

## Take a picture with Tim!

An MIT App Inventor tutorial

Feat. Tim the beaver





## App overview: Take a picture with Tim!

When you are done you and your friends will be able to use this app to:

- Take a picture of yourselves using App Inventor's camera component
  - Set this picture as the background of a *Canvas* component
- Add an image of Tim the Beaver and place him wherever you would like in the picture!





## 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.





## Step 1 continued

#### Welcome to MIT App Inventor!

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

Continue Without An Account

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









### Step 2: Creating a new project

Click "Start a new project" in the upper left corner...





#### Step 3: Familiarize yourself with the designer window

NewProject	Sc	creen1 • Add Screen	Remove Screen			Designer Blocks
Palette		Viewer			Components	Properties
User Interface				Display hidden components in Viewer	Screen1	Screen1
<ul> <li>Button</li> <li>CheckBox</li> <li>DatePicker</li> <li>Image</li> <li>Label</li> <li>ListPicker</li> <li>ListView</li> <li>Notifier</li> <li>PasswordText</li> <li>Slider</li> </ul>	Palette: Choose components ? ? Box 7 ?	5		Check to see Preview on Tablet size.	Components: View an organized list of	Properties: Set component properties AlignVertical Top : 1 • AppName NewProject BackgroundColor White BackgroundImage None
<ul><li>Spinner</li><li>TextBox</li><li>TimePicker</li><li>WebViewer</li></ul>	(?) (?) (?)				Components Rename Delete	Default Icon None OpenScreenAnimation Default ScreenOrientation
Layout Media Drawing and Anir	mation				Media Upload File	Unspecified  Scrollable ShowStatusBar



## Step 4: Add components!

To build this app you will need four components—a canvas, image sprite, button, and camera. Find these components in the Palette and drag and drop one of each onto the Viewer.

Drawing and Animation		Us	er Interface			Me	dia	
🔎 Ball	?		Button	(?)			Camcorder	(?)
🌽 Canvas	$(\mathcal{P})$	$\checkmark$	CheckBox	(?)		Ô	Camera	0
🔎 ImageSprite	0	2011	DatePicker	(?)		0	ImagePicker	0
				k	Compo ouilding Inve	onent g bloc entor	s are the ks of App apps!	



## Your screen should now look like this:



Note that no matter where you drop the Image Sprite, it will end up inside the Canvas



## Step 5: Upload media files

To complete this app you will need to download a picture of Tim from <u>here</u>. Then you will need to upload it to the App Inventor server by clicking the upload file button under "Media"



Media		
	Upload File	

Before upload

Media		
TimTl	neBeaver.png	
	Upload File	

After upload



## 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.



Let's start with the canvas! Find "Canvas1" in the "Components" list and click on it. Then change both its Height and Width properties to "Fill parent". This will ensure that our canvas is as big as possible.





### Step 6 continued

Select "ImageSprite1" and set the following properties: Height to 300 pixels Width to 225 pixels Picture to TimTheBeaver.png X to 91 Y to 60 Z to 1.0

Whew! There's a lot to do on this page. Double-check to make sure you don't miss anything!

	Properties
1	ImageSprite1
	Enabled 💌
	Heading o
	Height 300 pixels
	Width 225 pixels
I	Interval 50
	Picture TimTheBeaver1.png
	Rotates 🕑
	Speed 0.0
	Visible ☑
	X 91
	Y 60
	Z 1.0

Properties
Button1
BackgroundColor Default Enabled
FontBold
FontItalic
FontSize
FontTypeface default • Height Automatic
Width Automatic
Image None
Shape default • ShowFeedback
Camera
TextAlignment center : 1 • TextColor Default Visible 🖉

Next, select "Button1" and set the Text property to "Camera" **Properties** Screen1 AboutScreen AlignHorizontal Center: 3 • Finally, select "Screen1" and change the "AlignHorizontal" property to "Center"





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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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TakePictureWithTin	n Screen1 • Add Screen Remove Screen		Designer	ocks
Blocks	Viewer			
<ul> <li>Built-in</li> <li>Control</li> <li>Logic</li> <li>Math</li> <li>Text</li> <li>Lists</li> <li>Colors</li> <li>Variables</li> <li>Procedures</li> <li>Screen1</li> <li>Screen1</li> <li>Screen1</li> <li>CameraButton</li> <li>Camera1</li> <li>Any component</li> </ul>	Built-in blocks: These are always available and handle things like math, text logic, and control Component blocks: These correspond to the components you've added to your app	An example of two assembled blocks when CameraButton Click do call Cameral TakePicture	Viewer: Where you assemble the blocks into a program	
Media TimTheBeaver.png TimTheBeaver1.png Upload File	↑ 0 ▲ 0 Show Warnings			



#### Step 8: Start coding!

When the Camera button is clicked, your phone's camera should open. We will write the code to make this happen now!



Find Button1 under Screen1, click on it, and drag out a "when Button1.Click" block



#### Step 8 cont'd



Click on Camera1 this time and drag out a "call Camera1.TakePicture" block. Lock it into in the Button1.Click block!



Great job! You just wrote code in App Inventor! But does your code do what we want it to? To find out, we're going to have to learn how to test our app...

#### Step 9: Testing!





## 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: <u>http://appinventor.mit.edu/explore/ai2/setup.html</u> and follow the instructions under Option 2.



### 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.





## Step 9 cont'd: Open the companion app

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





## Step 10: More programming!

Awesome! We've created an app that opens the phone camera and lets us take a picture. But we're not done yet! Once a picture is taken, the app should set it to be the Canvas background.

Blocks	Viewer
<ul> <li>Built-in</li> <li>Control</li> <li>Logic</li> <li>Math</li> <li>Text</li> <li>Lists</li> <li>Colors</li> <li>Variables</li> <li>Procedures</li> <li>Screen1</li> <li>Button1</li> <li>Canvas1</li> <li>[mageSprite1</li> <li>[mageSprite1</li> </ul>	<pre>when Camera1 AfterPicture image do Camera1 TakePicture Camera1 TakePicture</pre>

Find Camera1 in the blocks menu under Screen1. Click on it and drag a "when Camera1.AfterPicture" block onto the workspace



#### Step 10 continued



Now find Canvas1, also under Screen1. Click on it and drag out a "set Canvas1.BackgroundImage" block. Click it into place under the "when" block. Then hover your mouse over the orange "image" box on the "when" block and drag out a "get image" block. Snap it into place!







## Step 10 continued: Moving Tim

We would like Tim to move when he is dragged, so that the app user can place him where they'd like in their picture!



Find ImageSprite1 under Canvas1, click on it and drag out a "when ImageSprite1.Dragged" block



#### Step 10 continued



Under ImageSprite1 again, find a "call ImageSprite1.MoveTo" block and lock it into place in the ImageSprite1.Dragged block.



#### Step 10 continued



Hover your mouse over the "currentX" box in the "when" block. Grab a "get CurrentX" block and snap it into place next to the "x" in the "call" block; then grab a "get CurrentY" and snap it into place next to the "y" in the "call" block.



## Step 11: Testing and debugging!

Awesome! You're all done programming this app. Now connect to the MIT AI2 Companion app to make sure everything is working properly. Remember, your app should:

- Open the phone camera when you click the button labelled "Camera"
- Set the background of the canvas to the picture you take
- Include an image of Tim that you can drag around to place in your picture!





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