MIT App Inventor

Build a balloon pop game!

Part 1

An MIT App Inventor tutorial

Feat. Tim the beaver

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App overview: Build a balloon pop game!

When you are done you and your friends will be able to use this app to play a fun game of pop the balloon!

- We will use *Image Sprite* components—programmable moving images—to create balloons that drop from the sky
- The player will have to “pop”—that is, click on—the balloons before they reach the bottom of the screen
- In this simple version of the app, nothing will happen if the balloons reach the bottom. In “Build a balloon pop game! Part 2”, we will add a “Game over” message and restart button that appear when this happens.

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Step 1: Signing in to App Inventor

Click the “Create apps!” button in the menu bar at the top of the MIT App Inventor Hour of Code page.

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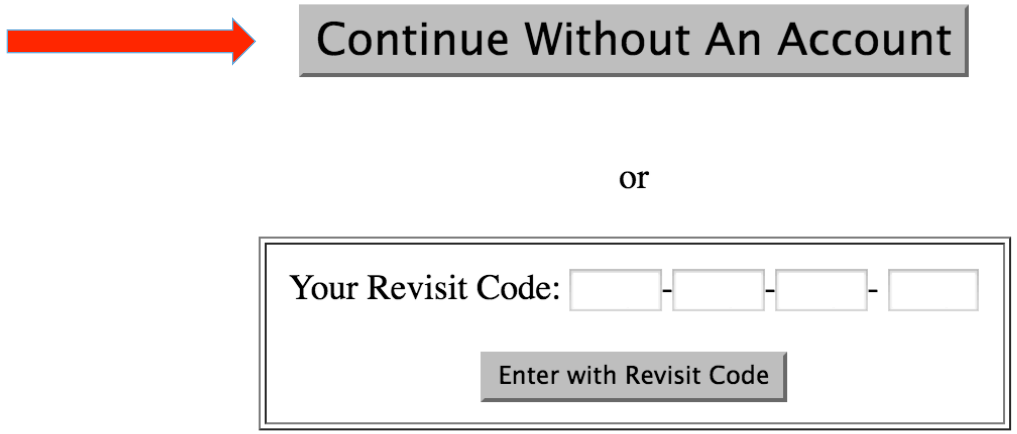
Step 1 continued

You can either Continue with an Account, and you will be given a Revisit Code to return to the site if you wish.



Or you can sign in if you have a Google account. Your projects will be saved with your account id.

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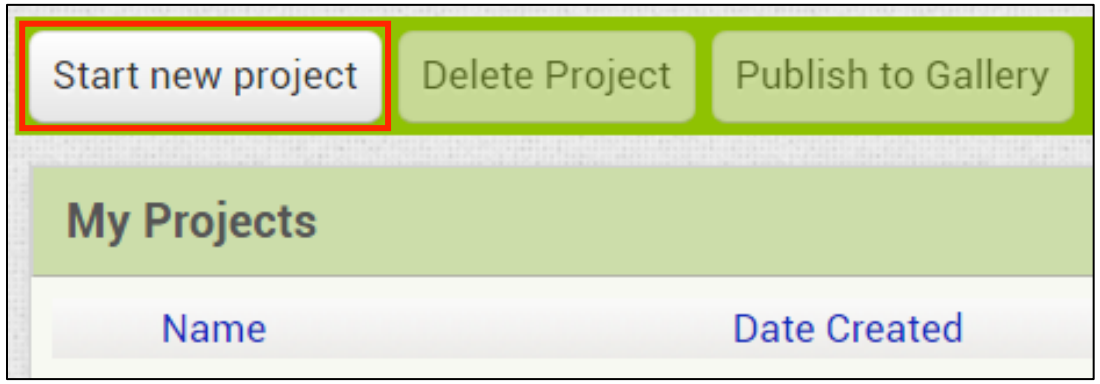
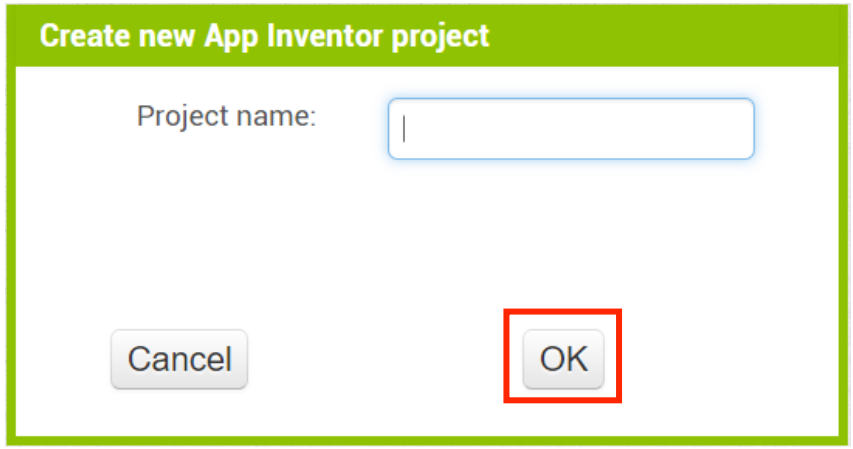
Step 2: Creating a new project

Click “Start a new project” in the upper left corner…



For this tutorial you can call your app “BalloonPop”

…give it a name and click “Ok” to get started!



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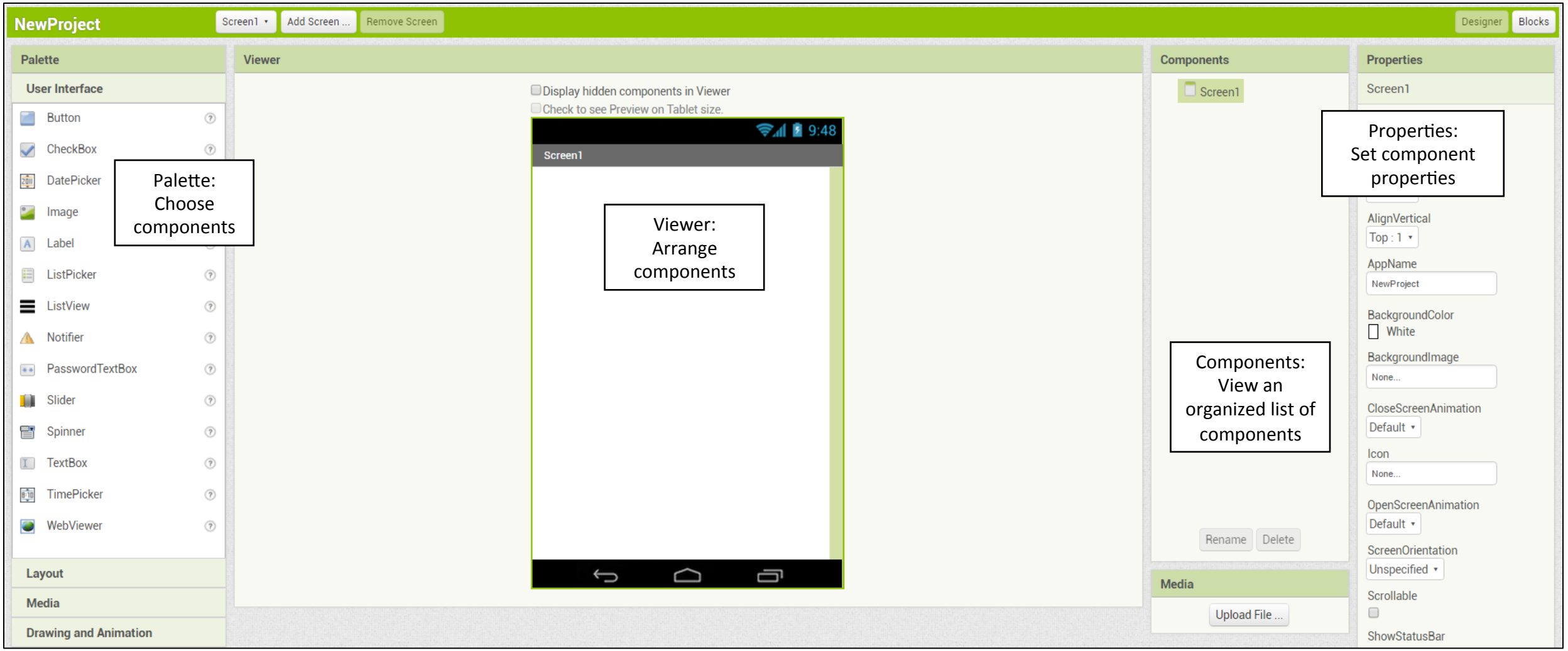
Step 3: Familiarize yourself with the designer window



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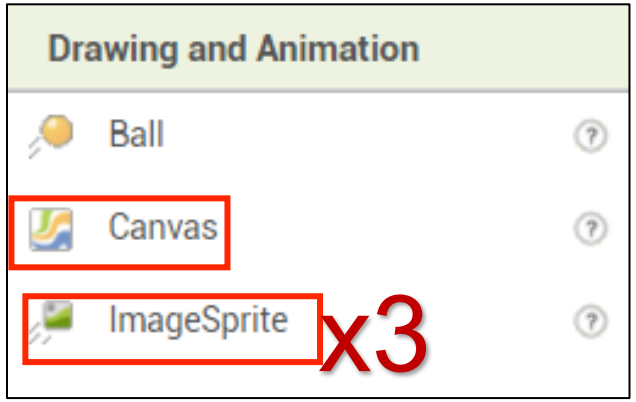
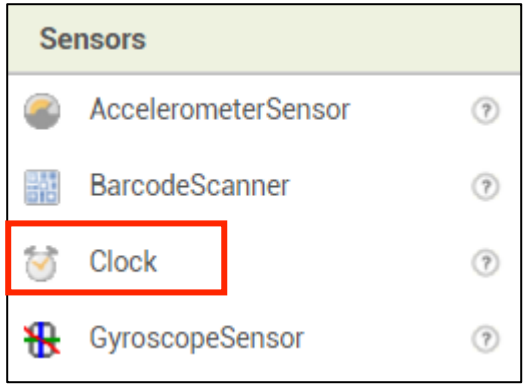
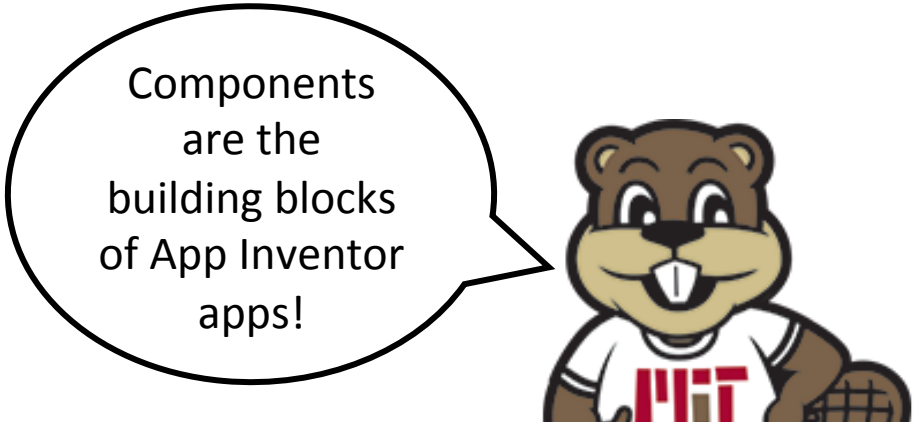
Step 4: Add components!

To build this app you will need five components—a canvas, three image sprites, and a clock. Find these components in the Palette and drag and drop them onto the Viewer.





Note that ImageSprites must be placed ON the canvas.



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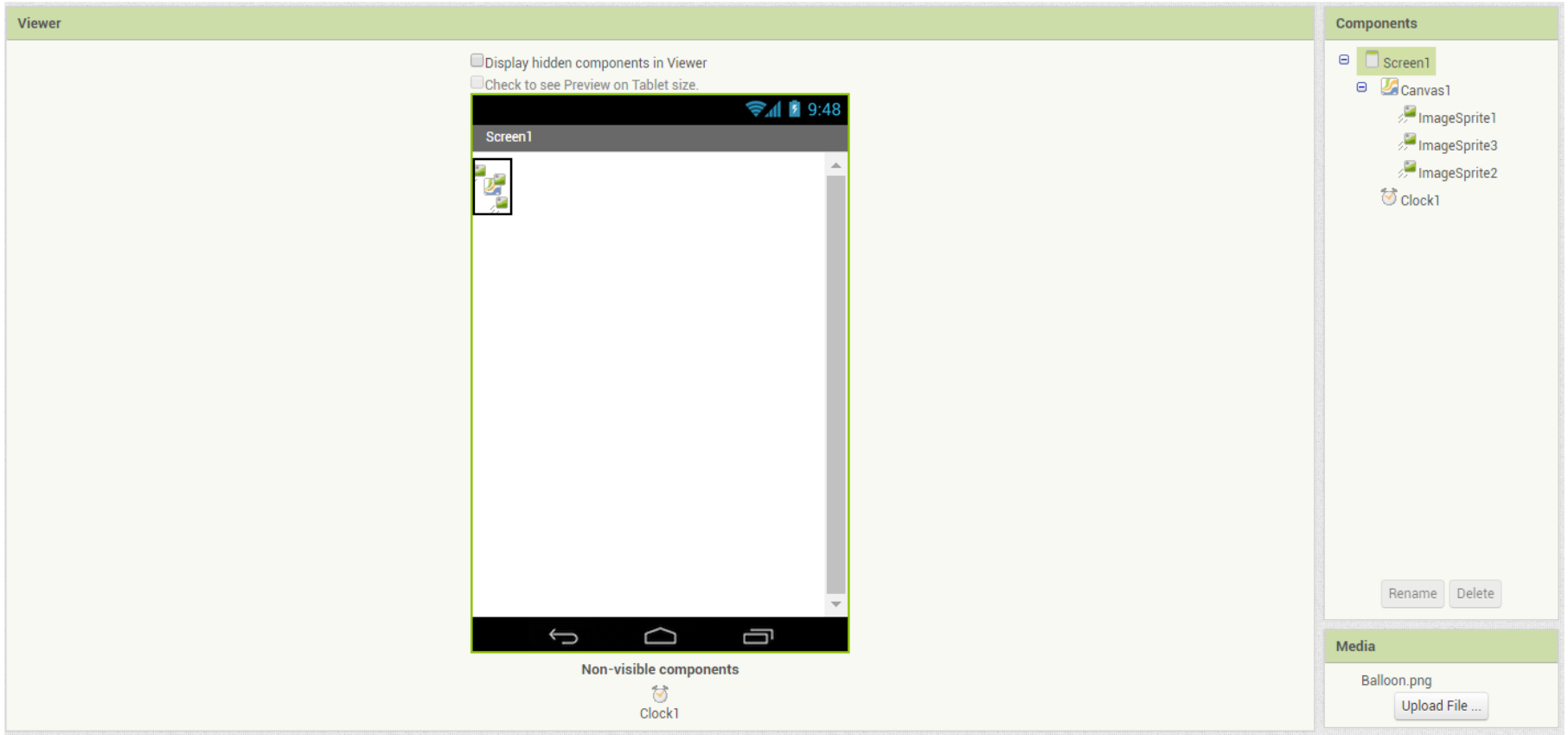
Your screen should now look like this:



Make sure to drop the Image Sprites inside the Canvas!

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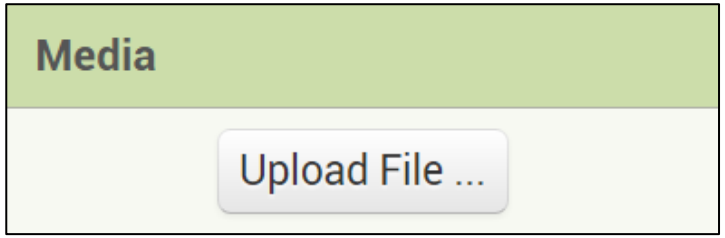
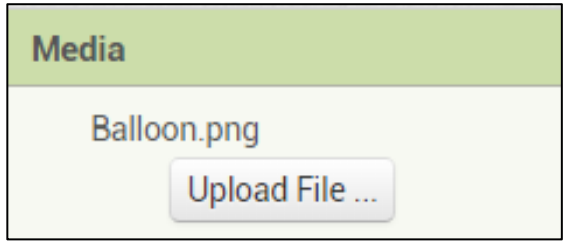
Step 5: Upload media files

To complete this app you will need to download a picture of a balloon for your sprites from here. Then you will need to upload it to the App Inventor server by clicking the upload file button under “Media”



Before upload



After upload

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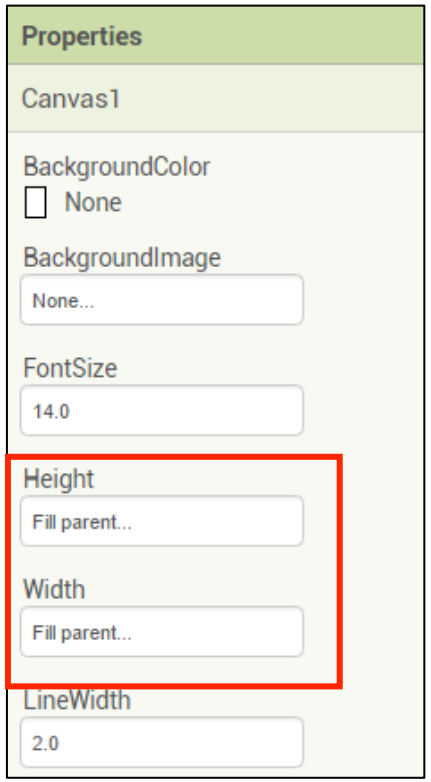
Step 6: Set properties

Now we will change some component properties to start truly building our app!
To view and change a component's properties, find it in the "Components" list and click on it.



1. Click on Canvas1 and set both the Height and Width to "Fill parent…"

2. Click on Clock1 and set TimerInterval to 500

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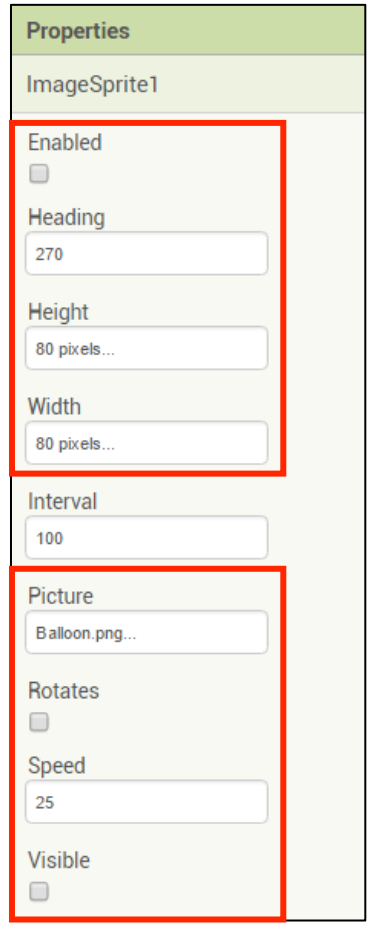
Step 6 continued

Now lets set the properties of our Image Sprites! First, we want to set their X properties so that they spread out across the canvas. Set the X value of ImageSprite1 to 10; the X value of ImageSprite2 to 100; and the X value of ImageSprite3 to 190

Now we need to set some properties that are the same for all three! The example to the right shows ImageSprite1, but all three Image Sprites should have the same properties set.

- Set Heading to 270
- Set Height to 80 pixels
- Set Width to 80 pixels
- Set Picture to Balloon.png
- Set Speed to 25
- Uncheck the boxes for Enabled, Rotates, and Visible



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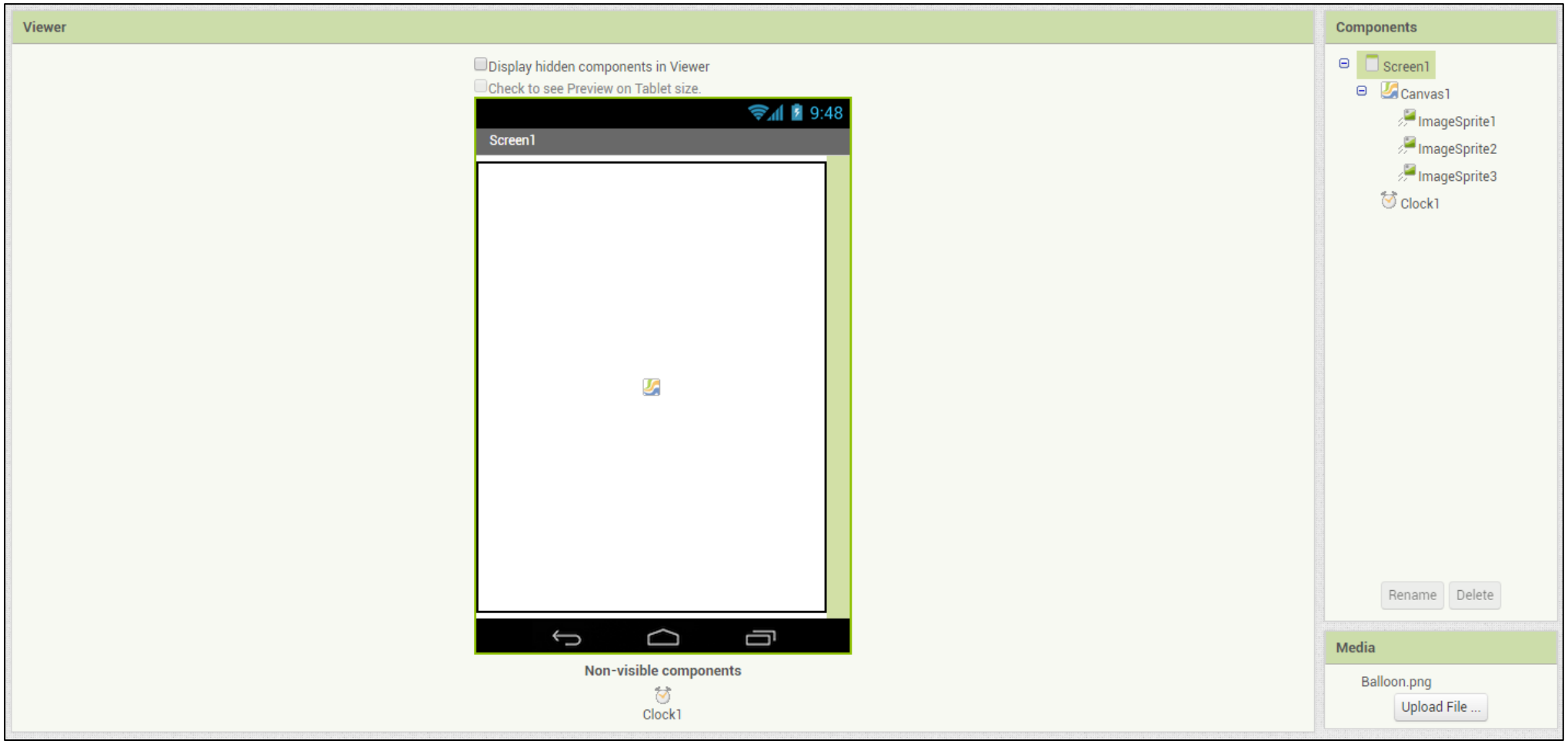
Your screen should now look like this:



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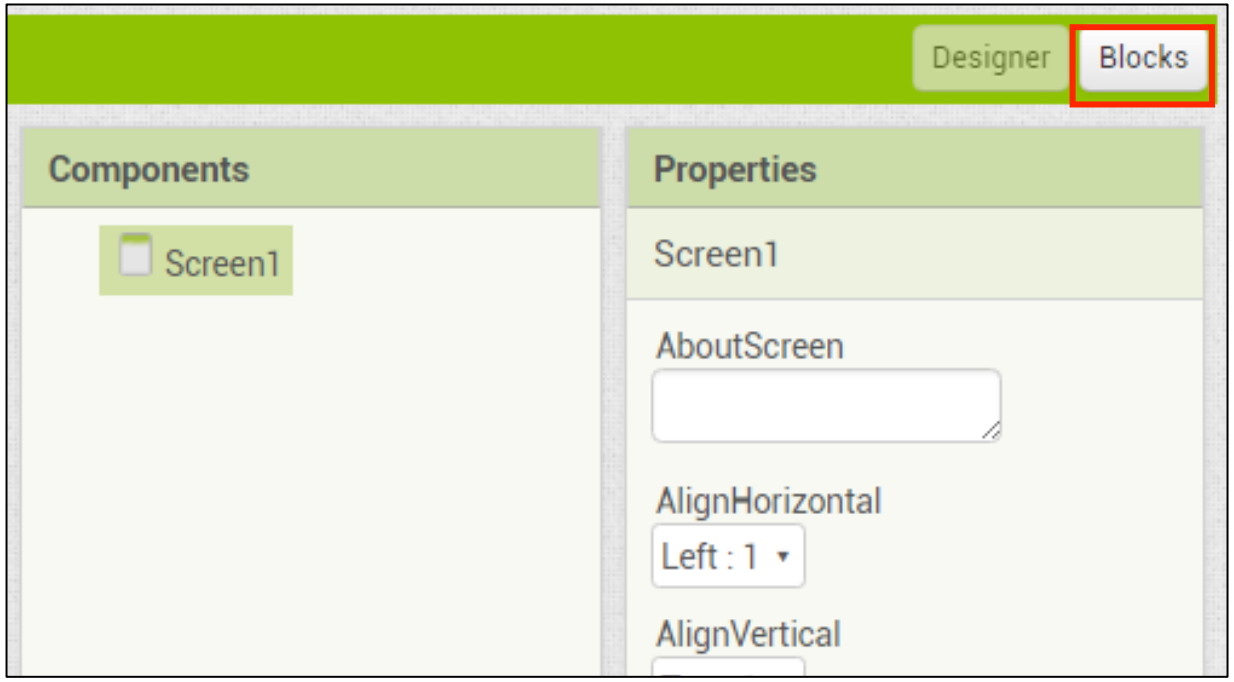
Step 7: Switch to the blocks window to write code!

Now that all components have been added to the app, we will write code to tell the app what to do with them! To do so, switch to the blocks window by clicking the “Blocks” button in the upper right corner.



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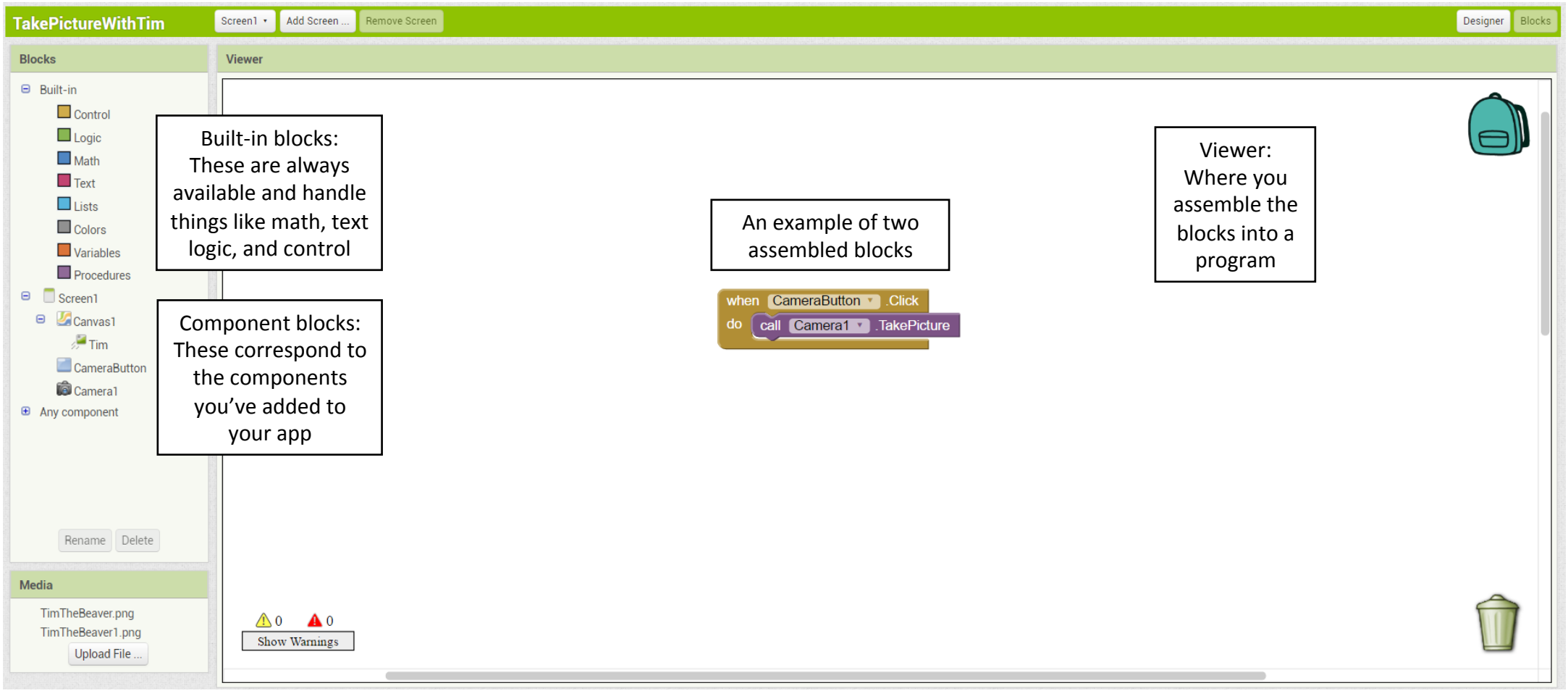
Step 7 continued: Get to know the blocks window



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Step 8: Start coding!

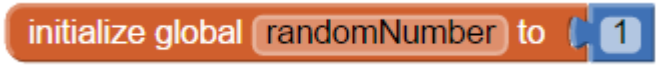
Every half a second (or 500 milliseconds), Clock1's timer will go off—that's because we set the TimerInterval property to 500! When this happens, we would like one of our three Image Sprites to appear and begin falling to the bottom of the screen. To do this, we have to choose a Sprite, and we would like that choice to be random. App Inventor lets us do this!

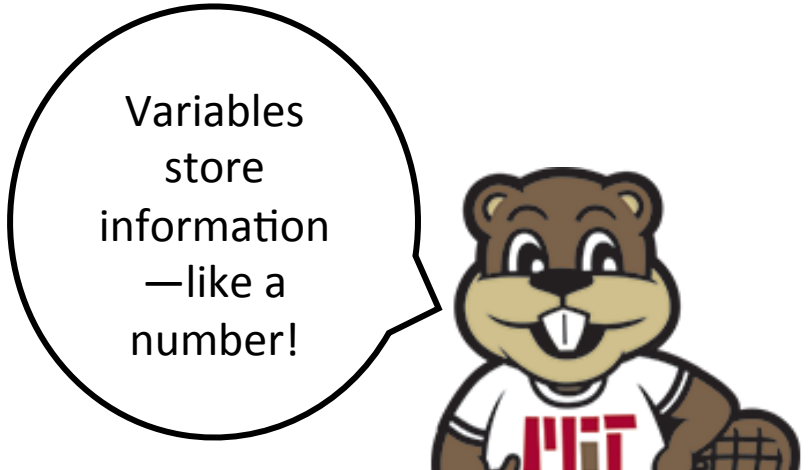
1. First, click on Variables in the Blocks menu and drag out a block that looks like this: 

2. Change "name" to "randomNumber"
3. Click on Math in the blocks menu and drag out a block that looks like this: 

4. Change "0" to "1" and then click it onto the "initialize global name" block

Your final result should look like this:





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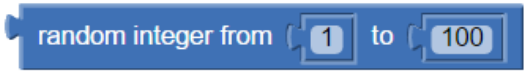
Step 8 continued

1. Next, click on Clock1 and drag out a block that looks like this:

2. Click on Variables again and drag out a block that looks like this:

3. Choose “global randomNumber” from the drop-down list

4. Click on Math again and drag out a block that looks like this:



5. Change “100” to “3” and lock the block into place with the “set global randomNumber” block to get this:

6. Snap these two into place inside the “when Clock1.Timer” block

Your final result should look like

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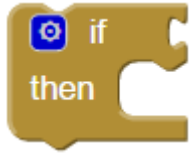
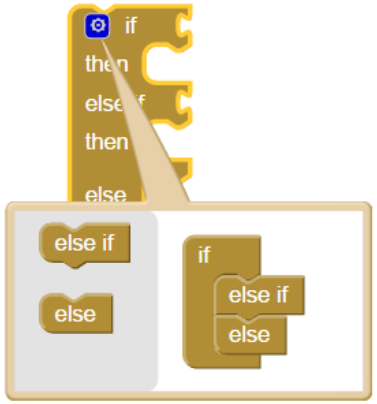
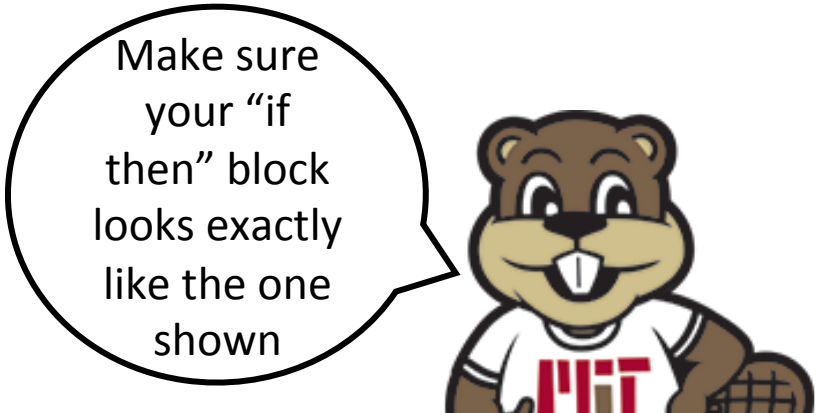
Step 8 continued

We would like the app to do different things depending on which number was chosen by App Inventor —because we asked it for a random number between one and three, it could have given us a 1,2, or 3.

1. Click on Control and drag out a block that looks like this: 

2. Click on the “if, then” block’s settings button—the square blue one in the corner
3. Drag out an “else if” and an “else” block from the left and lock them into place in the “if” block on the right. The “if, then” block should now look like this:





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Step 8 continued

Now we need to fill in our “if, then” block. If App Inventor has given us the number 1, we want to make ImageSprite1 appear; if it has given us the number 2, we want to make ImageSprite2 appear; otherwise, it must have given us the number 3, and so we want to make ImageSprite3 appear.

1. Click on Logic and drag out a block that looks like this: 

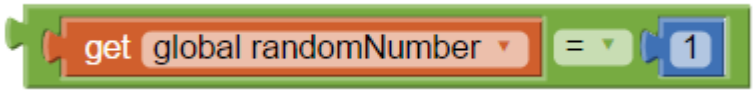
2. Click on Variables and drag out a block that looks like this: 

3. Choose “global randomNumber” from the dropdown list and then click this block into place in the Logic block’s first space.

4. Click on Math and choose a block that looks like this: 

5. Change “0” to “1” and click it into place in the Logic block’s second space

Your final result should look like



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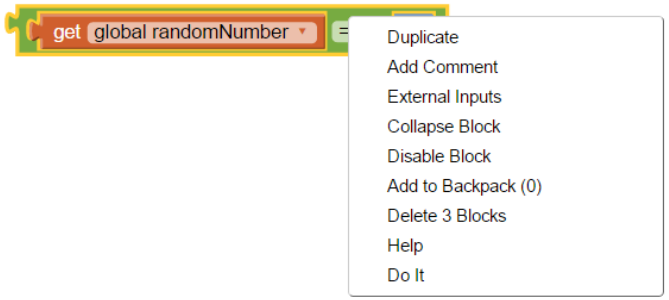
Step 8 continued

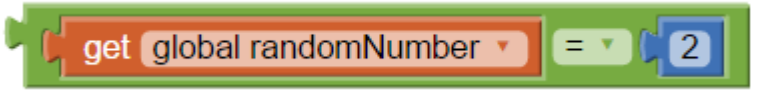
You have written code that checks if the randomNumber variable is equal to 1. With just a small tweak it will be able to check if randomNumber is equal to 2.

1. Copy and paste the block of code you just created. To do so, right click on it and choose "Duplicate from the drop-down list"



2. On the duplicate block, change the "1" to a "2"

Your final result should look like



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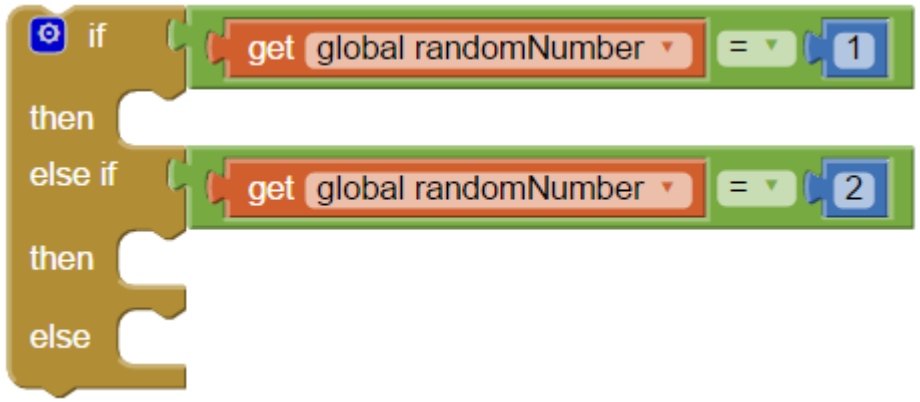
Step 8 continued

Now, click the two blocks you've just made into place in the "if, then" block, positioned as shown below:



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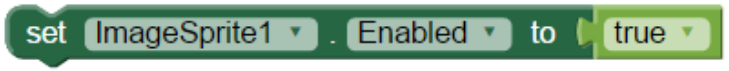
Step 8 continued

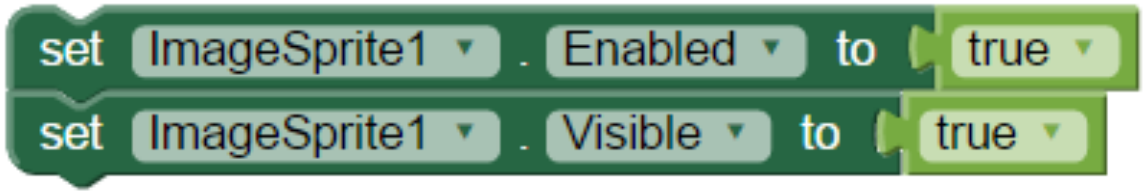
Now we will tell the app what to do, depending on the random number that is selected.

1. Click on ImageSprite1 and drag out a block that looks like this: 

2. Click on Logic and drag out a True block. Click it into place with the “set ImageSprite1.Enabled” to get this: 

3. Duplicate the block as you did before, by right clicking. For the duplicated block, replace “Enabled” with “Visible” by clicking on the second dropdown list.
4. Lock the two blocks together.

Your final result should look like this:



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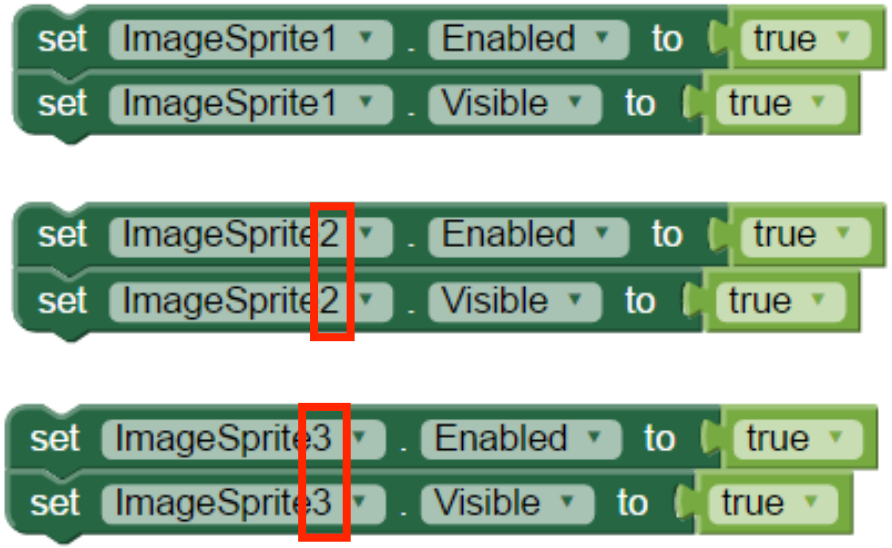
Step 8 continued

1. Take the group of two blocks and duplicate it twice (so that you get three copies).
2. Keep the original as it was, but change “ImageSprite1” to “ImageSprite2” in one of the copies, and to “ImageSprite3” in the other.

Your final result should look like this:



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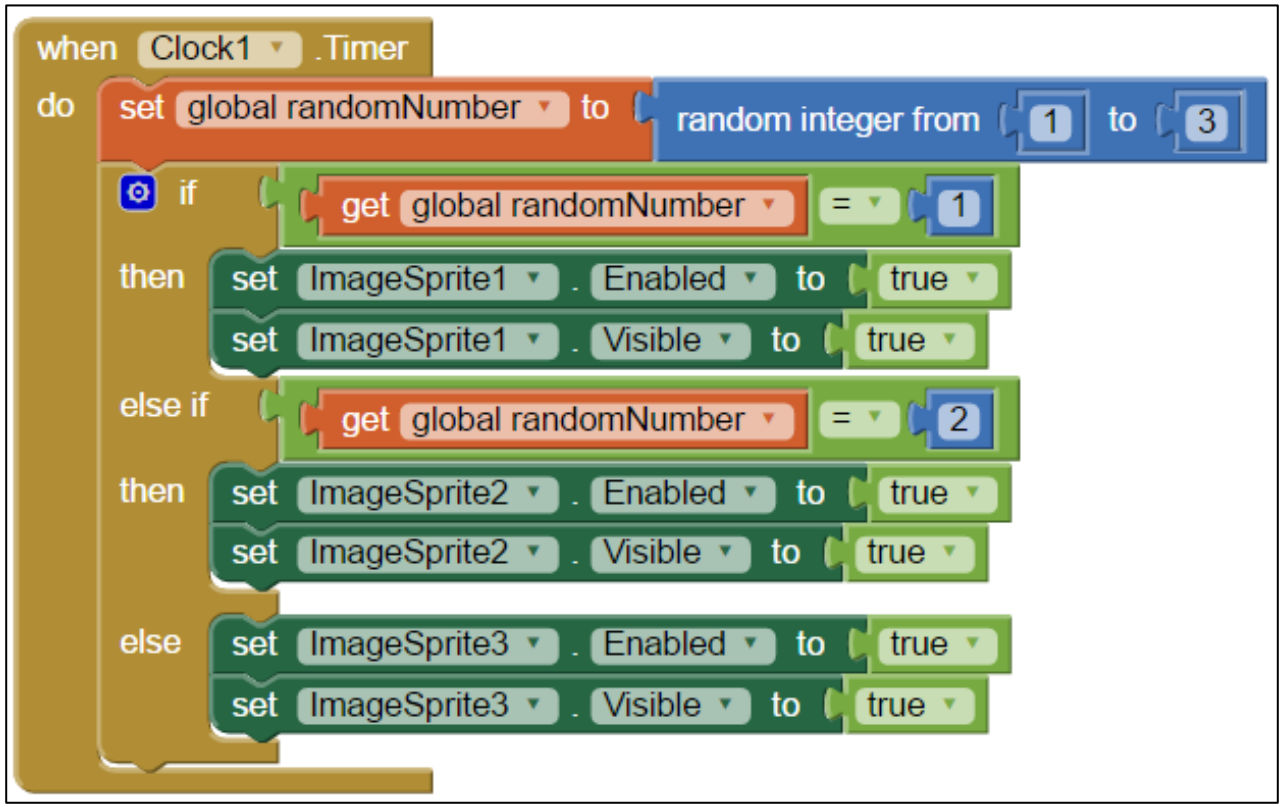
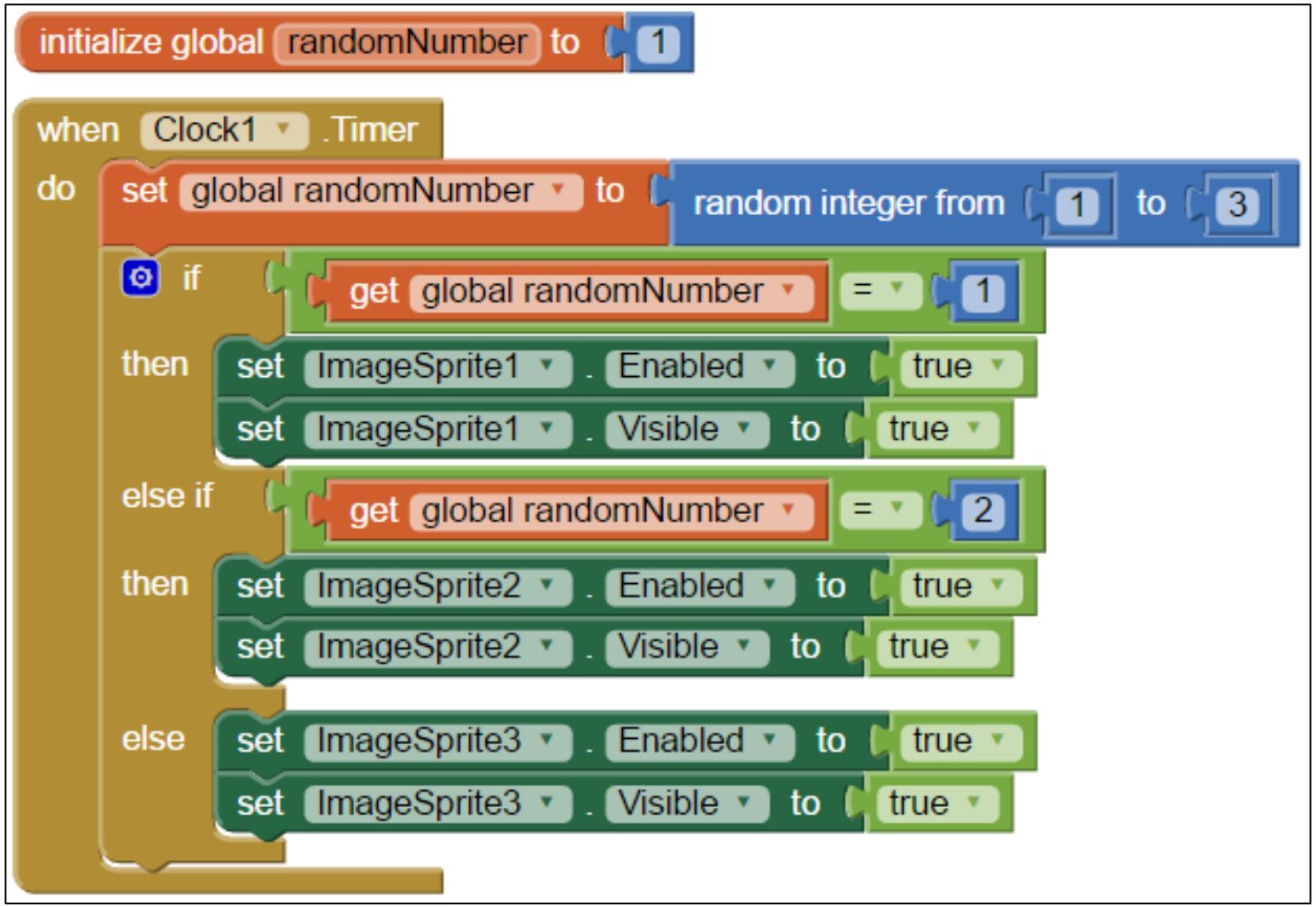
Step 8 continued

Now piece it all together! Place the three groups of blocks you created in the previous slide inside the “if, then” block as shown below, and put the “if, then” block inside the “when Clock1.Timer” block.



The code you have written so far should look like this:



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Step 9: Testing!

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Step 9 continued: Connect to your phone

In order to test your app, you will need an Android phone with the MIT AI2 Companion app installed. To download the Companion from the app store, scan the QR code below or search directly for “MIT AI2 Companion” on the Google Play Store, https://play.google.com/store.

NOTE: If you do not have an android phone, or if you are unable to download the Companion app, you can still use App Inventor using an emulator. Visit: http://appinventor.mit.edu/explore/ai2/setup.html and follow the instructions under Option 2.

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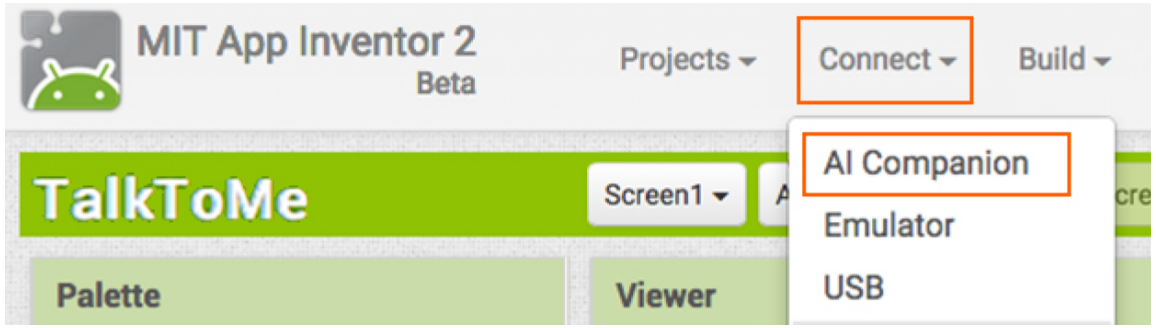
Step 9 continued

To connect to the AI2 Companion app, first choose “AI Companion” from the “Connect” drop down menu in the App Inventor site.



A QR code and 6-letter code will pop up.

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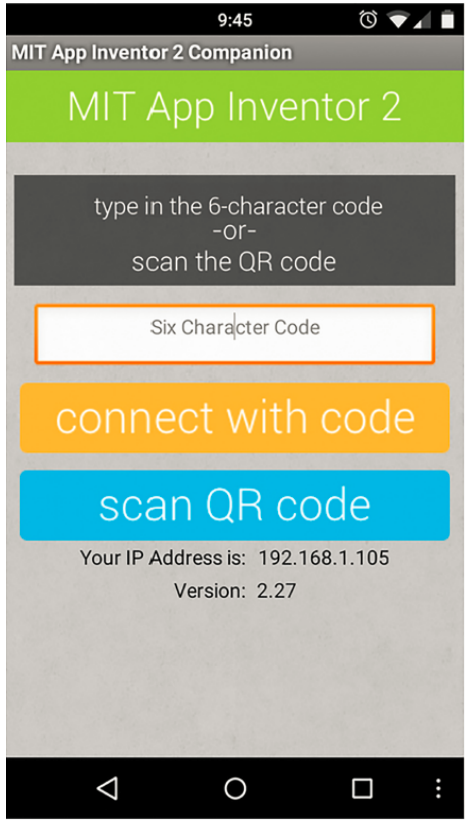
Step 9 continued: Open the Companion app

Open the AI2 Companion app. You can then either input the 6-letter code or scan the QR code to connect.



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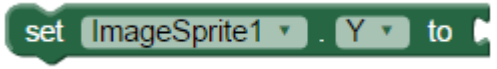
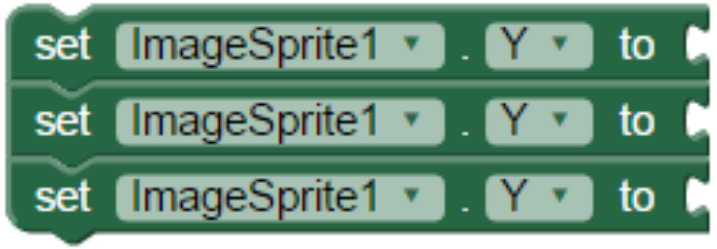
Step 10: More coding!

Okay, great, we have balloons that appear randomly and fall to the bottom of the phone, but we would like for something to happen when we touch them.

1. Click on ImageSprite1 and drag out a block that looks like this: 

2. Also under ImageSprite1, click on a block that looks like this: 

3. Duplicate it twice to get three copies, and click them together to form a stack:



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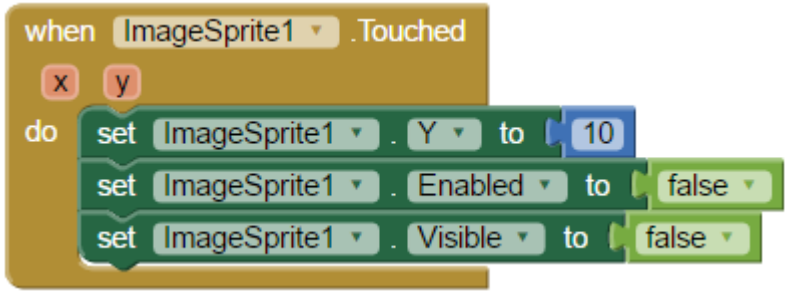
Step 10 continued

When each balloon is touched, we want to return it to its original state. This means resetting its Y, Visible, and Enabled properties.

1. Grab the stack of blocks you made in the last slide. Change the Y of one block to Visible using the dropdown menu, and the other Y to Enabled.
2. Set ImageSprite1.Y to 10, and ImageSprite1.Visible and ImageSprite1.Enabled to False.
3. Click this stack into the “when ImageSprite1.Touched” block.

Your final result should look like this:



Step 10 continued

The app should do the same thing when ImageSprite2 or ImageSprite3 are touched. That means we can reuse the same stack of blocks and just change the sprite name.

1. Duplicate the when ImageSprite1.Touched group of blocks twice (to get three copies)

2. For one of the group of blocks, change all mention of “ImageSprite1” to “ImageSprite2”

3. For the other, change all mention of “ImageSprite1” to “ImageSprite3”

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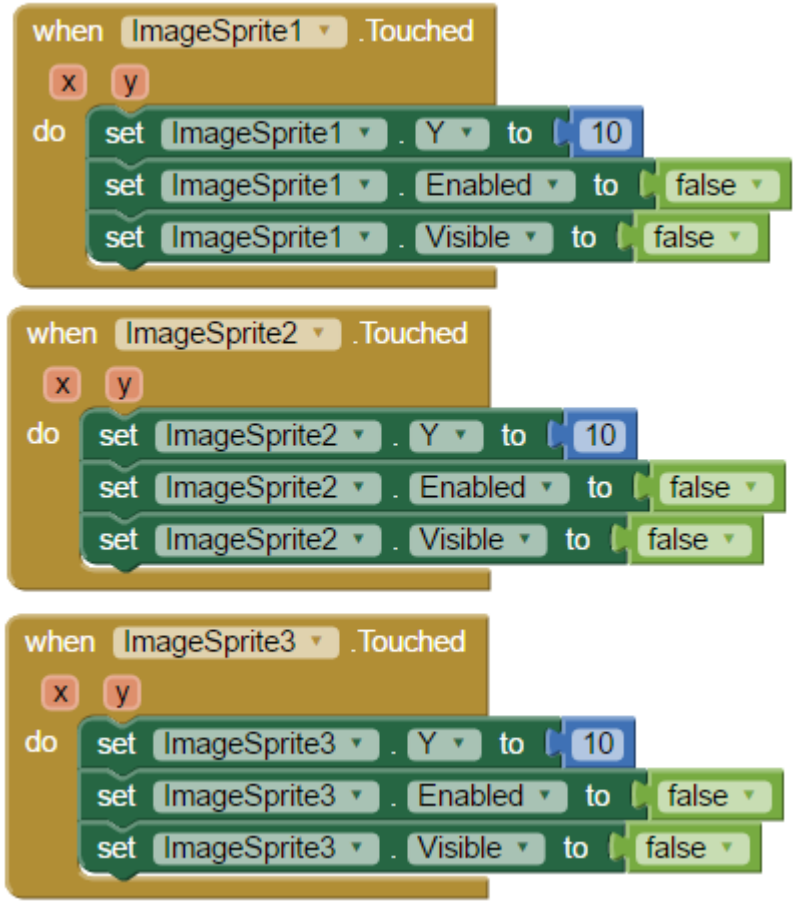
The code you have just added should look like this:



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Step 11: Testing and debugging!

Awesome! You're all done coding your app. Open the App Inventor Companion app and make sure everything is working properly. Remember, your app should:

- Reveal a new balloon at the top of the canvas every half a second
- Have that balloon drop to the floor
- Remove the balloon if the user clicks on it

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Thanks for coding with us!
You've done a great job. Check out more tutorials at
http://appinventor.mit.edu/explore/hour-of-code.html