

# **miniMusic BugBand**

Version 1.2  
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Instructions are available on your phone or handheld in the BugBand application. You can view them by tapping on the question mark in the center of the screen, or by choosing "Help" from the Options menu.

## **USING BUGBAND**

If this is your first time playing BugBand select "Practice" from the pop-up menu in the top right corner of the main screen. You can play in the "Practice" level as long as you want.

Tap on the "Play" button (represented by an arrow) to start playing the game. As a bug crawls across the screen you must play the correct note to get rid of it. If you play the correct note you score a point, if not you loose a point. The bugs must be eliminated in order from left to right.

You have your choice of instruments (piano, guitar, trumpet, tuba, trombone or violin) or you can write or type in the letter name of the note using Graffiti or the Treo keypad (use a capital letter to play sharp notes).

Tap on the "Tools" button (represented by a wrench) to change the settings. You can choose which instrument you want to play, which clef, and how the sound should be generated.

Select "Level 1" from the pop-up menu in the top right corner to start scoring points and advancing to more difficult levels. Tap on the score to see the high score screen.

See the other help topics on how to read music notation and how to play the different instruments.

## **READING MUSIC**

Every note (or pitch) in music is given a letter name. The letters A, B, C, D, E, F and G are used, 'A' being the lowest and 'G' being the highest. The distance between two letters is called a step.

Higher than the 'G' (or lower than the 'A') the same letter names repeat. So, one step above the 'G' is another 'A', but this 'A' is a higher pitch than the first 'A'. It is said to be one "octave" higher than the first 'A'.

There are more notes that fall between these seven letters. If you play a note halfway between the 'A' and the 'B' it is called an A-sharp (meaning a "half-step" higher than an 'A') or it can be called a B-flat (meaning a half-step lower than a B). Special symbols are used for these: "#" means sharp, and "b" means flat. We could call this note an A# or a Bb, the sound is the same. Likewise, between the C and D is a C# (or Db), between the D and E there is a D# (or Eb), and so on.

There is no pitch between the B and C, nor is there one between the E and F. These notes are already a half-step apart with no note in between. If you saw an E# written somewhere it would sound the same as an F (not an Fb).

Written music represents each note as a dot, called a "note head". BugBand uses bugs instead of note heads (for fun). The notes (or bugs) are drawn on a music "staff". A staff is a set of five lines running across a page (or your screen). Between the five lines are four spaces. If the note is drawn on a line it means one pitch, if it is drawn between two lines (in a space) it means a different pitch.

If you set BugBand to the "Practice" level it will show you which letter names go with which lines and spaces along the right edge of the screen.

## **PLAYING PIANO**

By default BugBand will start with a piano at the bottom of the screen. If you need to change to the piano from another instrument, tap on the "Tools" button (represented by a wrench) and select "Piano" from the instrument pop-up menu.

You play a piano by pushing down the keys. As you look at a piano keyboard, you'll see a repeating pattern of black and white keys. The white keys are used for the letter names A through G, and the black keys are used for the sharp and flat notes that fall between them (see the section on reading music for more about letter names, sharp and flat notes). If you find the A and B keys (both white) there is a black key between them that can be used as an A# (A-sharp) or as a Bb (B-flat).

Select "Practice" from the level menu in the top right corner of the main screen and all of the white keys will be labeled with the correct letters.

Notice that because there is no note between the B and C, nor the E and F, there are gaps in the black keys. From left to right: you see three black keys, then a gap for B and C, then two black keys followed by a gap for E and F. Then the pattern repeats for the next octave. In BugBand only one octave is shown.

## **PLAYING GUITAR**

To change to the guitar from another instrument, tap on the "Tools" button

(represented by a wrench) and select "Guitar" from the instrument pop-up menu. There are both right-handed and left-handed versions, although some left-handed people learn to play right-handed guitar. There are separate sections below explaining Right-Handed and Left-Handed playing.

### RIGHT-HANDED

To play a note on a guitar, you hold a string down with a finger on your left hand and strum the string with your right hand. By holding a string down you are briefly changing the length of the string so that it plays a different pitch, the string can only vibrate on the side you strum. The shorter you make the vibrating string, the higher the pitch will be.

To make sure you play the right notes, the guitar neck has a series of metal ridges called "frets". No matter where you hold the string down, the nearest fret will stop the string from vibrating at exactly the right place to get the pitch you want. In BugBand the long lines across the screen are the strings and the short vertical lines are the frets. You only have to worry about where to hold the string; when you tap on a string we will assume that you are also strumming it.

Each string has a letter name. This is the pitch which that string will play when you strum it without your left hand touching it at all. This is called an "open string" when no frets are being used to shorten it. Choose "Practice" from the pop-up menu in the top right corner of BugBand's main screen to see the letter name for each of the strings.

Moving along the neck toward the body (from left to right on the screen), each fret will raise the pitch one half-step. If you are on the 'G' string, tapping all the way to the left will play a 'G' (the open string). Move the stylus just to the right of the double line and tap on the same string to play a G-sharp (G#) which is one half-step higher. Move the stylus a little further to the right and tap on the string to the right of the next fret to play an 'A', which is a half-step higher than the G#.

In BugBand, while playing with the treble clef, try to play notes primarily on the B, G, and D strings (the two middle strings and the one above them). For reading the bass clef, try to use the lowest strings, the E, A and D at the bottom of the screen. You might want to hold the stylus in your left hand since it is the hand you will use to hold the strings on a real guitar.

### LEFT-HANDED

To play a note on a guitar, you hold a string down with a finger on your right hand and strum the string with your left hand. By holding a string down you are briefly changing the length of the string so that it plays a different pitch, the string can only vibrate on the side you strum. The shorter you make the vibrating string, the higher the pitch will be.

To make sure you play the correct notes, the guitar neck has a series of metal

ridges called "frets". No matter where you hold the string down, the nearest fret will stop the string from vibrating at exactly the right place to get the pitch you want. In BugBand the long lines across the screen are the strings and the short vertical lines are the frets. You only have to worry about where to hold the string; when you tap on a string we will assume that you are also strumming it.

Each string has a letter name. This is the pitch which that string will play when you strum it without your right hand touching it at all. This is called an "open string" when no frets are being used to shorten it. Choose "Practice" from the pop-up menu in the top right corner of BugBand's main screen to see the letter name for each of the strings.

Moving along the neck toward the body (from right to left on the screen), each fret will raise the pitch one half-step. If you are on the 'G' string, tapping all the way to the right will play a 'G' (the open string). Move the stylus just to the left of the double line and tap on the same string to play a G-sharp (G#) which is one half-step higher. Move the stylus a little further to the left and tap on the string to the left of the next fret to play an 'A', which is a half-step higher than the G#.

In BugBand, while playing with the treble clef, try to play notes primarily on the B, G, and D strings (the two middle strings and the one above them). For reading the bass clef, try to use the lowest strings, the E, A and D at the bottom of the screen. You might want to hold the stylus in your right hand since it is the hand you will use to hold the strings on a real guitar.

## **PLAYING TRUMPET**

To change to the trumpet from another instrument, tap on the "Tools" button (represented by a wrench) and select "Trumpet" from the instrument pop-up menu.

Playing a particular note on a trumpet requires you to control the way you blow into it and also press down a combination of the three keys. The keys are actually valves that control how air flows through the trumpet; when you press down a key it opens the valve. By opening valves, the path that air follows through the trumpet becomes longer making any note you play lower.

The shape of your mouth and the pressure you apply when you blow into the trumpet is called the "embouchure". It can change the quality of the sound and the pitch. A bugle is like a trumpet but has no valves; you can only play a small set of notes by changing your embouchure. You can play those same notes on a trumpet, but then use the valves to lower the pitch so that you can play many more notes that the bugle cannot.

Since you can't blow into your handheld computer, BugBand will assume your embouchure is correct for the desired note. All you have to worry about are the

valves. When you are in the Practice level (or the game is stopped) the notes you play are highlighted on the staff above; you will see each valve combination can be used for several different notes on the staff, depending on your embouchure.

Try tapping on the mouth piece of the trumpet while the game is stopped. Several notes are highlighted on the staff above. These are the G, C and E. Any of these three notes can be played without using any valves, just by changing the embouchure. Visit the help section "Reading Music" for more about these letter names of notes.

The middle valve lowers the pitch by a half step, for example changing an E to an E-flat (Eb). The first valve, closest to your mouth (played with your index finger), lowers the pitch by two half steps, so it would change an E to a D. The third valve (furthest from your mouth) lowers the pitch by three half steps changing an E to a D-flat (Db).

You can then use these valves in combinations to lower the note further by adding the half steps together. So if you hold down all three valves (1 + 2 + 3) it would lower the pitch by six half steps. There are some notes that can be played more than one way (depending on the embouchure). You should always try to use the simplest valve combination to play a note, lowering the note by the fewest half-steps. For example, play a 'B' by lowering the C by one half-step (using only the middle valve) instead of lowering the E by five half steps (using both the first and third valves).

Notice that there are two ways to lower a pitch by three half steps. One is to hold down the third valve key. The other way is to hold down the combination of both the first and second valve keys. When you play a real trumpet you should ALWAYS use the combination of the first and second keys to play these notes. Try to avoid ever using the third valve key by itself.

In BugBand, tap directly on a valve key to play a note with only that valve open. Use the buttons above the keys to play two-valve combinations, for example the right most button will depress both the second and third valve keys, lowering the note by 5 half steps. Tap the wide button beneath the valve keys to depress all three. Tap the button to the left to play a note without using any valves (or you can tap on the mouth piece for the same effect).

## **PLAYING TUBA**

To change to the tuba from another instrument, tap on the "Tools" button (represented by a wrench) and select "Tuba" from the instrument pop-up menu. There is not enough space on the screen to draw a full tuba, so you will learn the tuba fingering on the trumpet keys. There is a small picture of a tuba to the side to remind you that this isn't a trumpet.

Playing a particular note on a tuba requires you to control the way you blow into it and also press down a combination of the three keys. The keys are actually valves that control how air flows through the tuba; when you press down a key it opens the valve. By opening valves, the path that air follows through the tuba becomes longer making any note you play lower.

The shape of your mouth and the pressure you apply when you blow into the trumpet is called the "embouchure". It can change the quality of the sound and the pitch. You can play a small set of notes just by changing your embouchure. Then you use the valves to lower any of those pitches so that you can play many more notes.

Since you can't blow into your handheld computer, BugBand will assume your embouchure is correct for the desired note. All you have to worry about are the valves. When you are in the Practice level (or the game is stopped) the notes you play are highlighted on the staff above; you will see each valve combination can be used for several different notes on the staff, depending on your embouchure.

Try tapping on the mouth piece of the trumpet while the game is stopped. Several notes are highlighted on the staff above. These are the F, B-flat and D. Any of these three notes can be played without using any valves, just by changing the embouchure. Visit the help section "Reading Music" for more about these letter names of notes.

The middle valve lowers the pitch by a half step, for example changing the D to an D-flat (Db). The first valve, closest to your mouth (played with your index finger), lowers the pitch by two half steps, so it would change a D to a C. The third valve (furthest from your mouth) lowers the pitch by three half steps changing an D to a B.

You can then use these valves in combinations to lower the note further by adding the half steps together. So if you hold down all three valves (1 + 2 + 3) it would lower the pitch by six half steps. There are some notes that can be played more than one way (depending on the embouchure). You should always try to use the simplest valve combination to play a note, lowering the note by the fewest half-steps. For example, play an 'A' by lowering the B-flat (Bb) one half-step (using only the middle valve) instead of lowering the D by five half steps (using both the first and third valves).

Notice that there are two ways to lower a pitch by three half steps. One is to hold down the third valve key. The other way is to hold down the combination of both the first and second valve keys. When you play a real tuba you should ALWAYS use the combination of the first and second keys to play these notes. Try to avoid ever using the third valve key by itself.

In BugBand, tap directly on a valve key to play a note with only that valve open.

Use the buttons above the keys to play two-valve combinations, for example the right most button will depress both the second and third valve keys, lowering the note by 5 half steps. Tap the wide button beneath the valve keys to depress all three. Tap the button to the left to play a note without using any valves (or you can tap on the mouth piece for the same effect).

## **PLAYING TROMBONE**

To change to the trombone from another instrument, tap on the "Tools" button (the wrench) and select "Trombone" from the instrument pop-up menu.

Playing a note on a real trombone requires you to control the way you blow into it and also the position of the 'slide'. The movable tube called the 'slide' controls how air flows through the trombone. By extending the slide, the path that air follows through the trombone becomes longer making any note you play lower.

The shape of your mouth and the pressure you apply when you blow into the trombone is called the "embouchure". It can change the quality of the sound and the pitch. You can play a small set of notes just by changing your embouchure, then use the slide to lower those pitches so that you can play many more notes.

Since you can't blow into your handheld computer, BugBand will assume your embouchure is correct for the desired note. All you have to worry about is the slide. When the game is stopped (or in Practice level) the notes you play are highlighted; each slide position can be used for two different notes on the staff, depending on your embouchure. A real trombone can play more notes above and below the bass clef by using a different embouchure.

You can tap on the slide itself with your stylus and drag it to the desired position, or you can tap on the position numbers beneath the trombone and the slide will move to that position.

Try tapping the position #1 button while the game is stopped. Two notes are highlighted on the staff above. These are the Bb and F. The Bb can also be spelled A#, but it sounds the same. Either of these two notes can be played without moving the slide, just by changing the embouchure. Visit the help section "Reading Music" for more about these letter names of notes.

Each position that you move the slide out lowers the pitch by a half step, so if you slide it to position #2, you can lower the Bb to an A, or you can lower the F to an E. If you move the slide to position #3, the notes are lowered another half step to Ab and Eb.

With the level pop-up menu in the top right corner, choose the Practice level and the slide positions will be labelled with the natural notes. The unlabelled positions

(1, 3, and 5) are only used to play sharp and flat notes which appear at higher levels.

## **PLAYING VIOLIN**

To change to the violin from another instrument, tap on the "Tools" button (the wrench) and select "Violin" from the instrument pop-up menu.

To play a note on a violin, you hold a string down with a finger on your left hand and bow the string with your right hand. By holding a string down you are briefly changing the length of the string so that it plays a different pitch, the string can only vibrate on the side you bow. The shorter you make the vibrating string, the higher the pitch will be.

To make sure you play the right notes, we've marked the violin neck with lines to indicate each note. On a real violin a student would use tape to mark each note until they learn the proper hand positions. These where the frets would be on the neck of a guitar or similar string instruments.

In BugBand, the long lines across the screen are the strings and the short up & down lines are pieces of tape. The double line near the left edge is called the nut; this is a small metal ridge that holds the strings off of the neck. Since you can't bow your handheld computer, you only have to worry about where to hold the string; when you tap on a string we will assume that you are also bowing it.

Each string has a letter name. This is the pitch which that string will play when you bow it without your left hand touching it at all. This is called an "open string". Choose "Practice" from the pop-up menu in the top right corner of BugBand's main screen to see the letter names for the strings. To play an open string, tap the string on the far left edge, to the left of the double line.

Moving along the neck toward the body (from left to right on the screen), each finger position will raise the pitch one half-step. If you are on the 'G' string, tapping all the way to the left will play a 'G' (the open string). Move the stylus just to the right of the double line and tap on the same string to play a G-sharp (G#) which is one half-step higher. Move the stylus a little further to the right and tap on the the next finger position to play an 'A', which is a half-step higher than the G#.

In BugBand, while playing with the treble clef, try to play notes primarily on the D, and A strings (the two middle strings). You might want to hold the stylus in your left hand since it is the hand you will use to hold the strings on a real guitar. You should only need the E string to play the E at the top of the staff.

## **ABOUT MIDI**



If you connect your handheld to a MIDI instrument (like a synthesiser, keyboard, or sampler) you can hear notes played on that external hardware. You can also play notes on the attached MIDI instrument instead of tapping on the screen. This way you could learn piano on a full size keyboard instead of the little tiny one on the screen.

Connecting to MIDI hardware requires a serial port on your handheld. Many handhelds support both Serial and USB and can be used for MIDI, for example the Palm universal connector can do both. Many newer handhelds have a USB port only (like the Zire 21, 31, 72, Tungsten E) and cannot be used to connect directly to MIDI hardware. You will have to use the on-screen controls to play.

The easiest way to make this connection is if you have a MIDI instrument with a serial port on the back of it. This is a small round port (a little smaller than the MIDI-in and MIDI-out ports) and is often labelled "host" or "to host". This port is designed to connect the instrument to a computer without additional hardware (to use the MIDI ports you would need something called a MIDI interface). All you need to connect your Palm to such a MIDI instrument is a serial HotSync cable or cradle, and a Mac Serial Adapter (which converts the wide connector of the HotSync cable to the small round serial adapter used by older macintosh computers and by MIDI instruments). If you buy the Universal Connector Serial Cradle made by Palm it includes the Mac Serial Adapter. You may have to set a switch on the back of the MIDI instrument to use the serial port. Consult the manual that came with the MIDI instrument for details on connecting to a computer.

For more information, and for older instruments that do not have this serial port, see our web page about MIDI: [www.minimusic.com/midi.html](http://www.minimusic.com/midi.html)

We hope you enjoy playing BugBand!

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