Hello Purr

Building your first app: HelloPurr

Now that you've set up your computer and device, and you've learned how the Designer and the Blocks Editor work, you are ready to build the HelloPurr app. At this point, you should have the Designer or Blocks Editor open in your browser, and either an Android device or an Android emulator connected to your project. (See Setup Instructions if you do not have these things setup.)

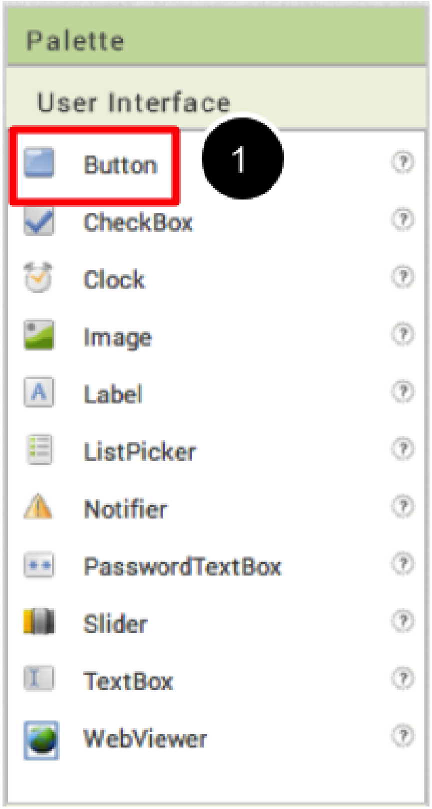
HelloPurr: Tap the kitty, Hear him meow

HelloPurr is a simple app that you can build in a very short time. You will create a button that has a picture of a cat on it, and then program the button so that when it is clicked a "meow" sound plays.

To build HelloPurr, you'll need an image file of a cat and an audio file with a "meow" sound. Download these files to your computer by right-clicking on the the following links and selecting "Save Link As..." Save both files onto your desktop or downloads folder, or anywhere that you can easily find later.

- Kitty picture: kitty.png (Right-click and Save)
- Meow sound: meow.mp3 (Right-click and Save)

Select components to design your app

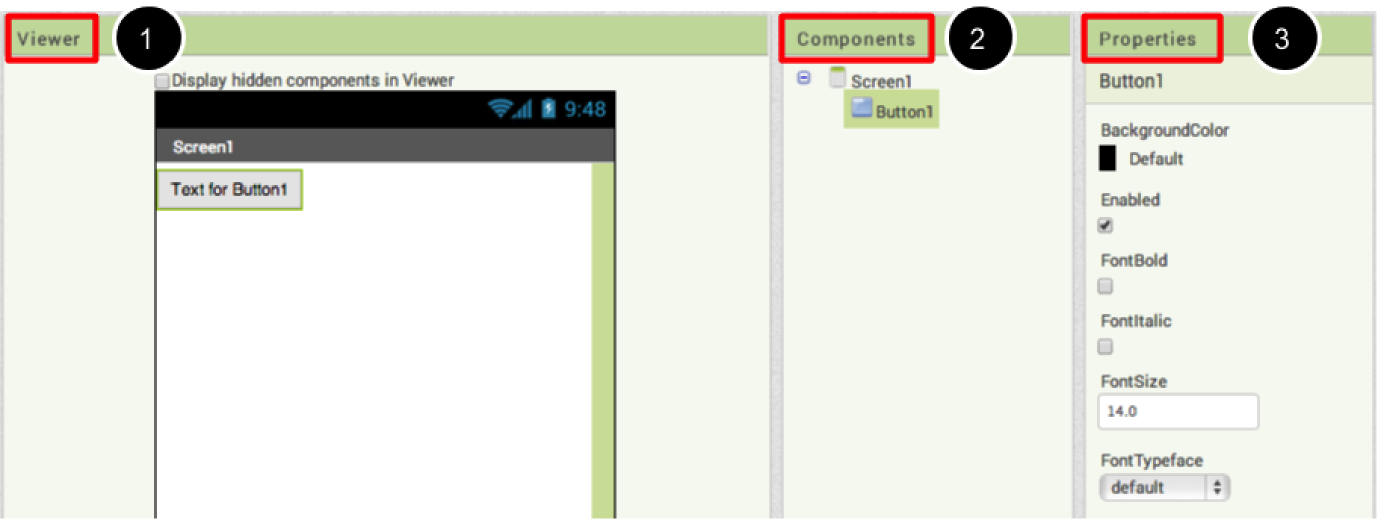


The App Inventor **Components** are located on the left hand side of the *Designer Window* under the title **Palette**. Components are the basic elements you use to make apps on an Android device. They're like the ingredients in a recipe. Some components are very simple, like a **Label** component, which just shows text on the screen, or a **Button** component (#1 left) that you tap to initiate an action.

Other components are more elaborate: a drawing **Canvas** that can hold still images or animations, an **Accelerometer** sensor that works like a Wii controller and detects when you move or shake the phone, components that send text messages, components that play music and video, components that get information from Web sites, and so on.

To use a component in your app, you need to click and drag it onto the Viewer in the middle of the **Designer**. When you add a component to the **Viewer** (#1 below), it will also appear in the components list on the right hand side of the Viewer.

Components (#2 below) have properties that can be adjusted to change the way the component appears or behaves within the app. To view and change the properties of a component (#3 below), you must first select the desired component in your list of components.



BackgroundColor
■ Default

Enabled
☑

FontBold
□

FontItalic
□

FontSize
14.0

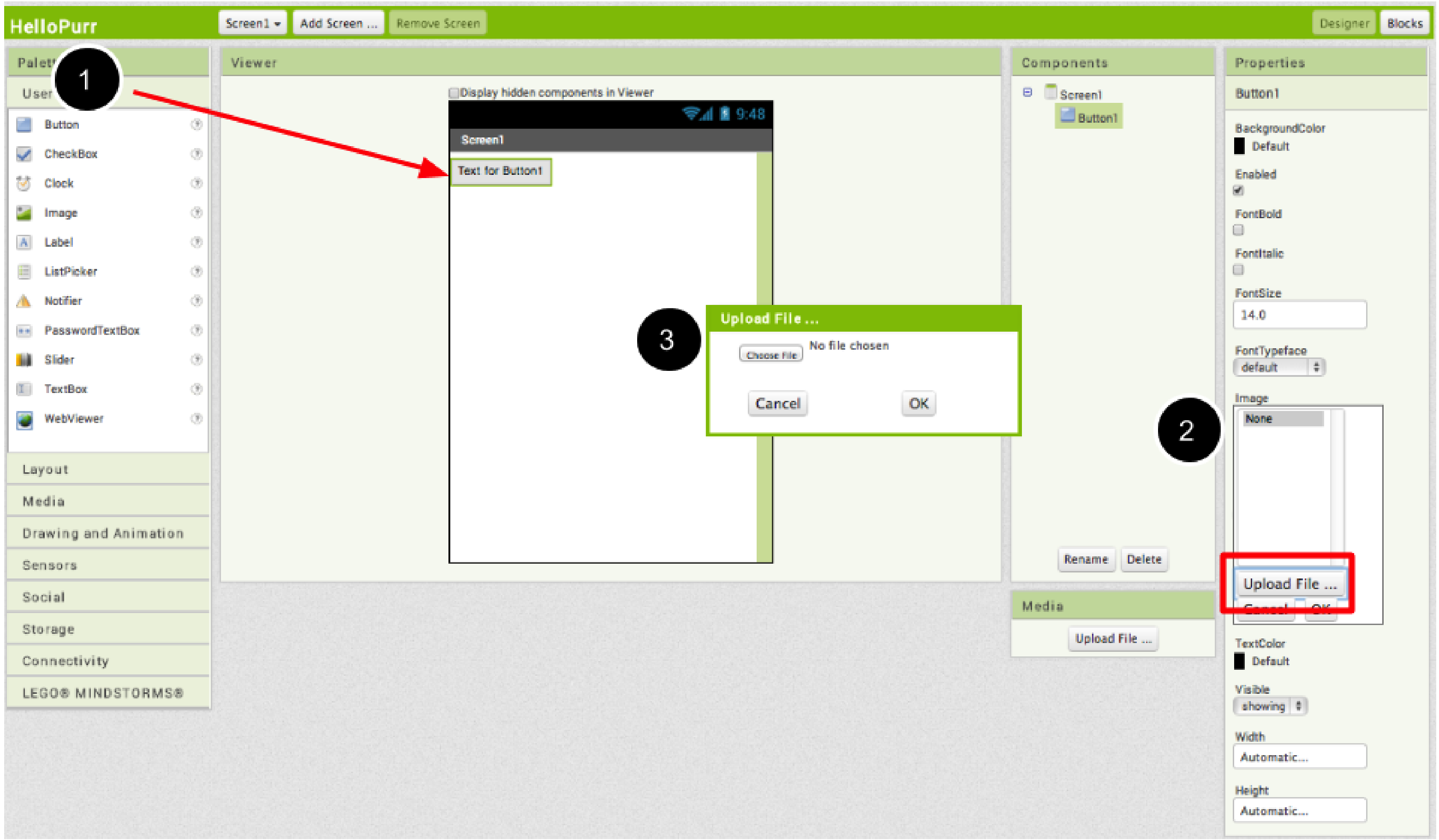
FontTypeface
default

Steps for selecting components and setting properties

HelloPurr will have a **Button** component that displays the image of the kitty you downloaded earlier. To accomplish this:

Step 1a. From the **User Interface** palette, drag and drop the **Button** component to Screen1 (#1).

Step 1b.To make the button have an image of a cat, in the **Properties** pane, under Image, click on the text *"None..."* and click *"Upload New"* (#2). A window will pop up to let you choose the image file. Click "Choose File" and then navigate to the location of the *kitty.png* file you downloaded earlier (#3). Click the *kitty.png* file, click "Open", and then click "OK".

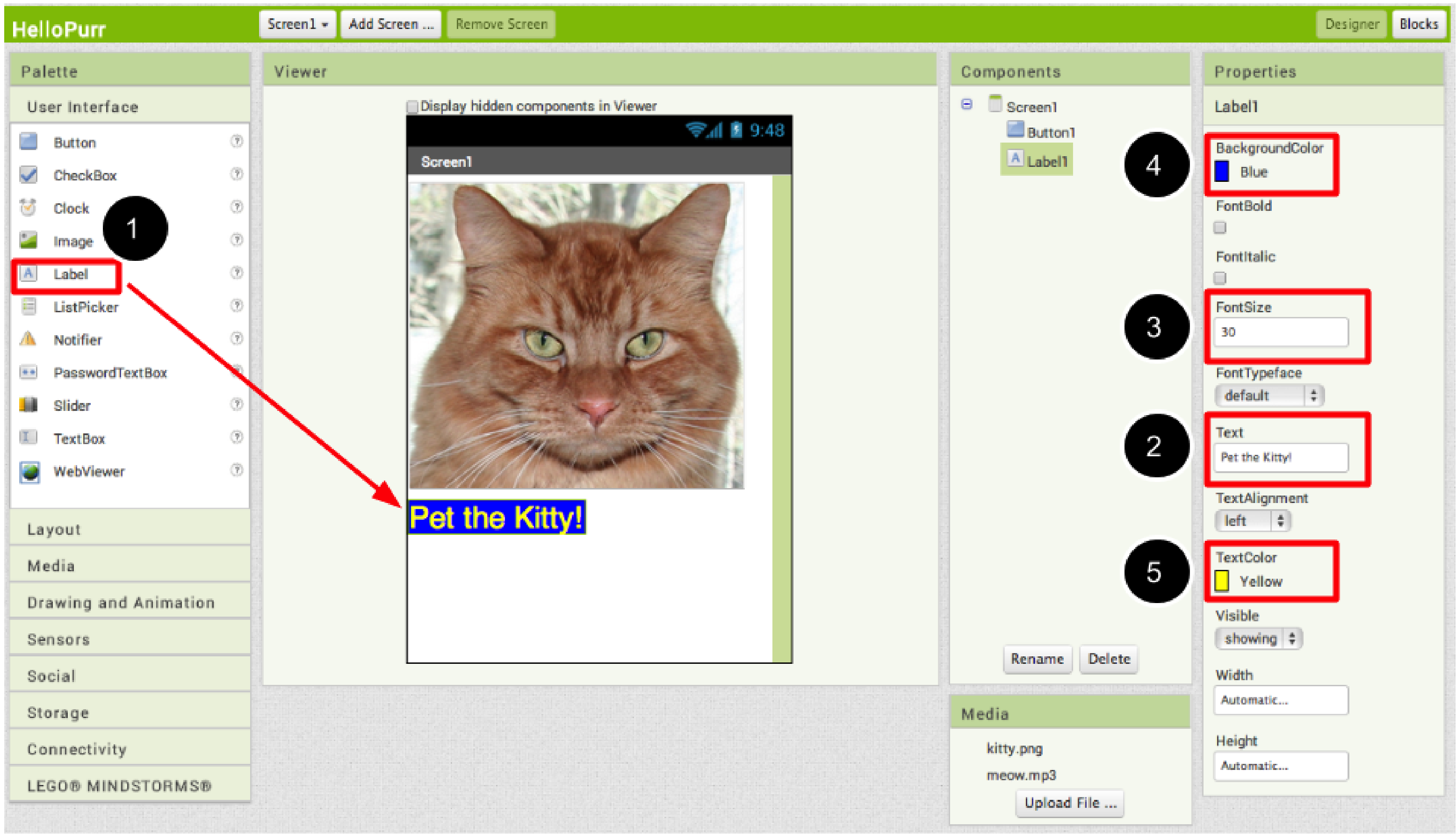


Step 2. Change the Button's *Text* property: Delete "Text for Button1", leaving the Button's *Text* property blank so that there is no writing over the kitty's face.

If the entire kitty picture is not showing up, you can fix this by setting the *Height* and *Width* properties of the **Button** to "Fill Parent". To do this, click on the **Button** component, go to the Properties pane on the right-hand side, scroll down to the very bottom to where it says **Width** and click on the word "Automatic..." to activate the drop down list. Choose "Fill Parent". Do the same for the **Height** property.

Step 3. From the **User Interface** palette, drag and drop the **Label** component to the Viewer (#1), placing it below the picture of the kitty. It will appear under your list of components as Label1.

Under the Properties pane, change the *Text* property of **Label1** to "Pet the Kitty" (#2). You'll see the text change in the Designer and on your connected device. Change the *FontSize* of **Label1** to 30 (#3). Change the *BackgroundColor* of **Label1** by clicking on the box (#4): you can change it to any color you like. Change the *TextColor* of **Label1** (#5) to any color you like. Here, the background color is set to blue and the text color is set yellow.



□ Display hidden components in Viewer

Label1

BackgroundColor: Blue

FontBold: □

FontItalic: □

FontSize: 30

FontTypeface: default

Text: Pet the Kitty!

TextAlignment: left

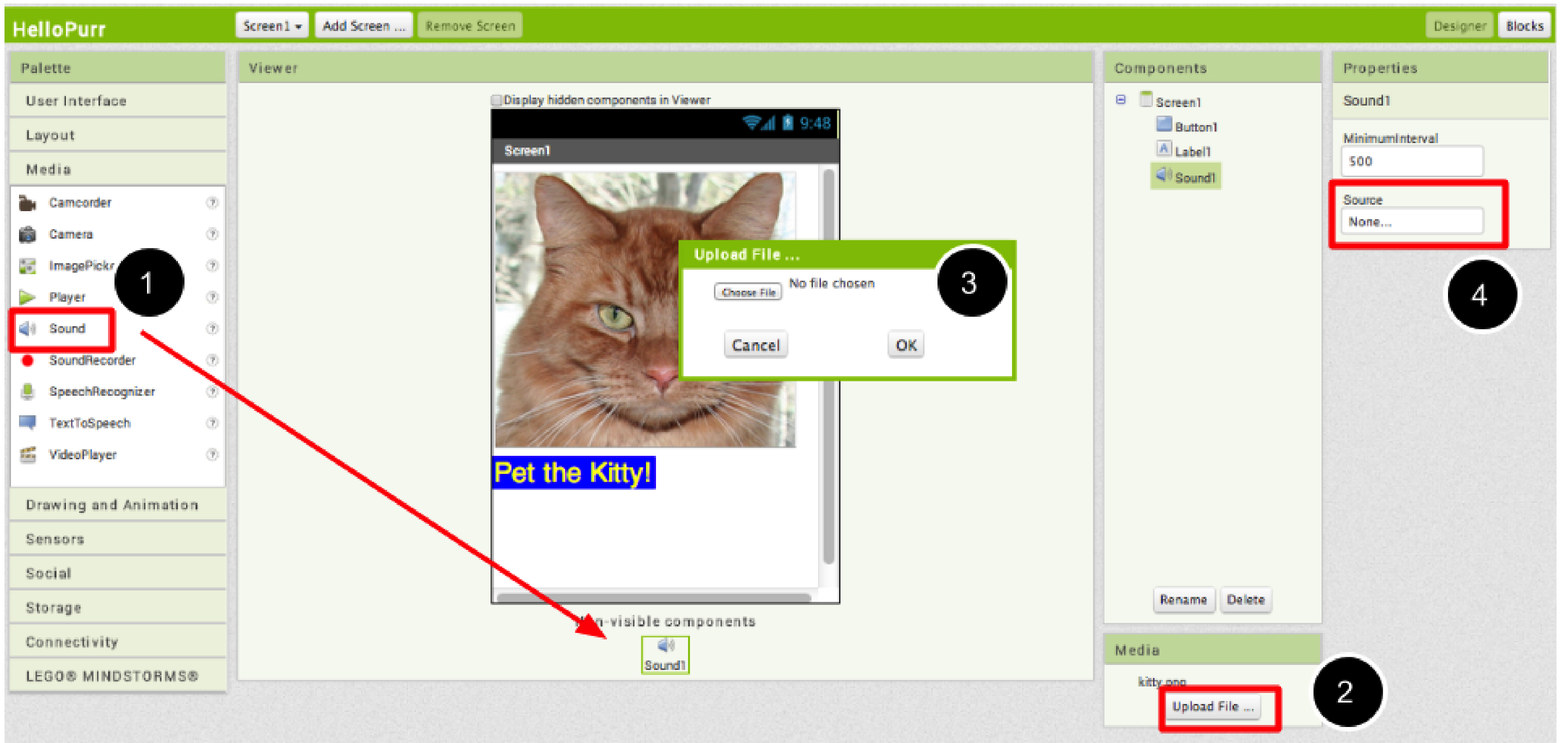
TextColor: Yellow

Visible: showing

Width: Automatic...

Height: Automatic...

Step 4. Under Palette, click on the **Media** drawer and drag out a **Sound** component and place it in the Viewer (#1). Wherever you drop it, it will appear in the area at the bottom of the Viewer marked **Non-visible components**. Under the **Media** pane, Click *Upload New...* (#2) Browse to the location of the **meow.mp3** file that you downloaded earlier and upload it to this project (#3). Under the Properties pane, see that the **Source** property currently says *None*.... Click the word *None...* to change the Sound1 component's **Source** to *meow.mp3* (#4).



□ Display hidden components in Viewer

No file chosen

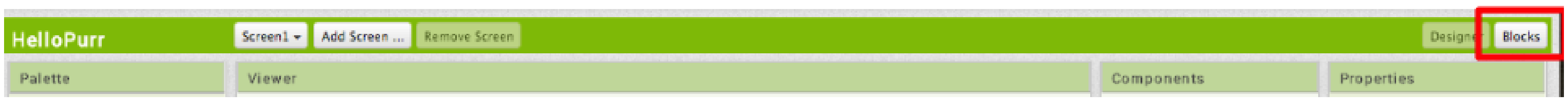
Sound1

MinimumInterval: 500

Source: None...

Programming with the Blocks Editor

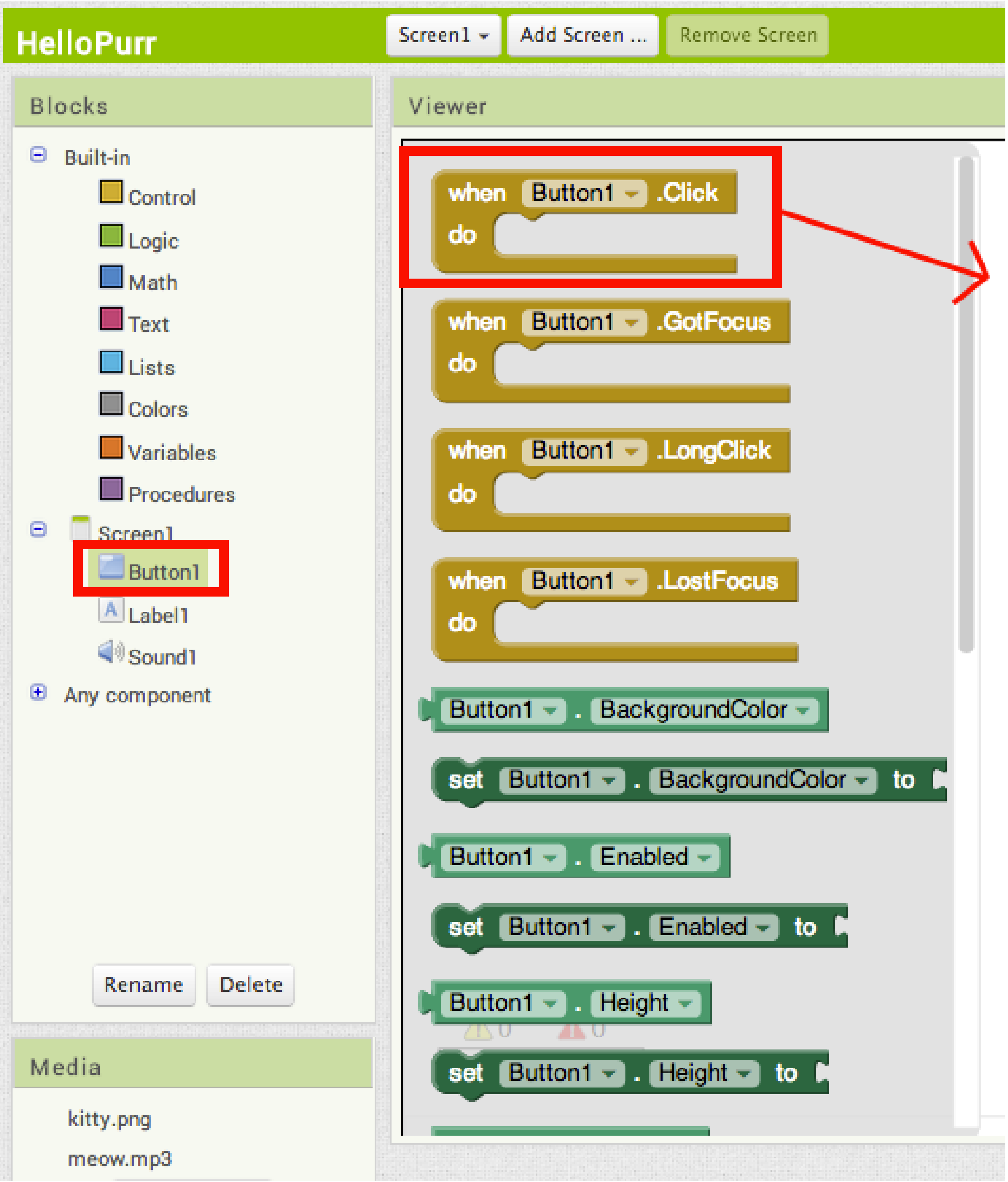
So far you have been arranging your app's screen and components in the *Designer*. To start programming the behavior of the app, you need to go to the *Blocks Editor*. Click the Blocks button to go to the Blocks Editor.



Once you have the Blocks Editor in front of you, continue to the next step to start programming your app with blocks.

Making the sound play

Step 1. On the left side of the Blocks Editor, click the **Button1** drawer to open it. Drag and drop the when Button1.Click block in the work area (the open area on the right).



Those mustard yellow blocks are called **event handler** blocks. The event handler blocks specify how the app should respond to certain events: a button has been pressed, the phone is being shaken, the user is dragging her finger over a canvas, etc. The event handler blocks are mustard yellow in color and use the word *when*. For example, when Button1.Click is an event handler

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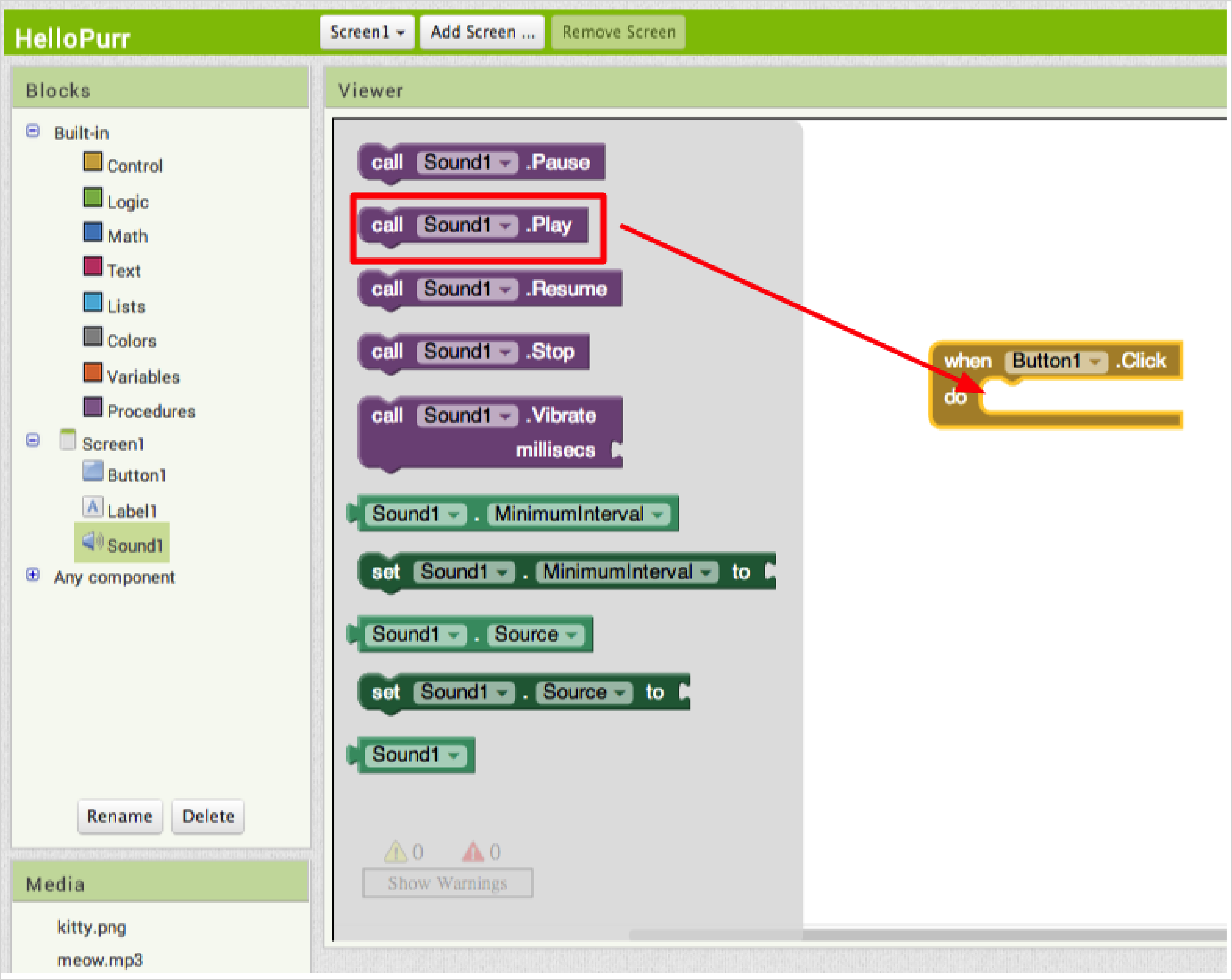
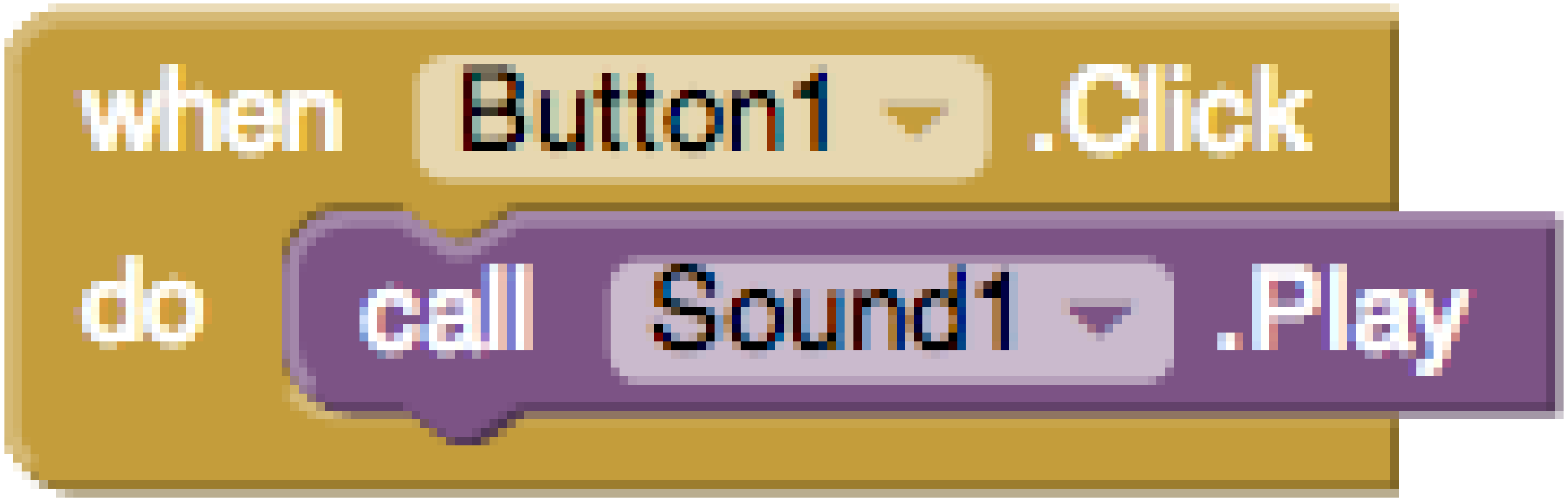
Step 2. Click the **Sound1** drawer and drag the Sound1.Play block and connect it to the "do" section of the when Button1.Click block. The blocks connect together like puzzle pieces and you can hear a clicking sound when they connect.



The purple blocks are called **command** blocks, and are placed in the body of event handlers. When an event handler is executed, it runs the sequence of commands in its body. A command is a block that specifies an action to be performed (e.g., playing sound) when the event (e.g., pressing Button1) is triggered.

Your blocks should look like this at this point:



Now you can see that the **command block** is in the **event handler**. This set of blocks means, "when Button1 is clicked, Sound1 will play."

You can read more about the blocks and how they work here: App Inventor Built-in Blocks.

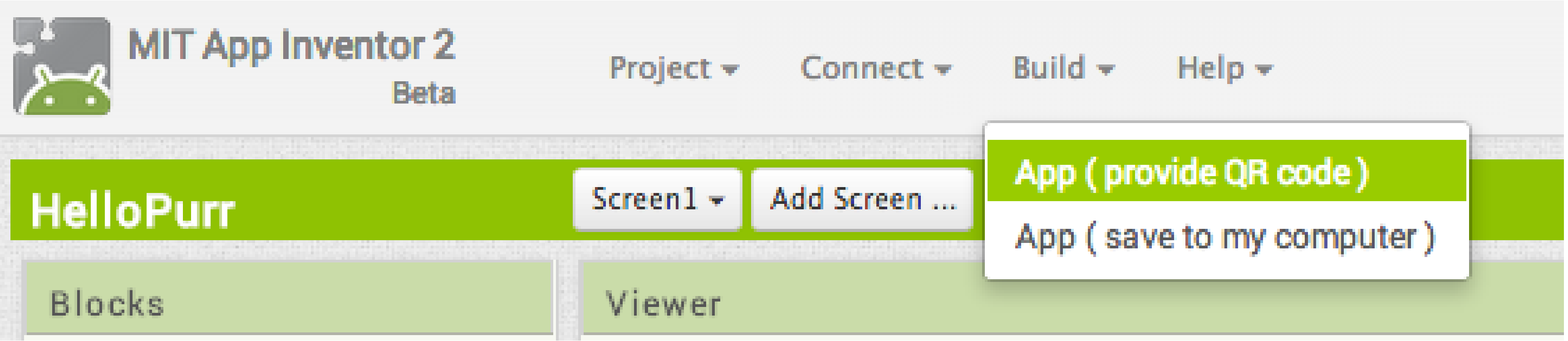
Try it out on your device or with the emulator! When you press the button you should hear the kitty meow. Congratulations, your first app is running!

Note: *there is a known issue with the Sound component on some devices. If you see an "OS Error" and the sound does not play - or is very delayed in playing, go back into the Designer and try using a Player component (found under Media) instead of the Sound component.*

Packaging your app

While your device (emulator or phone/tablet) has been connected to App Inventor, your app has been running in real time on your device. If you disconnect the emulator/phone/tablet from App Inventor, the app will vanish. You can always make it return by reconnecting the device. To have an app running without being connected to App Inventor, you must "**package**" the app to produce an application package (apk file) and install it permanently on your device.

To "package" the app to your phone or to send to someone else, click the **Build** tab at the top of the screen. Under Build, here are two options available for you to choose from.:



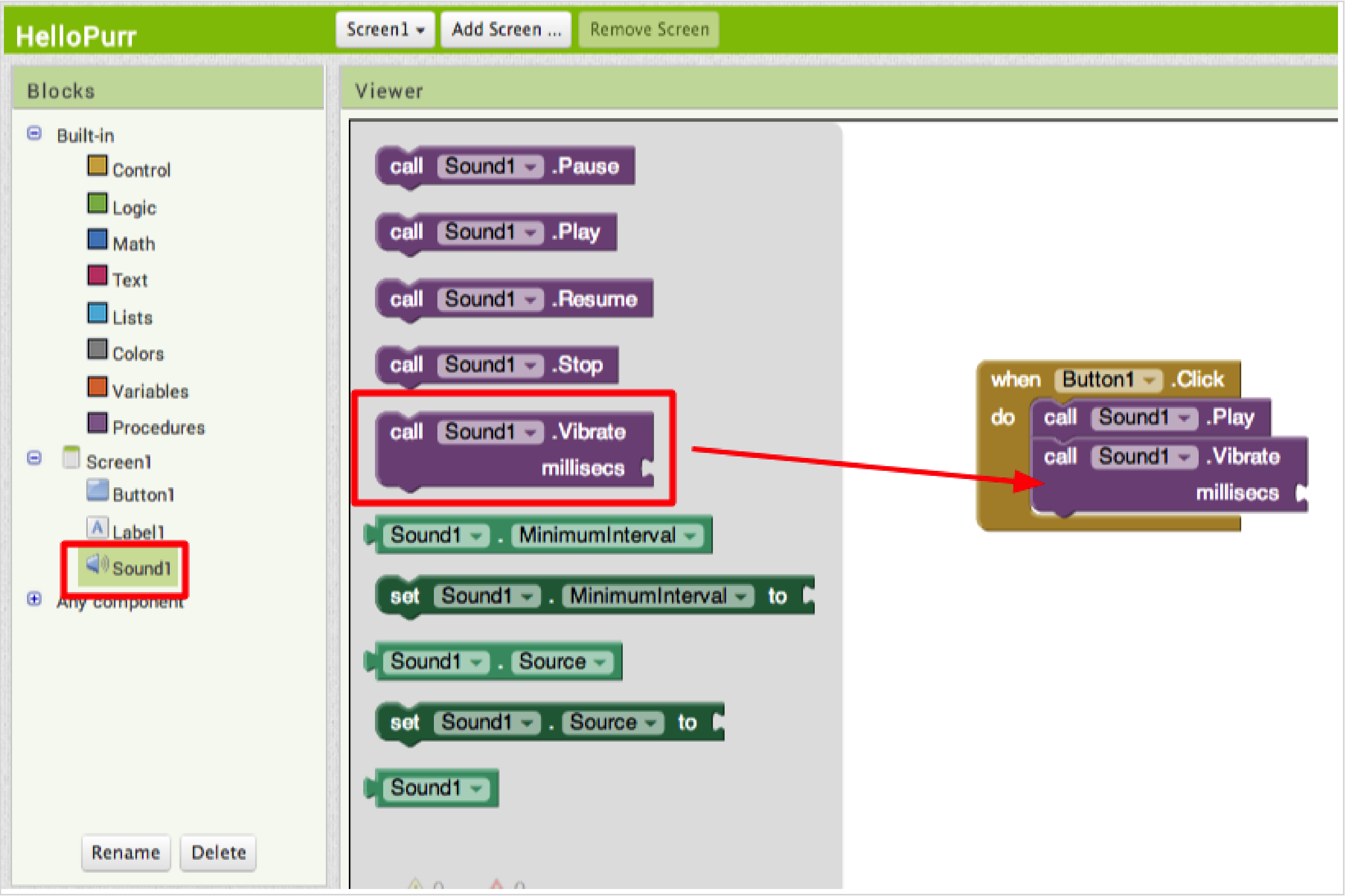
1. **App (provide QR code):** You can generate a Barcode (a QR Code), which you can use to install the app on a phone or tablet that has a camera, with the aid of a barcode scanner, like the ZXing barcode scanner (freely available in Google Play).

Note: this barcode is only good for two hours. If you want to share your app with others via barcode over a longer period, you'll need to download the .apk file to your computer and use a third-party software to convert the file into a barcode. More information can be found here.

2. **App (save to my computer):** You can download the app to your computer as an apk file, which you can distribute and share as you like by manually installing it on other devices. (sometimes called "side loading".

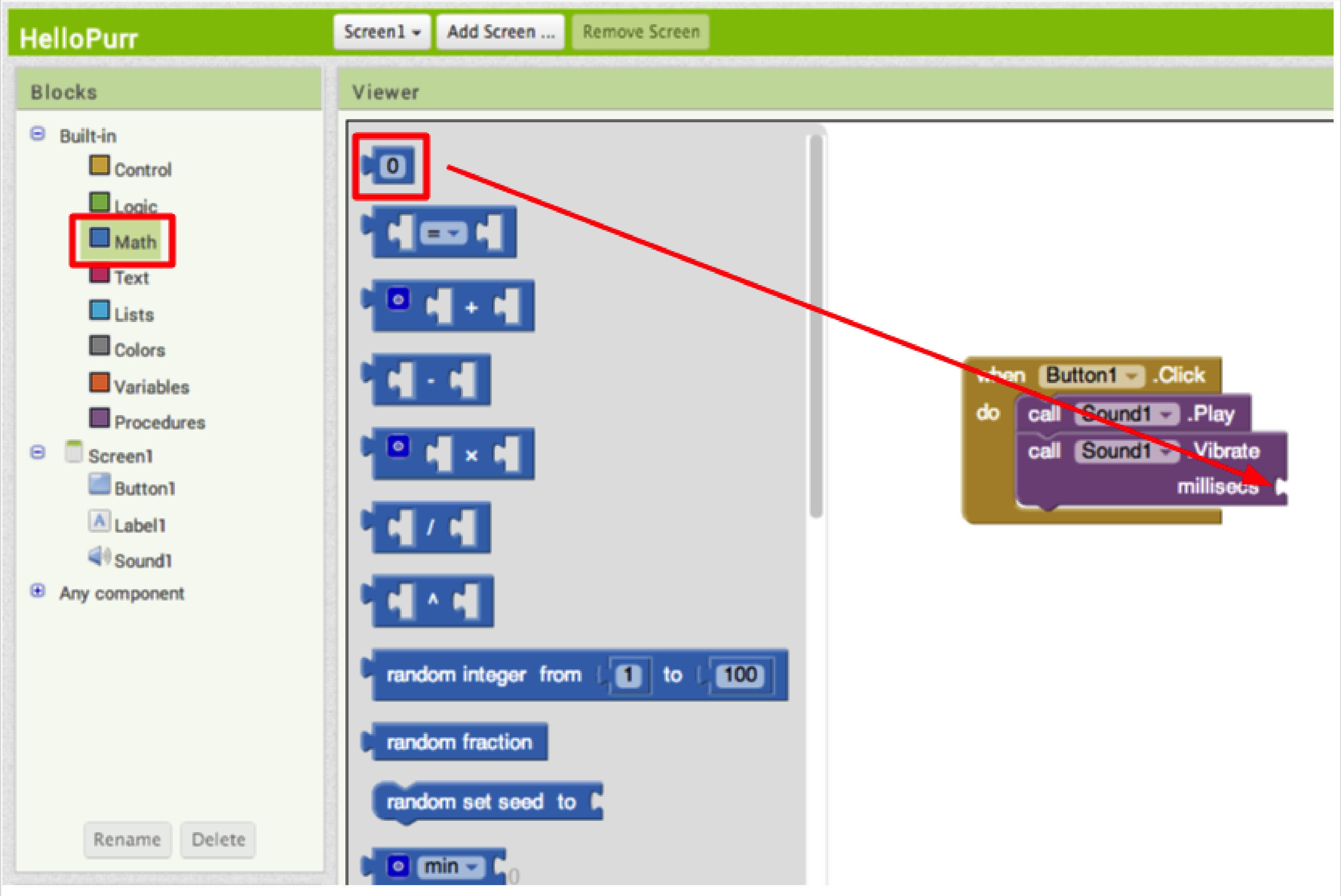
Challenge! Make the Cat Purr

The challenge is to have the cat purr when the button is pressed. Go to the Blocks Editor and open the **Sound1** drawer and drag out the Sound1.Vibrate block and place it under the Sound1.Play block.

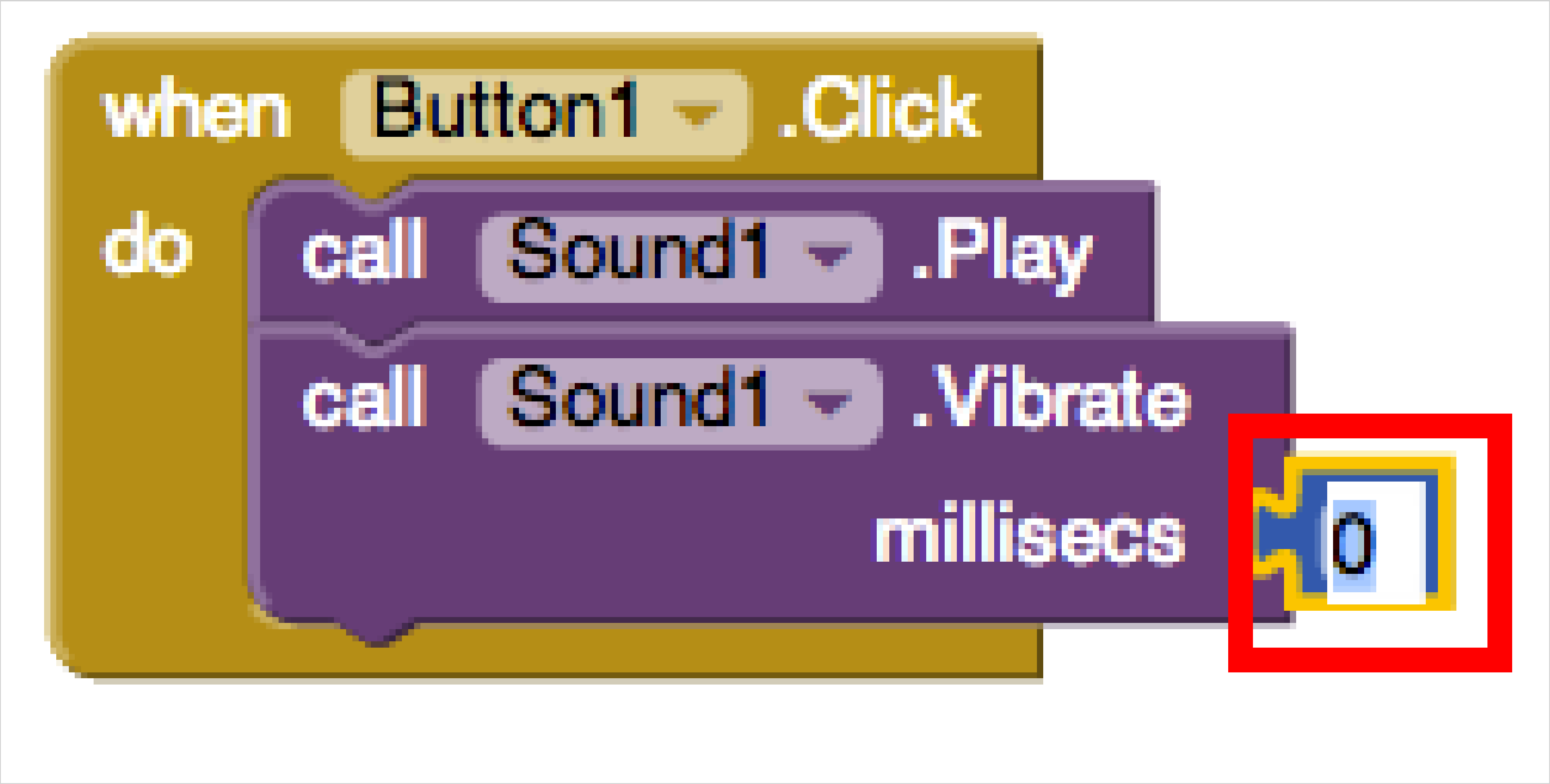


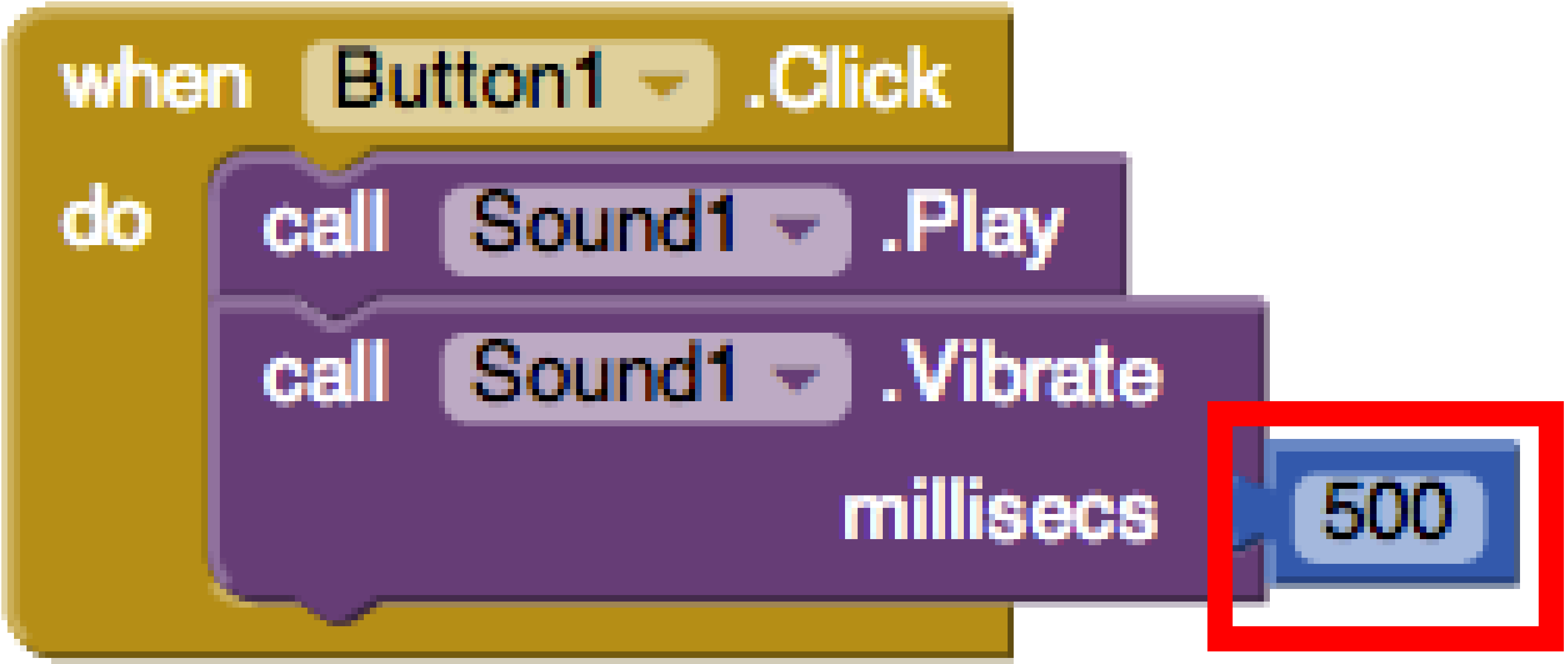
The Sound1.Vibrate block has an open puzzle piece slot, which means you need to attach something to it to specify more about how the behavior should work. Here, you want to specify the length of the vibration. Numbers are calculated in thousandths of a second (milliseconds): to make the phone vibrate for half a second, you need to plug in a value of **500 milliseconds**.

In the Built-In palette, go to the **Math** drawer, drag out the number 0 block and place it at the socket of the Sound1.Vibrate.



After you place the 0 block, click the number "0". It highlights the number in black: type "500" with your keyboard.





Done!

Now connect your phone or tablet and tap the image of the cat on the phone. The phone should vibrate *and* meow at the same time. If you packaged your app to your phone, this will not happen. To reconnect your phone in real-time test mode, click the Connect button at the top of your screen, and select Reset Connection. If this does not work, close out of the Companion app on your phone and restart the connection.

Review

Here are the key ideas covered so far:

- You build apps by selecting components (ingredients) and then telling them what to do and when to do it.
- You use the **Designer** to select components and set each component's properties. Some components are visible and some aren't.
- You can add media (sounds and images) to apps by uploading them from your computer.
- You use the **Blocks Editor** to assemble blocks that define the components' behavior
- when ... do ... blocks define *event handlers*, that tell components what to do *when* something happens.
- call ... blocks tell components to do things.