

MIDI Playground



User Guide

MIDI PhraseBook Version 1.1

NaiveSoft LLC

<http://www.naivesoft.com>

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Welcome to MIDI PhraseBook

The MIDI PhraseBook application generates musical phrases as MIDI sequences. These sequences can be played from within the application or exported for use in other applications. By selecting features such as musical key, tempo, time signature, octaves, concurrent notes, etc. the user exerts broad control over the characteristics of the generated phrase.

The MIDI PhraseBook application supports a wide range of uses, which may be creative, educational, practical or recreational. Phrases generated by this application can be exported to a Digital Audio Workstation environment to be combined with other content as part of a composition workflow. The application can be used as a light hands-on introduction to basic music theory concepts. Royalty-free melodies expressing a desired mood can be generated to be used with AV content or presentations. Or music can be generated purely for enjoyment.

The MIDI PhraseBook is part of the MIDI Playground family of applications from NaiveSoft. A major element of the MIDI Playground philosophy is a short learning curve despite rich functionality. The layout is simple with most options in plain view and identified by popup help. The applications are touch screen friendly and work on any Windows 10 device meeting the minimum requirements, including the Surface tablet.

Installation

The MIDI PlayGround applications are only available through the Microsoft Store. The minimum required operating system is Windows 10 (1709) version 10.0.16299. From the MIDI PhraseBook page in the Windows Store app, select either the trial or full version and the store app will download and install the application.

Quick Start

In keeping with the MIDI Playground’s complexity-averse approach, you should be able, once MIDI PhraseBook is installed and launched, to press a single key and hear results. From that point you can experiment with parameter values or generate random phrases and see what happens.

To hear MIDI PhraseBook, “just press play”. The play button is in the transport controls located near the bottom of the screen, as indicated in figure 1. Default parameters will be used to generate and play a melody using the built-in Microsoft Wavetable GS Synthesizer through the default audio device.

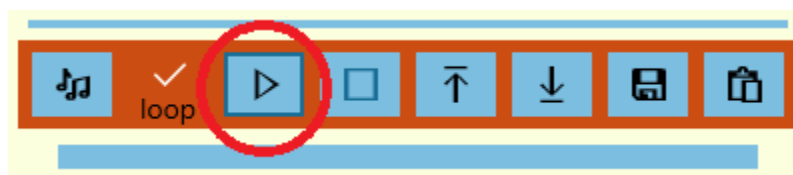


Figure 1 – Play Button

Screen Layout and Controls

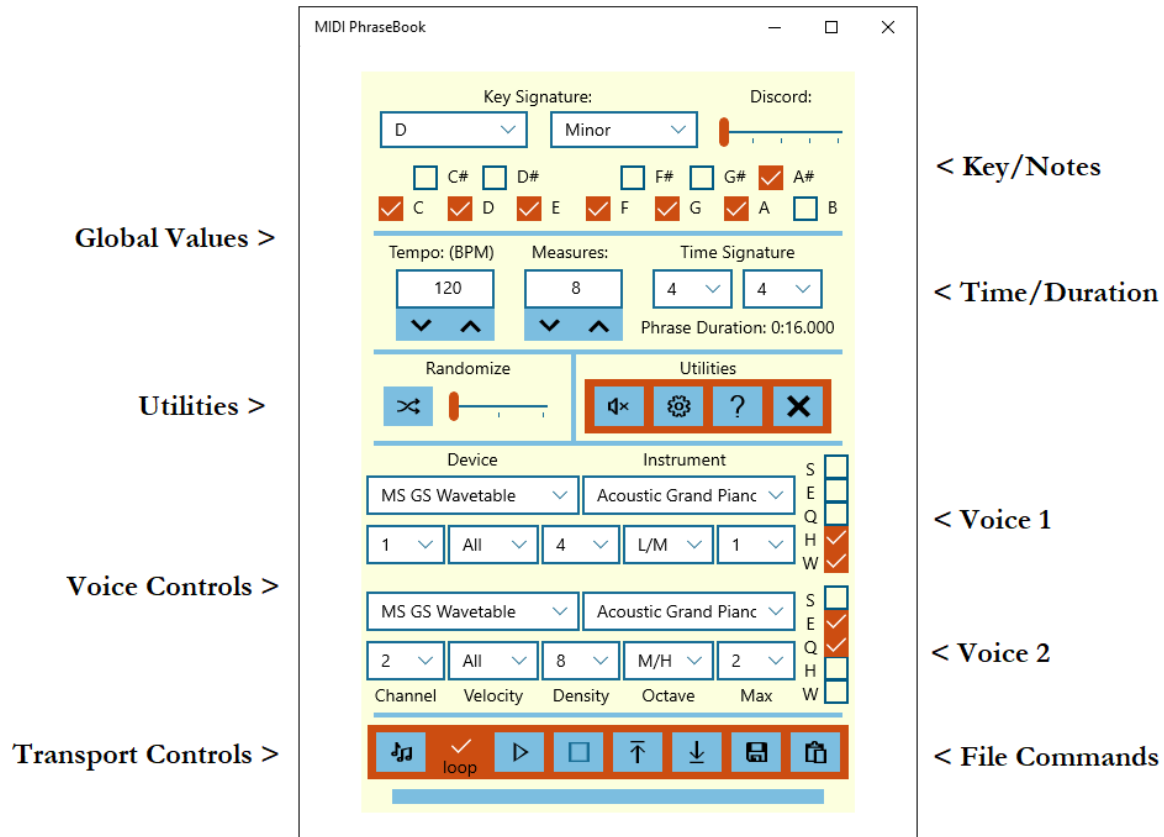


Figure 2 - Screen Control Groups

Global Values

Global values are set for the entire composition, as opposed to the voice controls which can be set separately for each of the two instruments. Global values include the selection of notes used to compose a phrase and the timing of the phrase.

Key Signature



Figure 3 – Key Signature Controls

There are two parts to the key signature; the tonic, which is the “home” note of the key, and the scale of the key, such as major or minor. Selecting the key signature will populate checkboxes representing the individual notes which are part of the selected key. The twelve notes of the twelve-tone musical scale are selectable from the note drop-down. The drop-down box to select the scale value includes major and minor as well as some less commonly used scale options such as blues and pentatonic.

The note and scale options can be bypassed or overridden by selecting individual notes using the checkboxes. If you want your composition to only include specific notes, you can accomplish that by selecting only the desired notes. If the selected notes happen to match a key signature, the note and scale drop-down boxes will be updated to reflect this.

In any key signature, some of the included notes are considered more harmonious, and others are considered discordant. MIDI PhraseBook can place emphasis on including the more harmonious notes, but this emphasis can be diminished or eliminated. The Discord slider when all the way to the left will place the highest priority on including harmonious notes. Each successive position to the right introduces an increasing amount of discord. At the far-right position all available notes are given equal priority.

To learn more about key signature: https://en.wikipedia.org/wiki/Key_signature

Time and Tempo

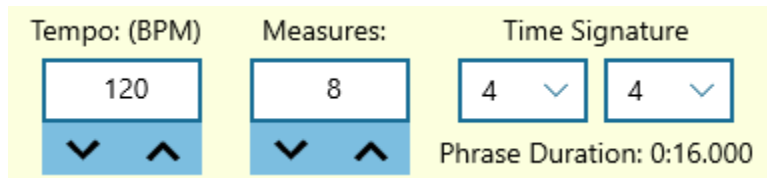


Figure 4 – Time and Tempo Controls

In this section you can set the tempo for your composition in beats per minute. You can also select the number of measures to be generated, which will determine the duration of your composition. The trial version of the application has an upper limit of 8 measures, the full version can generate up to 128 measures. You can also select the time signature, which is explained in more detail below.

Valid values for tempo range from 10 BPM (a very slow tempo) to 250 BPM (very fast). Values can be changed using the up/down arrows or by typing a value directly into the box. The read-only Phrase Duration display, shown in the lower right of Figure 4, shows the length of the generated phrase in minutes and seconds. It is updated when any time/tempo values are changed.

Time signature is made up of two values. The first number represents the number of beats in a measure. The second number represents what type of note makes a beat. As an example. 4/4 time is a very common time signature. In 4/4 time, a measure consists of 4 beats, and a beat is a quarter note.

To learn more about time signature and related concepts: https://en.wikipedia.org/wiki/Time_signature

Utilities







Figure 5 – Randomize and Utility Controls

Randomization

The randomize section contains a button and a three-position slider. Pressing the button will choose new random values for many parameters. Exactly which parameters are randomized, and in some cases the range from which random values are chosen, depends on the position of the randomization slider. By default, the level of randomization, randomizing more parameters and over wider ranges, increases as the slider moves to the right. In the full version of the application, each level of randomization can be edited for user-customized randomization scenarios. See the customization section for details.

Other Utilities

-  **MIDI Panic:** This control sends a MIDI note off command on every channel to each active device over the range of possible notes. This is useful if some activity leaves a note stuck on.
-  **Customization Settings:** In the full version of the application, this control provides access to the customization screen, where randomization and MIDI settings can be updated.
-  **About the App:** Displays the About screen, showing the version number and license type, and a link to the NaiveSoft home page.
-  **Exit Application:** Close MIDI devices and terminate the application.

Voice Controls

The MIDI PhraseBook supports two simultaneous voices. Each voice can be sent to any available MIDI device, to any available patch number on that device, on any MIDI channel. Each voice can also be

assigned a range of velocity (force or loudness), a density of notes, an octave range and a maximum number of concurrent notes. The durations of notes can also be set separately for each voice.

MIDI Device

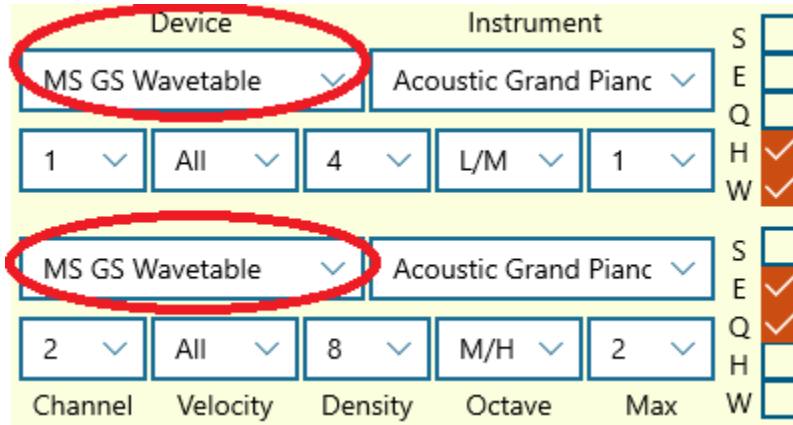


Figure 6 – Devices

These drop-down lists contain all MIDI devices, hardware or software, available on your system. The list is updated immediately when a MIDI device is added to or removed from your system. The full version of the application allows for customization of these device lists, by flagging which available devices should be included or excluded from the list, and by assigning friendly names to devices. The default device is the software synthesizer included with Windows, the Microsoft GS Wavetable Synth. Even if you have no other MIDI software or hardware, this option will be available. It is bundled with all releases of Microsoft Windows.

Instrument

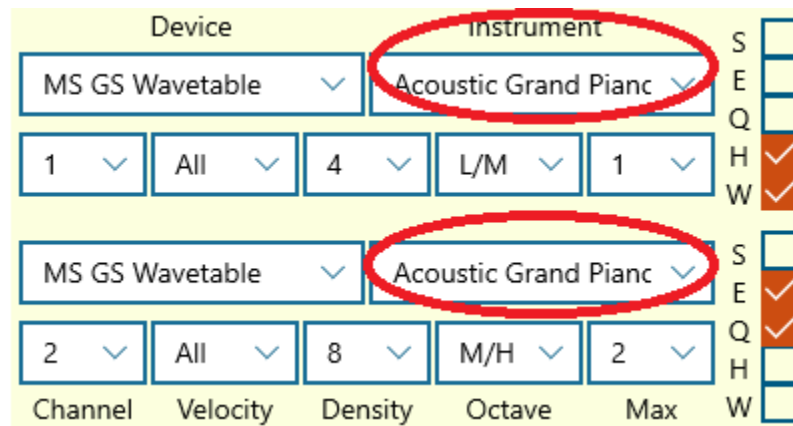


Figure 7 – Instruments

MIDI devices can produce many different sounds, commonly referred to as patches. The MIDI standard organizes these sounds into banks containing up to 128 patches.

The instrument drop-down list lets you select from up to 128 patches from the selected MIDI device, to be played on the selected channel. Your MIDI device may contain multiple banks of patches. The number of banks and how to select them varies among devices. The MIDI PhraseBook will select a patch from the currently selected bank on your device, providing your device recognizes standard MIDI program change commands.

Some banks of patches follow the GM (General MIDI) specification, which standardizes patch numbers to specific instrument sounds. For example, in this standard the first patch is always an acoustic piano sound and the 110th sound is always a bagpipe. The built-in GS Wavetable Synth follows this standard.

The MIDI PhraseBook application supports this GM specification and will display instrument names for devices recognized as GM devices. For all other devices, the patch names in these drop-down lists will be presented as numbers. So, for your Microsoft synth the first available patch will be displayed as “Acoustic Grand Piano”, but for a hardware synthesizer plugged into your system via USB that first available patch will be displayed as “Patch #0”.

The full version of the application provides user customization of each MIDI device. Through this customization, devices can be flagged as GM compatible. Also, a maximum number of patches can be set, and a device can be set as “mono”, restricting the number of simultaneous notes. The mono supports single-voiced devices such as monosynths.

Channel

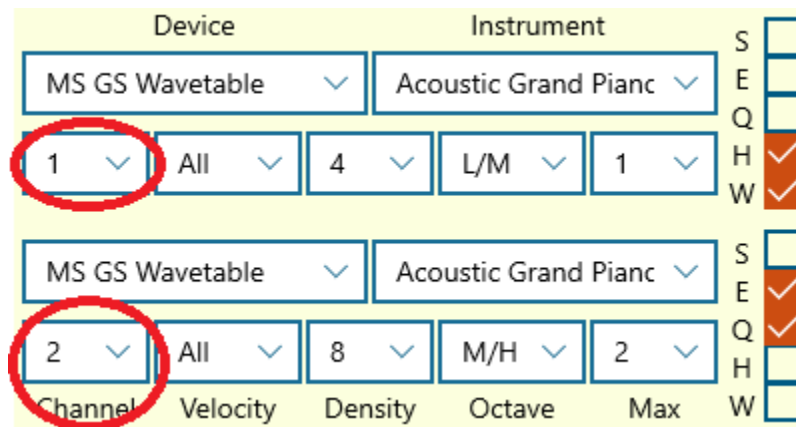


Figure 8 – MIDI Channel

The MIDI specification supports 16 channels. Each channel represents a separate stream of data sent to your MIDI device. Some devices (including the built-in Microsoft GS Wavetable Synth) can play different patches on different channels simultaneously. Other devices may only recognize one channel at a time. It is important that the channel selected here matches the channel from which your device expects to receive data.

By convention, MIDI channel 10 is reserved for drum sounds. The Microsoft GS Wavetable Synth follows this convention, so choosing that channel will play drum sounds rather than the musical notes selected.

Velocity

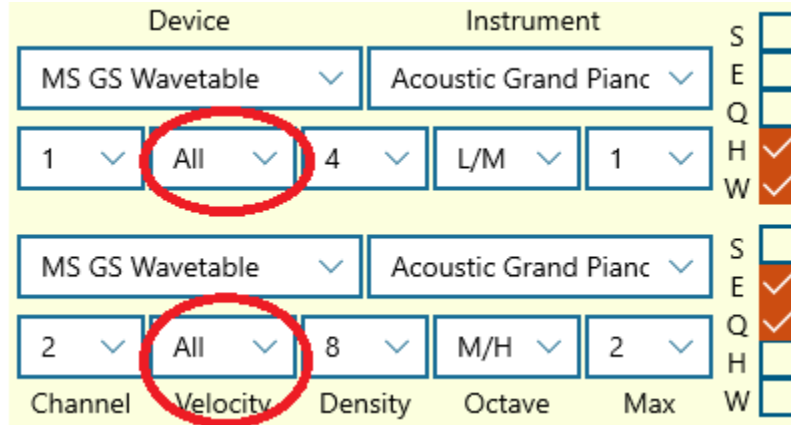


Figure 9 - MIDI Velocities

MIDI uses the concept of velocity as a measure of how forcefully a note is played. For our purpose we can think of it as related to volume of the note. MIDI PhraseBook varies the velocities of notes played to create a more interesting sequence. Selecting values from this drop-down sets a range of velocities for this instrument. Selection is by ranges or combinations of ranges, such as low, medium, high, or all.

Density

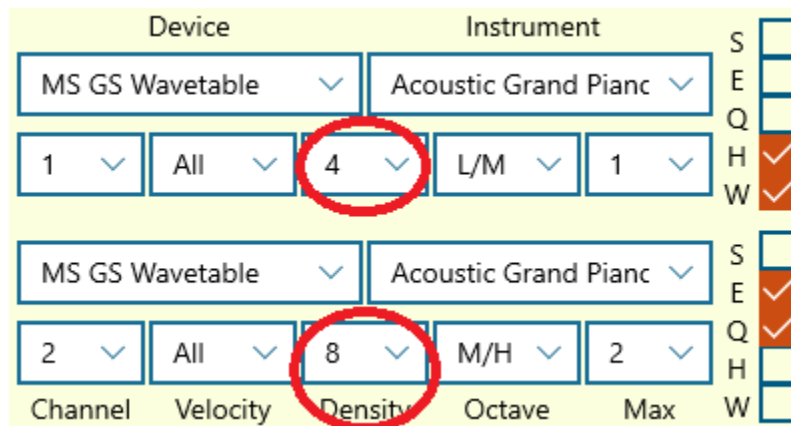


Figure 10 - Note Density

Density in MIDI PhraseBook determines how many notes will appear in a sequence. A lower number will create a sparse sequence with many rests or pauses between notes. Higher numbers will include more notes, producing a denser sequence. If the maximum concurrent note value is set greater than zero, a

higher density value here will also result in more simultaneous notes, playing chords rather than single notes. Density values are from 0 to 32. A value of 0 effectively mutes the instrument, no notes will be included. Density is limited by the choice of maximum concurrent notes, once all available space for notes is filled, higher values of density will have no further impact.

Octave

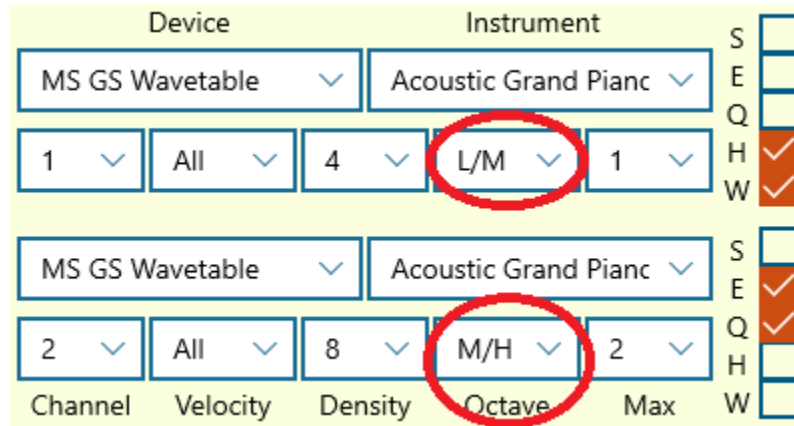


Figure 11 - Octave Range

The octave range of notes to include can be selected for each instrument. Selections are ranges such as low, medium or high, combinations of ranges, or all octaves. You can use these selections to have different instruments play in different ranges of the frequency spectrum.

Max

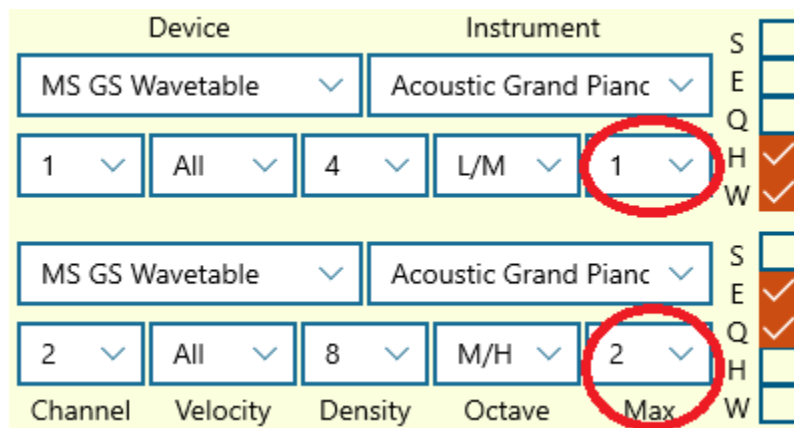


Figure 12 - Max Concurrent Notes

The Max drop-down selects the maximum concurrent notes to play for this instrument. Value can be set to 1, 2, 3 or + (more). Set at 1 this will produce a solo melody consisting of single notes, higher values

will produce chords with differing numbers of notes. The number of notes included in these chords will also be influenced by the value selected for density. Choosing three or more concurrent notes with a very low density value may produce some chords but also some solo notes and rests.

Note Types

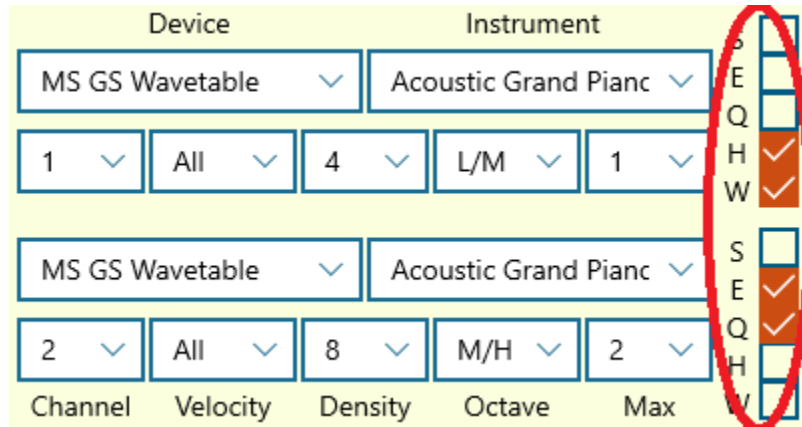


Figure 13 - Note Types

Check boxes for each instrument select the types of notes which can be included in a sequence. The available types are, from bottom to top; whole note, half note, quarter note, eighth note and sixteenth note. Any combination can be selected but at least one type must be included.

These note types denote the time duration of the notes, with whole notes being the longest, half notes half the length of whole notes and so on.


For an introduction to types of musical notes: https://en.wikipedia.org/wiki/Note_value

Transport and File Controls





Figure 14 - Transport and File Controls


The transport controls support starting, stopping and looping the play of MIDI sequences. The file controls support the loading and saving of parameter and MIDI files.


 **Generate New MIDI Phrase:** This control generates a new phrase using the parameters currently selected on the screen. If you select this control repeatedly without changing other parameters, the application will continue creating new phrases with the same tempo, key signature, etc.


When parameters are changed, a new phrase is not generated automatically. This control must be selected to trigger that action. If there are parameter changes anywhere on the page which have not yet been applied to a phrase, this button will be displayed with a red background. A red bar will also be displayed in the area of the screen with the changed parameter. Once the updated phrase is generated these colors will be restored to their defaults.


 **Play MIDI:** This control will start a sequence playing to the selected devices. If the loop control checkbox is checked, the sequence will repeat on completion, if loop is off it will play once and stop. The sequence can also be stopped using the stop button.

 **Stop Play:** This control will stop a currently playing sequence. The stop button is disabled if no sequence is playing, just as the play button is disabled when a sequence is playing.

 **Load Phrase Parameters:** All the parameters chosen for a phrase can be saved to an XML file for future retrieval, so you can save your favorite combinations. This control displays a file open dialog, if a valid parameter file is selected, its contents will be used to update values on the screen.

 **Save Phrase Parameters:** This control will display a save file dialog box. If a file name is entered and the save button selected, an XML file will be created in the chosen folder containing all the parameters making up the current phrase.

 **Save MIDI File:** This control will save the currently generated phrase as a standard MIDI file in the chosen folder. In addition to saving the notes of the phrase to a MIDI sequence, the file will also save MIDI metadata to indicate tempo, time signature, instrument patches.

 **Drag MIDI File:** This control will allow the MIDI content of the currently generated to be dragged and dropped to another application or location. If dragged to a file folder or the desktop it will be saved as a standard MIDI file. Most DAWs will accept drag and drop MIDI content, but there may be variations in how much of the included metadata will be recognized.

The progress bar below the Transport Controls displays the progress of various activities. The bar is color coded based on the type of activity in progress. For example, playing a sequence shows the bar with a green background, generating a sequence shows a blue background.

Customization Page

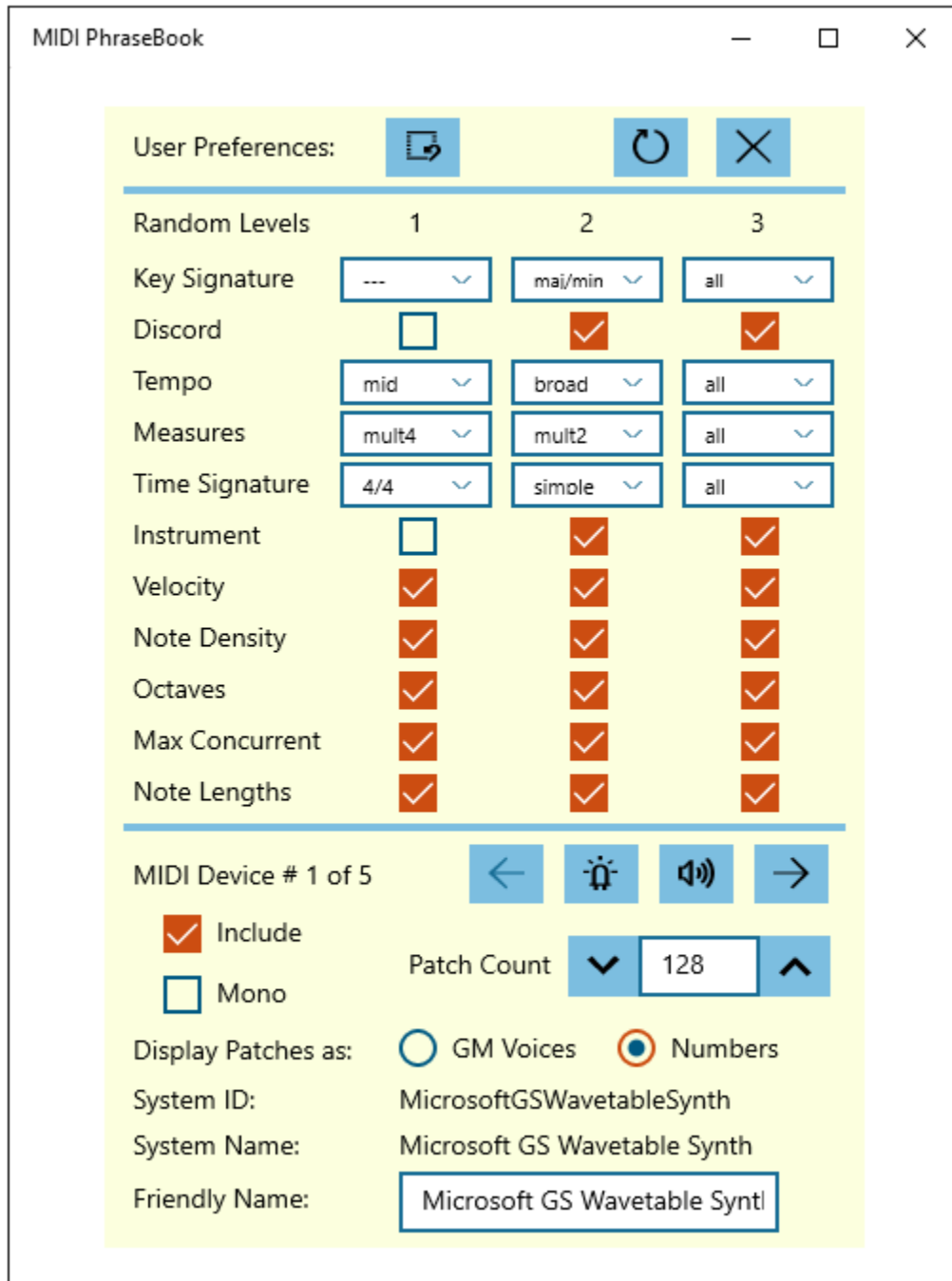


Figure 15 - Customization Screen

Access to the customization page is limited to the full version of MIDI PhraseBook.

Customize Random Levels

The customization screen allows each of the three levels of randomization to be set to user-selected values. The three levels are displayed as columns, with each option available in each column.

For each level, key signature can be set to one of three values. It can be removed from the randomization process (displayed as '---', the note and key will stay the same), limited to the choices of major/minor keys, or chosen from any option. The discord slider is represented by a checkbox, to either retain its value or be randomized.

Six options are available for tempo. Randomization can be turned off or randomized within a set of ranges. Ranges are slow, medium, fast, broad (moderately slow to moderately fast), or all (include extreme slow and fast values).

Measure count can be set to retain its current value, to be limited to multiples of 2 or 4, or randomized to any possible value. Time signature can be set to retain its value, limited to 4/4 time, limited to a small set of commonly used values, or open to any value.

All other values available to randomization are on/off, either retain current value

Customize MIDI Devices

This section allows customization of how MIDI devices appear and work in the MIDI PhraseBook application. All MIDI devices available to the system are available for display and edit.

A display indicates the number of the currently selected MIDI device and the total number of devices available. Left and right arrows scroll through available devices. Two buttons between the arrows help identify and test the displayed device by pinging it and by sending a note on command, respectively. If you have many external hardware MIDI devices and Windows 10 does not recognize their names, pinging the device to check for activity lights may help identify the selected device. Sending a note can help troubleshoot MIDI and audio connections.

Two checkboxes appear immediately below the device count display. The first lets you choose which MIDI devices appear in the drop-down box on the main page. If you have devices which you do not want to use with the application, you can deselect them here. They will still show up on this page so you can reselect them later if desired. The other checkbox lets you set a device as mono, limiting it to one note at a time. If this option is selected, the application will ignore additional notes to this device while an initial note is active.

A radio button lets you set a device to display GM Patch names or numeric patch numbers. There is currently no facility to import a custom list of patch names for a device.

The Windows 10 UWP MIDI API is not consistently successful in retrieving names for MIDI devices. Modern equipment is generally recognized correctly, but older equipment and especially multiport devices, do not show meaningful names. MIDI PhraseBook assigns names to such devices in a format such as "Device:1 – Port:1". Alternately, a friendly name can be entered on this page for any device, this friendly name will show up in the drop-down list on the main page.

Exit Customization Page



Reset random level values to defaults.



Save changes and exit.



Exit without saving changes.

General Information

MIDI Devices

MIDI PhraseBook uses the new API provided by Microsoft for Windows 10 Universal Windows Platform (UWP) development. This API provides some improvements over previous Windows approaches as well as some downgrades.

The biggest improvement is that hot plugging of MIDI devices is supported, and all MIDI PlayGround applications support this feature. Added or removed devices will be reflected in the device list immediately. Also, MIDI devices can be shared between applications. MIDI PlayGround apps support this as well.

The one degraded feature is that the new API does not recognize the names of many older MIDI devices, especially multi-port devices. The functionality of the device is not impaired. Friendly names can be added in the customization page, available in the full version of the application.

MIDI PhraseBook looks for hardware MIDI devices or for software devices emulating hardware devices. A software synthesizer, for example a virtual instrument using Virtual Studio Technology (VST), will not show up in your drop-down list of devices. To play a virtual instrument from MIDI PhraseBook, you can employ software that provides virtual MIDI devices. Such devices will show up in both MIDI PhraseBook as outputs, and in your virtual instrument as an input, to allow notes generated from MIDI PhraseBook to be played by your virtual instrument.

Audio Devices

When playing the built-in Microsoft synthesizer, MIDI PhraseBook uses the default Windows audio device. There is no option in the application to select a different audio output, if multiple audio devices are available. Both the device and volume are set through Windows.

Exporting MIDI Files

MIDI files created by the MIDI PhraseBook application, in addition to the note information which makes up the musical phrase, contain the following MIDI metadata:

- Tempo
- Time Signature
- Key Signature
- Program Changes

These MIDI files are playable from media player applications which support the MIDI format. They can be embedded in applications which support media files, such as Microsoft PowerPoint. They can be included in web pages.

Most DAW (Digital Audio Workstation) applications support the import of MIDI data, but they are not consistent in their level of support. MIDI export functions are fully supported in the trial version of MIDI PhraseBook specifically so you can test the application with your DAW to verify that your preferred workflow is sufficiently supported.

Some DAWs will open MIDI files as input, others allow MIDI content to be copied from the clipboard. MIDI PhraseBook supports both these models. You may find that in some cases, metadata such as tempo and key signature may be recognized by the DAW in some types of import but not in others. For example, it may be necessary to set the tempo and key signature in your DAW project prior to dragging and dropping content from MIDI PhraseBook.

Full versus Trial Version

Feature	Trial Version	Full Version
Maximum Measures	8	128
Random Levels Customization	No	Yes
MIDI Device Customization	No	Yes
Load/Save Parameters	No	Yes

Table 1

Support

Additional support is available on the NaiveSoft website.

Visit: <http://www.naivesoft.com/>