dense score.

Clicking the right mouse button on a track box will bring up a dialog box which will let you configure a track. This allows you to set the MIDI channel, master volume, transpose, instrument, and pan.

You may also select a track box by pressing the control key with the number of the desired box. For example CTRL+3 will select the third track. Adding the shift key will bring up the track configure dialog box (such as SHIFT+CTRL+3).

While music is playing, you may still select any track but you cannot call up the track configure dialog box.

# The Musical Staff



The musical staff is the place where notes and rests are placed. The vertical position on the staff is the way the pitch of a note is indicated. The higher on the staff, the higher the pitch. The horizontal position shows the time progression of the music, reading from left to right.

Lyra makes use of the grand staff, which is made up of the treble clef and the base clef. You will notice that the horizontal lines on which notes are placed are organized into two groups: the upper group starts with the treble clef symbol and the lower one starts with the bass clef. These clef symbols are used to indicate what pitches are associated with each level on the clef.

As you move the cursor up and down over the grand staff, watch the help bar at the bottom of the window. It will tell you the pitch name (such as A, B, C, D, E, F, or G) and the octave number.

Clicking the left mouse button (or pressing the Enter key) will result in placing a note, rest, or other symbol in the music. Clicking the right mouse button results in a small pop-up menu listing three possible commands: **Delete**, which will delete a note, **Paste**, which will insert music that has been cut or copied, and **Select Track**, which will automatically select the track that the cursor was positioned over.

More information about how to enter music can be found in the [edit music](#) topic.

# The Tool Box



The tool box in the middle at the bottom of the window, contains a number of tools that will help you in creating and editing music. A tool may be selected by clicking on it with the mouse. More information can be obtained about each tool by clicking on the tool icon above or selecting a topic from the following list:

[Notes and Rests](#)

[Pitch Modifiers](#)

[Length Modifiers](#)

[Select Tool](#)

[Special Tools](#)

## The Tool Box - Select Tool

The Select tool is used to mark a block of music that can be Copy or Cut. It is the cross shaped tool. When it is selected, all other tools are disabled and the cursor changes into the shape of a cross while in the staff window. This tool may also be selected by pressing the space bar key.

The start of a block is marked by selecting a track and clicking on a note; that note and the following ones in that track turn red. Mark the end of the block by clicking on the last note. A block may be deselected by simply clicking on the first note in the block or selecting the **Unmark** command from the **Edit** menu.

After a block has been marked, you can use the Edit menu to copy or cut the notes. Then you can paste those notes at some other point or into a different track.

## The Tool Box - Special Tools



This group of tools is used to enter special symbols into the score which change the volume, tempo, and the like. All of them can have more than one value, so the [Help Bar](#) will tell you not only the name of the tool but also the value that has been selected. When you click on the music score, a special symbol will be entered. Instead of playing a note, this symbol will do something else like changing the volume, tempo, or the sound your synthesizer makes.

The first special tool is the [Volume tool](#). When you click on it, a pop-up menu appears, listing all of the available volume symbols. When you release the mouse button, the volume that was highlighted is selected and can be entered into the music. The [Help Bar](#) will display the message **Ready to enter Volume pp** (or whatever volume you selected) while the cursor is in the music score area. More information about volumes in [Volume Settings](#).

The next tool is the [Tempo tool](#). When you click on it, a dialog box appears, asking you to enter a new tempo. This tempo is the number of quarter notes per minute. To remind you of what tempo you entered, the [Help Bar](#) will display the message **Ready to enter Tempo 100** (or whatever tempo you entered).

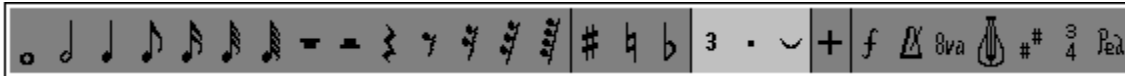
Next is the [Octave tool](#). Clicking on it will pop up a menu with two choices: **8va** or **loco**. **8va** is used to raise or lower a track by an octave. Placing the marker above the music staff will raise the track an octave; placing it below the music staff will lower it an octave. **loco** is used to cancel the effect of the **8va** and can be placed anywhere on the staff.

The [Instrument tool](#) is supposed to look like guitar. It will let you insert instrument changes in your music at any point. It is very important that the [Instrument Dialog](#) be correctly set up so that the right program change number is associated with each instrument name for your synthesizer. When you click on the tool, a pop-up menu will appear, listing all of the available instruments. When the cursor is on the music score, the [Help Bar](#) will tell you what instrument you selected.

The next two tools bring up a dialog box which lets you change the key and time signatures. This version allows only a single key and time signature; future versions will allow changes at any point.

The last tool, the [Controller tool](#), is like the Instrument tool. When you click on it, a menu will pop up listing the available controllers. You must fill in the [Controllers Dialog](#) to define a controller.

## The Tool Box - Length Modifiers



The length modifiers consist of the triplet, dot, and tie tools. These will modify the length of a note or rest. Pressing the **comma**, **period**, **T** or / (slash) keys will select the triplet, dot, or tie tools respectively. Selecting a pitch modifier tool that has already been selected will result in its being unselected. You may select any combination except that when a rest has been selected, a tie may not also be selected. A length modifier will remain selected after entering a note if the **Persistent Note Modifiers** box has been marked in the [Preferences](#) dialog box.

See the [Length Modifiers](#) topic for more information.

## The Tool Box - Pitch Modifiers



These tools (sharp, natural, and flat) will modify the pitch of a note. Selecting an pitch modifier tool that has already been selected will result in its being unselected. If a rest is selected, these tools are not selectable. Only one of these tools may be selected at a time. Pressing keys **S**, **N** or **D**, and **F** will select the sharp, natural, or flat tools respectively. A pitch modifier will remain selected after entering a note if the **Persistent Note Modifiers** box has been marked in the [Preferences](#) dialog box.

See the [Pitch Modifiers](#) topic for more information.

## The Tool Box - Notes and Rests



The tools are organized into several groups. The first group consists of notes and rests. Select one by clicking on it. Only one note or rest can be selected at a time. Pressing keys 1 through 7 will select a note, and SHIFT+1 through SHIFT+7 select the corresponding rest. The cursor will change shape to correspond to the note length selected when it is within the area of the music staff.

See the [Notes and Rests](#) topic for more information.



# The Help Bar

The help bar is a gray bar that goes across the bottom of the window. Its purpose is to assist you by telling you what sorts of actions are possible, depending upon where the cursor is.

You will find more complete descriptions of Pulldown Menu commands here; as you move the cursor over the tape controls, the track boxes, the music score, and the tool box, you will find specific information as to what action will be taken by clicking on that area, the track number, the pitch on the score, or the type of tool you selected.

# Using the Keyboard

Almost every function of the mouse can be duplicated with the computer keyboard. Here is a list of the valid key press commands (other than those associated with the pulldown menus):

- C** - open the controllers dialog box
- c** - select the controllers tool
- d** - select the natural tool (alternate for n)
- f** - select the flat tool
- I** - open the instruments dialog box
- i** - select the instruments tool
- k** - select the key signature tool
- m** - select the time signature tool
- n** - select the natural tool
- o** - select the octave tool
- p** - play music
- r** - select the tempo tool
- s** - select the sharp tool
- t** - select the tie tool
- V** - open the volumes dialog box
- v** - select the volume tool
- 12345678** - select a note length
- SHIFT+12345678** - select a rest length
- CTRL+1234567** - select a track
- CTRL+SHIFT+12345678** - open the track editor dialog box
- ,** - select the triplet tool
- .** - select the dot tool
- /** - select the tie tool (alternate for t)
- enter** - enter a note or rest
- up arrow** - move the cursor up one step on the music score; if you press the SHIFT key as well, you can adjust the cursor more precisely.
- down arrow** - move the cursor down one step on the music score; if you press the SHIFT key as well, you can adjust the cursor more precisely.
- page up** - move the cursor up one octave on the music score
- page down** - move the cursor down one octave on the music score
- home** - move the cursor to the left hand side of the window
- ctrl+left** or **ctrl+right arrow** - back up or advance one page

# Editing Music

Notes may be easily placed on the music staff by selecting the desired note or rest length from the toolbox and clicking on the music staff. Just as easily, you can make changes to existing music.

[Entering New Music](#)

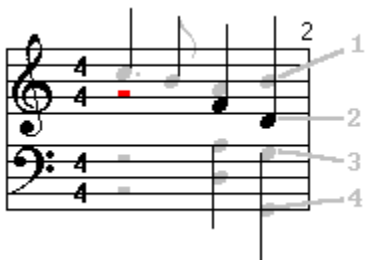
[Changing Existing Music](#)

[An Example of Transcribing Music](#)

## Entering Music

To enter new music into a score, you must first select a track. Next select a note or rest from the toolbox at the bottom of the window. Select any pitch or length modifiers you wish. Now position the cursor on the music staff at the correct pitch and click the left mouse button (or press **Enter**). A new note or rest will appear on the staff. Add as many notes as you wish. Each track is limited to one note at a time, so if you wish to enter chords, you will have to split the notes between the tracks.

Here is an example of two four note chords: the notes have been entered into tracks 1 through 4. Since the first two beats of the measure had only a melody (which was entered into track 1), tracks 2 through 4 started out with half rests. Track two was selected, making its notes black, and the rest gray.



A note may be inserted between two existing notes in the same track by clicking between them at the right pitch. If you click directly over a note, then that note will take on the attributes selected in the toolbox.

If you click after the last note in a track, then the new note will be added immediately after the last note, regardless of how far to the right you click.

Please note that new notes cannot be entered unless you have first selected a track!

Also see the [Example of Transcribing Music](#).

# Changing notes

A note's pitch may be changed by dragging it to a new pitch. This is done by putting the cursor over it, pressing the left mouse button and holding it down, moving the cursor up or down to the new pitch, and releasing the mouse button. The cursor will change shape while a note is being dragged. If no track has been selected, you must position the cursor directly over the note before dragging; if a track has been selected, then the note that is black directly above or below the cursor can be dragged. You will find that dragging is easier when a track has been selected. If you move the cursor too far to the left or right, the pitch change will be cancelled and the cursor will return to its normal shape.

You can change a note's length or change the accidental by selecting the desired length or pitch modifier in the toolbox at the bottom of the screen and then clicking the mouse while the cursor is positioned directly over the note in question.

A note may be deleted by positioning the cursor over the note and pressing the **Delete** key or SHIFT+D. You can also press the right mouse button and select the **Delete** item from the menu that pops up.

Inserting a note is done by selecting a track, and positioning the cursor between two notes and clicking the left mouse button or pressing the **Enter** key.

# Sound Card Problems

If you can't get your music to play right, you may be having problems with your sound card (such as Ad Lib, Sound Blaster, etc.). Here is a list of some known problems and solutions.

## **Sound Blaster and Sound Blaster Pro:**

P:When I select **SB Pro MIDI Out** in the Preferences dialog, the program seems to work OK but I get no sound.

S:You will get sound only if you have a MIDI synthesizer hooked up to the Sound Blaster with a special cable. Select **SB Pro 2 Synth** instead if you don't have a synthesizer.

P:Even though I've set one track's stereo position to all the way left and another's to all the way right, when I play the music using my Sound Blaster (FM), the sound comes out in the center.

S:Make sure you are using the most recent Sound Blaster drivers. The **SB Pro 2 Synth** has stereo capability whereas the **SB FM Synth** does not.

P:I've set up two tracks, each one with different instruments. But when I play the music, both tracks sound the same.

S:You probably have set both tracks to the same channel. Select the Edit Tracks from the **Edit** menu and make sure that each track has a different channel.

P:I surely would like to be able to play music using instrument sounds other than those set up in Lyra.

S:The number and types of sounds you can play with Lyra depends on the card's device driver. Follow the directions given in the Playing multiple instrument sounds topic.

# Playing Music

To play music, you must have first correctly installed a music device in your computer. This may be an internal FM synthesizer card such as a Sound Blaster, or a MIDI interface card such as a Sound Blaster or MPU-401 which must be connected to a MIDI synthesizer. Please consult the Windows manual and the instructions that came with the card to do this correctly.

Once this has been done, Lyra will recognize the music device(s) in your computer. If you have more than one music device installed, then you will need to configure Lyra so that it knows which one you want to play music on. This is done with the Preferences command on the **File** menu.


When you select the **Play** command under the **Play** menu, a new item, **Stop**, will appear on the menu bar at the top of the window. As the music is played, the current measure number is displayed in the **go to** button on the tape controls. You may stop playback at any time by selecting the **stop** button. This will result in the music display returning to the point where playing started. Selecting the **goto** button or selecting the **Stop** menu item will result in the music display staying at its current position.


If your synthesizer does not play correctly, you may need to set up the track parameters or you may want to set the Filter. Also see the Sound Card Problems topic for more information.

# Notes and Rests

Notes are the fundamental building blocks of any piece of written music. They represent the musical sounds made by an instrument. Each note has two basic pieces of information built into it: the length, which is determined by the shape; and pitch, which is determined by the vertical position of the note on the musical staff.

Rests are used to show that no sound is to be made for a given amount of time. The length of a rest is determined by its shape. A rest may be placed anywhere on the musical staff, and vertical placement does not affect the rest (it is just for making the music easier to read).

The quarter note, , is the starting point for learning about note lengths. It usually lasts for one beat. Other notes are compared to it in terms of length. The eighth note,

, is half as long, so two eighth notes equal one quarter note.

Here is a list of the notes and rests that Lyra uses:



whole note and rest. Equal to four quarter notes.



half note and rest. Equal to two quarter notes.



quarter note and rest. Normally get one beat.



eighth note and rest. Two are equal to one quarter note.



sixteenth note and rest. Four are equal to one quarter note.



thirty-second note and rest. Eight are equal to one quarter note.



sixty-fourth note and rest. Sixteen are equal to one quarter note.



# Pitch Modifiers

A pitch modifier (also called an accidental) is a term used to describe a group of symbols used to modify the pitch of a note. Lyra makes use of three:

# is the sharp symbol. It raises the pitch of a note half a step.

b is the flat symbol. It lowers the pitch of a note half a step.

♮ is the natural symbol. It is used to cancel the effect of the key signature. If the note would normally have been sharpened by the key signature, then the natural would lower the pitch half a step. If the note would have been flatted by the key signature, then the natural would raise the pitch half a step.

# Length Modifiers

The length modifiers are used to change the length of a note or rest. Since a tie is not allowed to modify a rest, the combination of a rest and tie cannot be selected in Lyra. Otherwise, you may select any combination of length modifiers to modify a note or rest.

**3** this is the triplet modifier. It shortens the length of the note or rest slightly so that three of the same note or rest will be equal to two of the unmodified note or rest. For example, three triplet eighth notes equal two eighth notes.

**·** this is the dot modifier. It looks just like a period. It increases the length of a note or rest by one half. For example, a dotted quarter note equals one and a half quarter notes (or three eighth notes).

**~** this is the tie modifier. It allows you to combine two notes together. The result is a note of the pitch of the first one, and a length of both notes combined. Tied notes are required to be of the same pitch.



# Time Signature

The time signature gives you two bits of information about how music is to be played: the basic rhythm, and what note length gets a single beat. This is indicated by two numbers, arranged one over the other on each clef. It is set by the **Time Signature** command in the Tools menu.

The top number tells you how many beats there are per measure. This number is usually from 1 to 12.

The bottom number tells you what note length gets a beat. This ranges from 2 for a half note, 4 for a quarter note, to 8 for an eighth note. Other numbers such as 3, 5, 6, 7 are not permitted.

Here is an example of a time signature of 6/8:



This indicates that there are 6 beats per measure, and an eighth note gets a beat. In actual practice, however, this is usually performed as a triplet rhythm of two beats of three eighth notes per beat. Occasionally it is performed as three beats of two eighth notes per beat.

# MIDI Controllers

MIDI controllers are MIDI messages that are used to control various types of synthesizer functions that modify how music is played. Not all synthesizers respond to all controller messages in the same way. All controller messages are three hex bytes long: B0, the controller number, and the controller value. The last two values must always be 7F or less.

Here is a list of the most common controllers; use the [Controllers Dialog](#) to set up a new controller.

- 07** Main Volume 0=off, 7F=maximum
- 0A** Pan (stereo position) 0=left, 3F=middle, 7F=right
- 40** Sustain (damper pedal) 0=off, 7F=on

An example of a controller to set the volume to maximum would be **B0 07 7F**. The first number, **B0**, identifies this as a controller message. The second number, **07**, is the controller number, and identifies the type of controller (in this case the main volume). The last number, **7f**, is the controller value.

A controller that sets the pan to middle would be **B0 0A 3F**.

## The Purpose of the `_default.lyr` File

`_default.lyr`, which is present in the same directory as `wlyra.exe`, is a file that is automatically loaded into Lyra when the program starts up. `_default.lyr` is a standard Lyra file and can contain any of the things that a Lyra file normally has. Normally, though, you will not want it to contain any notes. You can fill the instrument table, set up the volumes, the master tempo, and the like with the values you usually use.

If you don't want to use the features of `_default.lyr`, simply delete it.

# Volume Settings

Each track can have its own volume. This can be set using the track setup dialog box, using the volume tool in the toolbox, or setting up a controller. Probably the easiest method is to use the track configure dialog box. If you want to vary the volume of a track as music is played, then use the toolbox to place standard volume markers in the music. Of course, volume markers affect only the track in which they are placed.

A volume controller is a special MIDI message that tells a synthesizer to change its master volume for a given channel. Just before playing music, Lyra sends a volume control message for each channel, using the value set in the track configure dialog box. You can also use a controller tool to change master volume at any point in the music.

Most synthesizers respond to standard volume markers and a volume controller in the same way. More sophisticated ones will change the quality of sound produced rather than volume with the standard volume markers. The reason for this is that Lyra uses **velocity changes** to implement volume markers. Most synthesizers simply interpret a larger velocity number to mean a louder sound. Some others, however, produce a different sound that may or may not be louder. An example is the piano: when you hit a key harder, the sound is louder but it also is brighter and you may hear some other percussive sounds associated with the key hitting bottom.

# The Menus

Select the Menu that you need information about:

File: commands that access the disk drive and printer

Edit: commands that are used to change the various parts of a music score

Tools: commands that duplicate the tool box.

Play: commands that affect how music is played.



# File Menu

**New:** This command is used to clear the music score. It does not change the time or key signature, master tempo, or clear the annotation, instrument controller tables, or lyrics.

**Open:** Load in an existing music score from disk using this command.

**Save:** Save the music score as a file on disk.

**Printer Setup:** Select and configure the printer used to print music.

**Print:** Print music on the default printer. Before printing, set the **Note Display** mode in the Preferences box to a mode other than **compact**.

**Preferences:** Modify certain parameters that change the way Lyra works. See the Preferences topic.

**Annotation:** Use this command to enter any information about the music you wish, such as a copyright notice or directions on how the music is to be played. It will be saved with the music. See the Annotation topic.

**Exit:** Quit Lyra and return to Windows. If the music score currently in memory has been changed, Lyra will first ask if you want to lose the changes.

# Edit Menu

**Undo:** Undo a command that has changed the music score.

**Unmark:** Clear the start and end markers that were used to mark a block of music.

**Copy:** Copy the notes in a marked block into a temporary holding area that then can be inserted into music with the Paste command.

**Cut:** Copy the notes in a marked block into a temporary holding area and then delete the marked notes. The copied notes can then be inserted into music with the Paste command.

**Lyrics:** Enter and edit lyrics for track one; more information in the Lyrics Dialog Box topic.

**Goto:** Adjust the music score display so that the bar number you give is the first measure displayed.

**Filter:** Prevent Lyra from displaying and playing certain types of music information. See the Filter topic.

**Tracks Setup:** View and modify the setup parameters for all tracks at once. See the Tracks Setup Dialog topic.

# Tools Menu

The **Tools** menu duplicates the tool box at the bottom of the screen. It provides an alternate way of selecting the various tools as well as listing the keyboard shortcut keys for each tool.

See the [tool box](#) topic for more information on how the individual tools work.

# Play Menu

**Play** - see the [Play Music](#) topic.

**Tempo** - set the speed at which music is played as the number of quarter notes per minute.

**Transpose** - specify how much music will be transposed when it is played back in terms of half steps. For example, entering **-4** will make the music be played 4 half steps lower. When the transpose amount is not zero, then a check mark will appear on the menu to remind you when you play music.

**All Notes Off** - if you have stopped music playback and you find that notes remain on, use this command to turn them off. It sends note off messages for all channels and turns the the sustain controller off in all channels.

# Empty Instrument Table Alert

This message means that the instrument table does not have any entries. Consequently, you cannot select an instrument to place it in the music score.

You can set up the instrument table by clicking the right mouse button while the cursor is positioned over the Instrument tool or by pressing the **SHIFT+I** keys.

More information about the instrument table may be found in the Instrument table topic.

# Empty Controller Table Alert

This message means that the controller table does not have any entries. Consequently, you cannot select a controller to place it in the music score.

You can set up the controller table by clicking the right mouse button while the cursor is positioned over the Control tool or by pressing the **SHIFT+C** keys.

More information about the controller table may be found in the Controller table topic.

# How to change instrument sounds

You can use the Track Setup dialog box to set a different instrument sound for each track. You will notice that an instrument assignment can be made only if the channel assignment is not the same as another track. In other words, each track that has its own instrument sound must also have its own unique channel number.

If you wish to change the instrument sound for a track at some point other than the beginning, you will need to use the Instrument tool, which is discussed in the Toolbox topic. This allows you to make as many changes as you wish.

# Playing multiple instrument sounds

Music in Lyra is organized into eight tracks, and each of these tracks can be set up so that it has its own instrument sound.

First of all, the music device must be capable of playing more than one sound at the same time. The Sound Blaster and most recent MIDI synthesizers have this capability.

Secondly, you must determine what the program change numbers are that correspond to the instrument sounds you want to hear. The synthesizer manufacturer's manual should give you this information. This number must be entered into the **Instrument** box on the track setup dialog box.

Last of all, make sure that each track that has its own instrument sound has a unique channel number (also set up in the track setup dialog box).



# Hexadecimal Numbers

Hexadecimal numbers are based on the number sixteen. Decimal numbers, which everyone is familiar with, are based on the number ten. Each digit in a decimal number is a multiple of a power of ten. The first three powers of ten are 1, 10, and 100. The number 213 actually means  $3 \cdot 1$  plus  $1 \cdot 10$  plus  $2 \cdot 100$ .

In hexadecimal (or hex for short), when you reach the number ten, there are new digits up to the number fifteen. This is how you count to sixteen: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10. Notice that the letters A through F represent the numbers ten through fifteen, and that 10 no longer means ten, but sixteen. To avoid confusion with regular decimal numbers, hex numbers usually have a \$ in front or an h behind, like this: \$7F or 7Fh. Each hex digit is a multiple of a power of sixteen. The first three powers of sixteen 1, 16, and 256. The hex number 35 is the same as  $5 \cdot 1$  plus  $3 \cdot 16$ , or 53 decimal. The hex number BA is the same as  $10 \cdot 1$  plus  $11 \cdot 16$  or 186 decimal.

f this is the Volume tool.

 this is the Tempo tool.



this is the Instrument tool.

`ova` this is the octave tool.

$P_{\text{ed}}$  this is the controller tool.



this is

the sharp symbol.



this is

the flat symbol.





this is

the natural symbol.



this is

the tie symbol.



this is

the dot symbol.



the triplet symbol.

this is

Select a track by clicking on the track box at the top right corresponding to the track you wish to select, or press CTRL+the track number key (such as CTRL+1 for track one).

The track parameters may be modified by clicking the right mouse button on the corresponding track box at the upper right, or pressing the SHIFT+CTRL keys with the key corresponding to the track (such as SHIFT+CTRL+3 for track 3). More information in [Configuring a Track](#).

A measure is a group of notes that last a certain number of beats (defined by the time signature) and is enclosed by vertical barlines on the music staff.



This is the **Control Panel** icon. You will find it in one of the windows in the Program Manager (usually the Accessories window).



# Installing a Music Device Driver

1. Start the Control Panel program and double click on the **Drivers** icon.
2. Press the **Add...** button.
3. Select the entry from the list that corresponds to your interface card or **Unlisted or Updated Driver**. Select the **OK** button.
4. If prompted, insert the disk that is asked for and follow the instructions.
5. Restart Windows.

The driver should be installed, and Lyra should be able to use it. For more information, refer to "Installing and Configuring Drivers" in chapter 5 of your Microsoft Windows User's Guide.

A music device can be an internal FM synthesis card such as the Sound Blaster or an internal MIDI interface card that connects your computer to a MIDI synthesizer. Such a music device must be correctly installed using the Windows Control panel.



More information in the [Track Selection Boxes](#) topic.



A **status byte** is the first number in a group of numbers that is a MIDI message. This number is always greater than 127 (or 7F hex). All of the other numbers are less than 128 (or 80 hex). The status byte identifies the type of message that follows, and the channel number. Types of messages include note, control change, program change, pitch wheel, and others.

There are 16 MIDI channels. Most MIDI messages can be assigned to a channel. Messages that change a controller or instrument sound (program change) will affect only a single channel. For example, if you send a message to set a piano sound on channel 2, then only notes in a track that has a channel assignment of 2 will be affected and sound like a piano.

A chord is a group of notes that sound simultaneously, usually producing a harmonious effect.

# The Filters Dialog Box

**How to get here:** Select the **Filters** command from the **Edit** menu.

When one of the boxes in this dialog box is checked, that musical symbol is not displayed or played. This can be used to improve legibility of a print-out or to disable instrument changes when you're trying to play a file that was created for another synthesizer.



# The Controllers Dialog Box

**How to get here:** Press the **SHIFT+C** key or click the right mouse button on the controller tool (see the Toolbox topic for more information about tools).

This table must be set with up the correct information before you can use a controller tool.

There is space for 16 controllers. First is the controller name; make it something that describes what the controller will do. The name can be up to 15 letters long.

Next is the controller data. This data is sent to the music device to control various things like the master volume stereo position (also known as pan), sustain pedal, etc. The controller data is entered as hexadecimal bytes. Each byte must be two digits long and followed by a space. For example, **b0 07 00** is the controller data to set the master volume to zero. See the MIDI Controllers topic for more information about the numbers to use.

You can enter multiple MIDI messages for a controller; the only restriction is that you cannot use system exclusives (they begin with F0 and end with F7).

Most MIDI status bytes have the channel number encoded in the second hex digit. When Lyra plays a controller, it replaces the channel number in the data area with the channel of the track in which the controller is entered. For example, entering **B0 07 3F** produces the same result as **B7 07 3F**.

You will need to consult your synthesizer manual for the correct numbers to use here. Remember that the Track Configure dialog box lets you set the most frequently used controllers.

More information about volumes in Volume Settings and controllers in MIDI Controllers.

# The Volumes Dialog Box

**How to get here:** Press the **SHIFT+V** key or click the right mouse button on the Volume tool (see the [Toolbox topic](#) for more information about tools).

Here is where you can set the actual volume associated with each volume symbol. The volume must be a number from 0 to 127. Lyra plays volumes as changes in the note velocity. If you wish to use a control volume change, use the [Control tool](#). More information about volumes in [Volume Settings](#).

# Loading New Instruments

**How to get here:** Press the SHIFT+I keys or click the right mouse button on the Instrument tool, then click on the **Load** button in the displayed dialog box.

Clicking on the **Load** button brings up another dialog box that allows you to select an instrument file. An instrument file is a simple text file that contains a list of up to 128 instruments. The contents of this file is loaded into each of the 16 **Name** combo boxes. No change is made in the current instrument names and program numbers. To see the new names, click on the arrow to the right of the name; a list will pop down. This list contains the new instruments loaded from the instrument file and makes it easy to set up an instrument table; you don't have to keep referring to a manual to find out what instrument sounds are available for a given synthesizer, and what the program change numbers are for each instrument sound. When you select an instrument name from the combo box, Lyra automatically changes the corresponding **Pgm** number to the right program change number. Lyra remembers the last instrument file that you loaded and automatically re-loads it the next time you open this dialog box.

A instrument file may be created with a editor such as the Windows Notepad program. It contains up to 129 lines. The first line contains the name of the synthesizer. It is displayed just above the buttons at the bottom of the dialog box. Each line consists of an instrument name (up to 15 letters long) followed by a comma (,), then the program number (0 to 127). While you can give the file any name you wish, it is suggested that you make the file name extension (the last 3 letters after the period) of an instrument file 'ins'.

Here is what a simple instrument file would look like that defines five instruments:

```
This line contains the name of the synthesizer  
Cello,1  
Violin,2  
Harpsichord,3  
Trombone,4  
Organ,5
```

If you use a word processor program such as Windows Write, or Word, or Word Perfect, or Ami Pro, be sure to save the file as a text file.

# The Instruments Dialog Box

**How to get here:** Press the **SHIFT+I** keys or click the right mouse button on the Instrument tool (see the Toolbox topic for more information about tools).

The **Instruments Dialog** lets you modify the instrument names and the program change numbers associated with each instrument. There is space for 16 instruments, arranged in two columns. Within each column, the first space is for the instrument name. The second space (titled **Pgm**) is for the program change number.

The name that you give is entirely up to you. Only the first 15 letters in the name will be saved. If the name is blank or starts with a space, that instrument will not be listed when the the instrument tool is clicked on.

The program change number is the actual number that is sent to your synthesizer to change the sound that it makes. This number depends on the synthesizer and you will have to consult the manual that came with your synthesizer to determine what numbers to use. Do not enter a program change number greater than 127.

Lyra assumes that the first program change number is zero; some synthesizers start at one. If your synthesizer is one that starts at 1, click on the radio button at the bottom of the list titled **Patches start at 1**. This will cause 1 to be subtracted from each program change number when you press the **OK** button.

Clicking on the **Load** button loads instrument definitions from an instrument file. See the Loading New Instruments topic for more information.

A multi-timbral synthesizer is one that is capable of playing more than one instrument sound at a time.

# Configuring a Track

**How to get here:** Click the right mouse button on a track box or press Ctrl+Shift+a number key (1-8).

Each track can be configured so that it has a unique MIDI channel, volume, stereo position (pan), instrument (program change), and transpose offset. This makes it possible for you to play music on a multi-timbral synthesizer that sounds like a small band playing.

You can call up the track configure dialog box by clicking the right mouse button on one of the track boxes at the right upper corner of the window, or by pressing the SHIFT and CTRL keys with the number key corresponding to the desired track (such as SHIFT+CTRL+2 for track two).

Following is a description of each line in the **Track Setup** dialog box.

**Channel** - This can be any number from 1 to 16. This is the MIDI channel for the track. More than one track can have the same channel, but only the first track can be configured for volume, position, and instrument.

**Clef** - This will be used in future versions to permit multiple staves.

**Color** - Selecting a color from this combo box results in the notes in this track being displayed with the new color.

**Transpose** - The number given here is the number of half steps that are added (or subtracted) to each note pitch in a track when music is played. This is useful for transcribing music for an instrument whose concert pitch does not correspond to the written pitch.

**Master Volume** - Lyra sends MIDI control messages for each track to set a master volume for each track; 0 corresponds to complete silence, and 127 is maximum. More information about volumes in Volume Settings.

**Stereo Position** - Each track may be configured to play through the left or right speaker, or somewhere between. Zero corresponds to left, and 127 to right, and 63 to exactly between.

**Instrument** - The number entered here is sent as a MIDI program message just before music is played. Program messages are used to change the instrument sound that a synthesizer makes; you must enter the number corresponding to the sound you want. Consult the synthesizer manual for the needed information.

The Master Volume, Stereo Position, and Instrument lines will be disabled if the Channel number is the same as one used in a previous track. For example, if tracks 1 and 2 both are set to channel 2, then you will be able to modify those lines only in track 1. To remind you of this fact, a message (**set up in track 1**) will appear after the channel number for track 2.

If you wish to edit all eight tracks at a time, see the Tracks Setup dialog.

# Signatures Dialog Box

**How to get here:** Select the key or time signature tool from the tool box.

This dialog box is used to change the key signature or time signature. This version does not support multiple key or time signatures within a music file (this is planned for future versions!).

The key signature is entered as a number followed by either **F** (for flats) or **S** for sharps. For example, the key signature of 3 sharps would be entered as **3S**. See the [key signature](#) topic for more information.

The time signature is entered as a simple fraction (such as **3/4**, **4/4**). More information is in the [time signature](#) topic.

# Tempo Dialog Box

**How to get here:** Select the **Tempo** command from the **Play** menu.

Here is where you can change the speed at which music is played (tempo). The number you enter is the number of quarter notes per minute. Entering 120 will result in music being played at the speed of 120 quarter notes per minute (or two quarter notes per second).

The tempo set here is called the master tempo. It is the tempo effect at the start of music. If you use the tempo tool to change the music after the start, the new tempo takes precedence.



# Transpose Dialog Box

**How to get here:** Select the **Tranpose** command from the **Play** menu.

Use this dialog box to transpose all tracks when music is played. The number you enter is the number of semitones that music will be transposed. For example, entering -4 will result in music being played 4 semitones lower.

If you wish to transpose only certain tracks, then use the [Track Configure](#) dialog box.

# Preferences Dialog Box

**How to get here:** Select the **Preferences** command from the **File** menu.

This is where you modify certain parameters that change the way Lyra operates.

**Note gray shade:** Enter a number (or adjust the slider) to change the intensity of the gray used to display unselected notes. The value 0 corresponds to black, and 255 is white. 192 is the value that Lyra uses by default. You can also use this to completely turn off unselected notes by entering the value 255. If you change the value of this box by typing a new value, and then press the **Enter** key, you will find that the new value did not get entered as intended. You can fix this by pressing the **Tab** key before the **Enter** key or selecting the **OK** button. If you use the slider to adjust the shade, the number box to the left will change to a color corresponding to the selected shade.

**Music Device:** This combo box contains all the names of the installed music devices. Just select the one you want. If no device has been installed, **(none)** will appear. If one or more music devices have been installed, you can also use the MIDI mapper.

**Note Display:** This combo box allows you to select the way music will be displayed. You can select **Compact**, which is default display; each note length is given the same space. The remaining selections space notes and rests according to their length. A longer note is given more space.

**Persistent Note Modifiers:** When this box is marked with an **X**, then the note pitch and length modifiers (sharp, natural, flat, triplet, dot, tie) remain selected after a note is placed on the music staff. If it is not marked, then the note and pitch modifiers are cleared after a note has been placed on the music staff.

**Animate Playback:** When this box is marked with an **X**, Lyra will update the music display as it is played so you can follow along. It also will "play" the music on the player piano at the bottom of the screen.

**Timer Resolution:** This number controls how accurate the timer is that is used to play music. The smaller the the number, the greater the accuracy. However, the smaller the number, the more processing time required of the CPU, which can slow everything else down. Music that is dense and has a lot of fast notes will require a smaller number. Valid values are 1 to 32; a recommended starting number is 16.

You can also edit the wlyra.ini file to change settings.

# The Lyrics Dialog Box

**How to get here:** Select the **Lyrics** command from the **Edit** menu.

Lyrics may be added to a song by the use of this dialog box. This version allows lyrics only for track one, and they are displayed above the music. Simply position the music display so that it is at bar 1 or the first note in track 1. Call up this dialog box and type in the lyrics. Be sure to put a space between all syllables that you want assigned to separate notes. For example, typing **heavenly light** as **hea- ven- ly light** will put the words on four different notes, whereas **heavn- ly light** will put the words on only three notes. If you want to skip a note (no word for it), just type in an extra space.

Editing lyrics requires only that the words be currently displayed. If no words are displayed, move back in the music until words appear. The lyric editor dialog box will contain only those words that start with what is displayed. Make any changes you want, select the **OK** button, and you will see the display changed accordingly.

You can turn lyric display off by selecting the Lyric filter.

# Music Device Error Alert

When Lyra tried to play music, it could not open a music device. This could be for a number of reasons:

- You don't have a music device installed in your computer
- The device drivers have not been installed
- The music device has not been correctly configured
- You are not running Windows version 3.1

Also see the [Installing a Music Device](#) topic for more information.

# Printer Error Alert

You must first select a **Note Display** mode other than **Compact** from the Preferences dialog before printing music. This must be done so that the barlines line up at the end of each staff. Call up the Preferences dialog by selecting **Preferences** from the **File** menu.

More information in the [Preferences Dialog](#) topic.

Select the **Ok** button to erase all the notes in memory; this does not erase the annotation, instrument, controller, or volume tables.

# The wlyra.ini File

The wlyra.ini file contains information that tells Lyra how to configure itself. All of the data in this file is set by the Preferences dialog box. This file is always kept in the same directory as wlyra.exe.

Here is a list of the file and the possible values that each variable can have:

**NoteGrayShade:** the shade of gray used to display notes that are not selected. 0=black, 255=white

**MusicDeviceName:** the name of the device used to play music on.

**DisplayType:** the number of bars of music displayed on the screen;

COMPACT: the music displayed with as little space between notes as possible

2 BARS: two bars per screen

3 BARS: three bars per screen

4 BARS: four bars per screen

**PersistentNoteModifiers:** set to ON if pitch and length note modifiers remain selected after a note is entered on the music score; otherwise set to OFF.

**AnimatePlayback:** set to ON if you want Lyra to update the music display while music is being played so you can follow along; otherwise set to OFF.

**TimerResolution:** the resolution of the timer used to play music; may be set to 1 through 32.

# The Annotation Dialog Box

**How to get here:** Select the **Annotation** item from the **Edit** menu.

Use this to enter information about the title, author, copyright, and any other text about the music. This will all be saved with the music. Future versions will make use of this information when printing music.

Do not use the tilde (~) character; this is used internally by Lyra to mark the end of each section of text in the annotation.



# The Paste Command

The Paste command is used to insert music already stored in a temporary holding area by the use of the Copy or Cut commands. Place the cursor over a note and press the **Ctrl+V** or **Shift+Insert** keys or press the right mouse key and select the **Paste** item from the menu that pops up. The inserted music follows immediately after the note that was under the cursor.

You can use this command to move music from one track to another. To move music from track one to track two, select track one, select the desired notes, **Cut** the block, then select track two and paste at the desired spot.

A block is marked by using the Select tool from the Tool Box. Once this tool is selected, select the desired track and click on the first and last notes in a block. The notes within the block will turn red.

# Compatibility with Previous Versions

Lyra for Windows can read music files produced by previous versions for the Tandy Color Computer (you just need to transfer the files to a PC formatted disk) and the DOS version, PC-Lyra. This version will also write files that are at least partially usable by previous versions. The music data format is unchanged but much of the rest of the data (such as annotation, instrument and controller tables) is new and will not transfer. A major change is planned in the near future which will result in a completely new format that will not be readable by previous versions. See the topic on [file format](#) for more information.

# Program History

Lyra was first released for the Tandy Color Computer in 1985 and was marketed by Speech Systems. It was written entirely in assembly language, giving it the advantage of very small size but also the disadvantage of being hard to fix and update. The program sported a mouse driven user interface and could interface with a MIDI synthesizer with the addition of a two wire cable.

PC-Lyra was released in 1989 and marketed initially by MusicWare. In 1991 Covox included it with their PC sound card, the Sound Master II. It was written in C. Its music files are pretty much identical to the Color Computer version.

Lyra for Windows was released in 1993 and marketed as shareware by the author. It is written in Pascal.

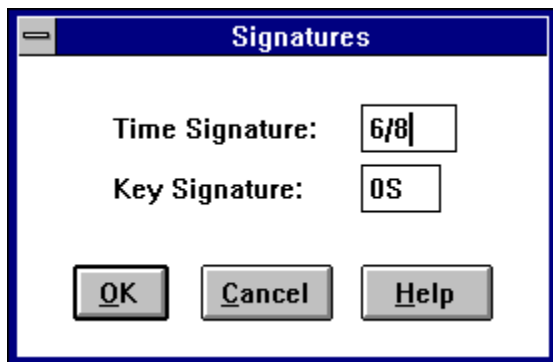
The future of Lyra lies primarily in the Windows version, though the DOS version may see improvements if there are enough people who want them.

# An Example of Transcribing Music

Here is the first bar of a popular Christmas carol:



The first step is to set the time signature to 6/8 and the key signature to C major (0S or 0F). This is done by calling up the Signatures dialog box by pressing the **K** key, selecting the time or key signature from the toolbox, or selecting **Key Signature** from the **Tools** menu.



Now you are ready to start entering notes. Each chord has 4 notes in it, so this should be pretty easy. First select track one from the track boxes or press **Ctrl 1**. The top note, or melody, will be entered into this voice. The first note is a dotted eighth note. Select this note value by clicking on the eighth note and dot icons in the toolbox. The keyboard equivalent is **4 .** (four and period). Position the cursor over the treble staff, just after the time signature, and over the **G2** pitch.



You can tell what pitch the cursor is at by looking down at the Help Bar. Press the left mouse button (or press the **Enter** key). Finish entering the rest of the notes in track one:



You've probably noticed that Lyra does not beam notes together. Instead, each note or chord has its own flag to indicate note length. Now you're ready to enter the notes for track two. Select track two from the track boxes or press **Ctrl 2**. This is what the score should look like when you're done:



Notice that the notes in track one are gray. After entering the notes for track three, you should have:



You may be wondering where that last note came from. There was only one middle C in the original score; how come we now have the same last note in tracks two and three? If you were singing tenor (track 3) you would not suddenly stop singing when you reached the last note in this bar. The confusion is due to the common practice of merging two notes of the same pitch into one so that the score is neater.

Now we just have track four to do:



To add lyrics, select the **Lyrics** command from the **Edit** menu. Type in **Si - lent night!** and select the **OK** button. The lyrics will appear above the music.

Oops! We have yet to enter a volume for each voice. Select track one and then the volume tool by clicking on it and then select **mp** from the menu that pops up. You can also select the volume tool by pressing the **v** key or using the **Tools** menu. Place the cursor before the first note but after the key signature and click (or press **Enter**):



If you goofed and placed the cursor too close to the first note, thereby deleting it, not to worry! Select the **Undo** command from the **Edit** menu and try again.

Repeat this process for each track until you have entered all four volumes (mp). You can place all the markers in the same spot so that the finished effect is the same as the original (a single marker), or you can space the markers apart so it is easier to change them later if you wish.

The very last thing to do is to configure each track. How much time you spend on this depends on how fussy you are. You could play the music now and it would sound pretty good. But if you want to adjust the master volume, the stereo placement, or the instrument sound for each track, you'll need to call up the **Track Setup** dialog box by clicking the right mouse button on the track one icon or pressing **Ctrl+Shift+1** or use the **Tools** menu. Try changing just a few of the parameters at first so you can get a feel for how they work. See the Configuring a Track topic for more information.

This score is also in the file **example.lyr** on the distribution disk.

# Diagnosing Problems and Obtaining Product Support

If you run into problems while running Lyra, there are several things that you should do.

If the program terminated with an error message, write the message down along with a description of what you did just before the message appeared. Run the program DRWATSON.EXE and then run Lyra; try to duplicate the error. If you are able to duplicate the error or get any other errors, make a printed copy of the file DRWATSON.LOG (which is in the Windows directory).

Write a letter to MusicWare requesting assistance. Include the following items in your description of the problem:

- The error message or a description of the problem.
- A description of what you were doing just before the error message or problem occurred.
- Exit from Windows and run the Microsoft Diagnostics program (MSD.EXE) which is either in the DOS or Windows directory. Print a full report using the **File|Print Report...**
- If you have run DRWATSON, please also include a copy of DRWATSON.LOG

Mail the letter to:

MusicWare  
Hamlet Route Box 1261  
Seaside, OR 97138

While comments are welcomed from everyone, only registered users are guaranteed a reply.



A TSR is a DOS program that is loaded into memory and remains there while other programs are run. Most TSRs can be called up by pressing a special key combination even while another program is running.

# Tracks Setup Dialog

**How to get here:** Select the **Tracks Setup** command from the **Edit** menu.

This works exactly like the Track Setup dialog except that you can edit all eight tracks at once. Select a radio button from the boxed group on the left, and the boxes and sliders on the right will change to give the correct data for each track.

# Register Your Copy of Lyra for Windows

If you find Lyra for Windows useful, you are asked to register your copy. Doing so encourages the author to improve the program, puts you on a mailing list to receive news about new versions or programs, and makes you eligible to receive low cost updates. Print this page by selecting **Print Topic** from the **File** menu.

Your Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_

What version of Lyra for Windows are you using? \_\_\_\_\_

Any comments or suggestions: \_\_\_\_\_

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Registration fee: \$20.00 (money order or check for US funds). After December 31, 1994, please contact the author first.

Please mail this form and the fee to:

Lester Hands  
MusicWare  
Hamlet Route Box 1261  
Seaside, OR 97138

# The Player Piano Keyboard

Near the bottom of the window is a depiction of a keyboard. You can use it to enter notes into the score or watch it as music is played.

When using the keyboard to enter notes, first select the track that you want to enter notes into. Each time you click on one of the keys, a note of the length selected in the toolbox is entered at the end of the selected track. You probably will want to make sure that the end of the track is displayed so you can see the notes as they are entered. When you click on a black key, the note is entered as a sharped note unless the key signature is one or more flats. You can over-ride this by selecting the sharp or flat pitch modifier in the toolbox. The natural has no effect.

If you have selected **Animate Playback** in the Preferences dialog box, you will see the keys being highlighted as music plays. You can use this to help you learn to play the music on a piano, or just watch it for your amusement.

this is the Reverse tape button

this is the Play button

this is the Stop button

this is the Fast Forward button



this is the Goto button

this is the Turn All Notes Off button

# Lyra Music File Format

Following is a description of the music file format used by the MIDI music composition program, Lyra, version 2. This format is used by the Color Computer and DOS versions and is readable by the Windows version. The Windows version includes some data at the end of the file which is not described here.

Each Lyra file is made of two main parts: the header which contains information about the music in general (such as key signature, instrument numbers, etc.), and the body which has all the actual note information. The following table describes the Lyra header. Count refers to the number of bytes associated with a particular item. Bytes shows exactly how the information is formatted; ASCII data is identified by single quotes (') around it, 8-bit bytes by the letter b (more than one byte is separated by commas), 16-bit words (most significant byte first) by the letter w (more than one word separated by commas). All numbers are base 10 in this description.

Count	Bytes	Description
1	'2'	Identifies this as version 2 format
1	'Z'	Lyra music file identifier
2	bb	Key signature (default '44')
2	bb	Time signature (default '0S')
2	w	Master tempo (default 32)
8	b,b,b,b,b,b,b,b	Display modes (1 byte per voice) 0=no display 1=normal 2=halftone
16	w,w,w,w,w,w,w,w	Count of bytes from start of file to start of music for each voice (0-8)
2	w	Not currently used
2	w	End of music offset (bytes from start of file)
224		MIDI instrument numbers table
		Format of each entry (total of 16):
	'0:001 '	number:MIDI program number
	' ' '	name (7 letters)
	' ' or 13 or 0	first entry uses ' ', every other uses 13; last one uses 0
29		Description: 28 characters, terminated by 0
8	b,b,b,b,b,b,b,b	MIDI channel assignment for each voice (0-8)
8	b,b,b,b,b,b,b,b	MIDI velocities for volumes (ppp-fff)
32	'8/8 8/8 8/8 8/8',	Fractional note lengths for each voice (0-8)
	13,	(default values shown)
	'8/8 8/8 8/8 8/8',	
	0	

Immediately following the music header is the body, or the actual music. The notes for each voice are listed sequentially from start to end, first for voice 1, then 2, and so on. Since a 'note' can mean more than just a musical note, it is called a 'note event'. Each note event is made of two bytes, the "descriptor", and "pitch". The end of each voice is marked by setting both bytes of the note event to zero.

In the following discussion, it is assumed that the bits of a byte are counted from the least significant (bit 0) to the most significant (bit 7). If bit 7 of the first byte of a note event (the descriptor) is 0 (or the descriptor has a value of less than 128), then the note event describes a note or rest. Bits 0-2 describe the note or rest length:

- |           |          |          |
|-----------|----------|----------|
| 1 - whole | 4 - 8th  | 7 - 64th |
| 2 - half  | 5 - 16th |          |

3 - quarter                      6 - 32nd

When bit 3 is zero, then we have a note; if it is set to 1, then we have a rest. The remaining 3 bits contain modifier information:

bit 4 - note is a triplet  
bit 5 - note is tied to previous note  
bit 6 - note is dotted

The second byte of a note event represents the pitch (or position on the staff in the case of a rest). Bits 0-5 are used to represent the notes of a C major scale, numbered from three octaves above middle C starting at 1, and increasing as the pitch lowers. Thus middle C has a value of 32. For notes not in the C major scale, bits 6 and 7 are used to indicate sharp and flat, respectively.

If bit 7 of the descriptor is set to 1, then we have an 'option'. Basically, an option is anything other than a note. Options are identified by bits 4-7 of the descriptor:

\$90 - instrument  
\$A0 - tempo  
\$B0 - MIDI byte  
\$C0 - octave modifier  
\$D0 - loco (cancel octave modifier)  
\$E0 - volume

Bits 0-3 may or may not be utilized, depending on the option. The instrument option has the Lyra instrument number encoded in bits 0-3 of the descriptor, and the position on the staff is in the second byte.

The tempo option has bits 0-3 set to 0, and the actual tempo in byte 2. This option should ALWAYS be in voice 1 and never in any other, since tempo affects all voices. The MIDI byte option has bits 0-3 set to 0, and the actual byte that is to be sent out in byte 2. This option should ALWAYS be in voice 1 and never in any other.

The octave modifier option has bits 0-3 set to 0, and the position on the staff in the second byte. If the position is above the staff (less than 12) then all notes in that voice are played an octave higher; if the position is greater than 32 (below the staff), then all notes in that voice are played an octave lower. The loco option has bits 0-3 set to 0, and the position on the staff in the second byte. It cancels the effect of the octave option.

The volume option has one of 8 possible volumes encoded in bits 0-3:

0 - ppp	4 - mf
1 - pp	5 - f
2 - p	6 - ff
3 - mp	7 - fff

The position on the staff is in the second byte.

# The Correct Use of Ties

Most people confuse ties with slurs since they look similar. Both look like a curved line that connects one or more notes. Actually, there is a big difference between them.

A **slur** is used to connect a group of notes to indicate that they should be played as a phrase, usually smoothly connected. Most often, the notes are of differing pitches and lengths.

A **tie** is quite different: only two notes can be connected, and both must be the same pitch, though it is not uncommon for them to have different lengths. A tie produces a note having a length equaling the length of both notes. When two tied notes are performed, the first note is sounded and held until the end of the second note. The second note is not sounded separately.

To help remind you of the difference between slurs and ties, Lyra will not let you enter a tied note unless it immediately follows another note of the same pitch.

More information about how to enter ties in the [Length Modifier Tools](#) topic.

## Select a Track Before Entering Music Alert

You will get this message if you try to enter notes or symbols in a music score if no track has been selected. A track is selected by clicking on the appropriate track box at the upper right or pressing the control key plus the number of the track (such as control+1).

More information in the [entering music](#) topic.

