MIT App Inventor

Create your own Mobile Data Collection App using simple drag and drop technology

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MIT App Inventor – Background and History

Developed by Google's Mark Friedman and MIT Professor Hal Abelson, the MIT App Inventor is a free, online tool that opens the world of mobile app creation to everyone.

The simple user interface allows you to create your own Android apps using drag-and-drop building blocks in place of rows and rows of cryptic coding.

You can easily setup a data collection form and then leverage the features of an Android smartphone to include GPS coordinates, photos, video, social networking and much more.

Data can be saved either locally or in the cloud and then exported as needed.
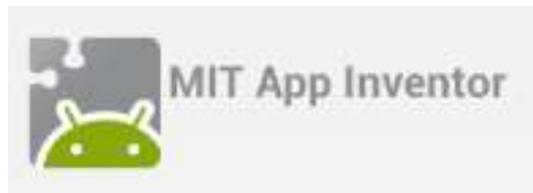
MIT App Inventor – Background and History

The MIT App Inventor is now in it's second generation: MIT App Inventor 2

(and a 3rd generation is on the way)

There are plenty of websites, books, YouTube videos, forums and online classes to help you get started.

edX   Courses   Programs

MY COURSES

Mobile Computing with App Inventor - CS Principles

VERIFIED

TrinityX - T002x

MIT App Inventor - So How Does It Work?

It's a completely FREE online tool to create an Android application

1. You login with your Google account: http://ai2.appinventor.mit.edu/

2. You have a screen (called a "Designer") that simulates what's going to be shown on a mobile device (smartphone or tablet layouts)

3. You drag and drop fields onto the layout: text boxes, radio buttons, lists, buttons, sliders, etc.

4. You drag and drop in some services that you want to use. Examples: saving data to a database, getting GPS coordinates, generating a text message, playing (or recording) a sound – or many, many others.

5. You create 'directions' for the application by using snap-together blocks

6. You test the application LIVE on your real phone using the MIT AI2 Companion app
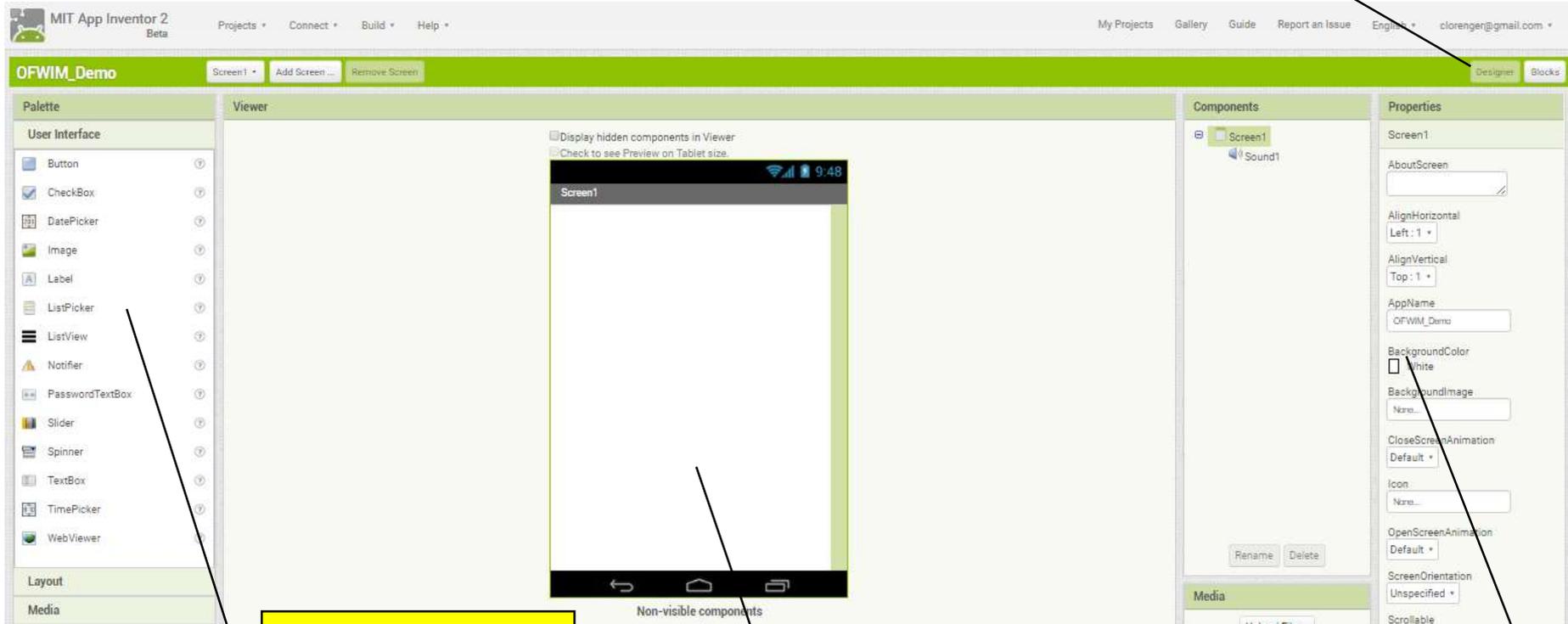
7. You save and publish the application.

NORTH
CAROLINA
Wildlife
RESOURCES
COMMISSION

Getting Started – Items and Steps

1. Open a browser (Chrome is best) and go to:
   http://ai2.appinventor.mit.edu/

2. Sign-in with your Google account if not already logged in.

3. When App Inventor loads, you should get a blank project screen. Or you can go to Project > Start new project on the top menu.

4. Go to the Google Play Store. Locate and install the "MIT AI2 Companion" app.   (you'll only have to do this step once)

5. Get your smartphone

6. Make sure you have a Wi-Fi connection available.

Designer - Overview
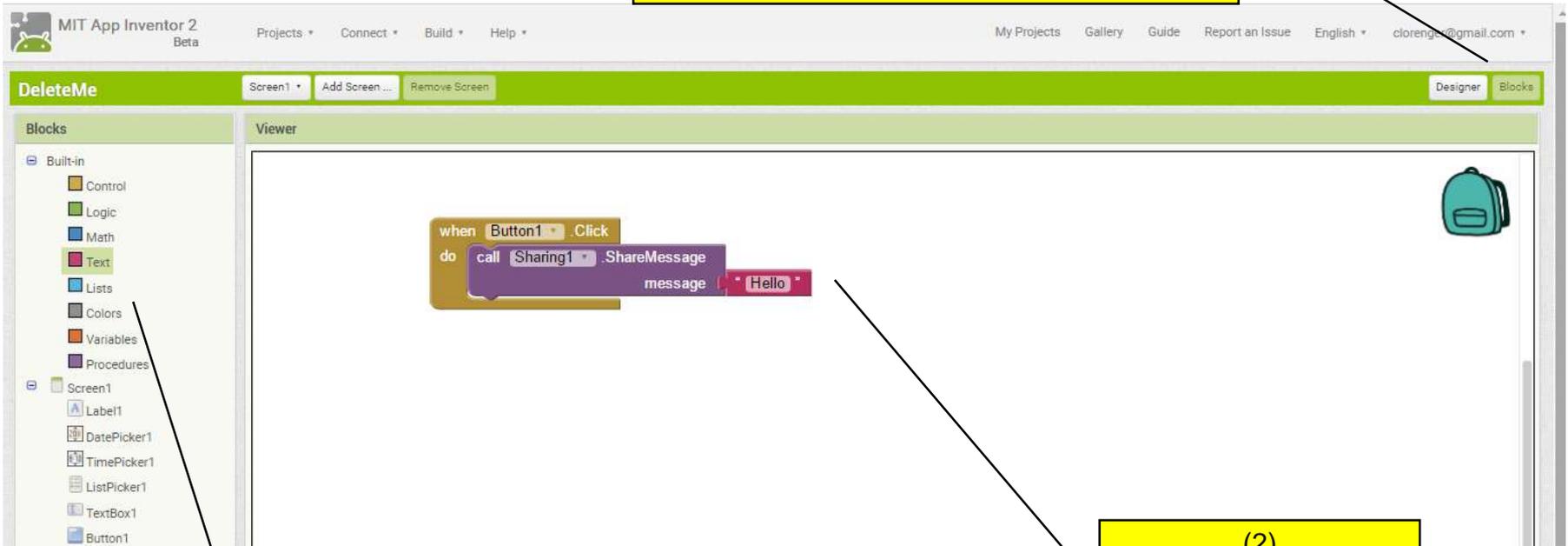
This shows that I'm in Designer mode

MIT App Inventor 2
Beta

Projects ▾   Connect ▾   Build ▾   Help ▾

My Projects   Gallery   Guide   Report an Issue   English ▾   clorengen@gmail.com ▾

OFWIM_Demo   Screen1 ▾   Add Screen ...   Remove Screen   Designer   Blocks

Palette	Viewer	Components	Properties
User Interface		Screen1	Screen1
Button	☑ Display hidden components in Viewer	Sound1	AboutScreen
CheckBox	☐ Check to see Preview on Tablet size.		
DatePicker			AlignHorizontal
Image	Screen1		Left : 1 ▾
Label			AlignVertical
ListPicker			Top : 1 ▾
ListView			AppName
Notifier			OFWIM_Demo
PasswordTextBox			BackgroundColor
Slider			☐ White
Spinner			BackgroundImage
TextBox			None...
TimePicker			CloseScreenAnimation
WebViewer			Default ▾
			Icon
			None...
		Rename Delete	OpenScreenAnimation
			Default ▾
Layout		**Media**	ScreenOrientation
Media	Non-visible components	Upload File	Unspecified ▾
			Scrollable

(1) Choices of fields and services that are available to use in the application. Drag from here…

(2) …and drop over here. This is the area that simulates the screen on your mobile device.

(3) And these are the settings and options you can choose for configuring each field or service.

Blocks Editor

MIT App Inventor 2
Beta

Projects ▾   Connect ▾   Build ▾   Help ▾

My Projects   Gallery   Guide   Report an Issue   English ▾   clorenge@gmail.com ▾

DeleteMe   Screen1 ▾   Add Screen ...   Remove Screen   Designer   Blocks

Blocks

Viewer

- ⊖ Built-in
  - ☐ Control
  - ☐ Logic
  - ☐ Math
  - ☐ Text
  - ☐ Lists
  - ☐ Colors
  - ☐ Variables
  - ☐ Procedures
- ⊖ ☐ Screen1
  - A Label1
  - ☐ DatePicker1
  - ☐ TimePicker1
  - ☐ ListPicker1
  - ☐ TextBox1
  - ☐ Button1

```
when  Button1 ▾ .Click
do    call  Sharing1 ▾ .ShareMessage
                         message  " Hello "
```

(1)
Choices of actions that are available. Drag from here…

(2)
…and drop over here. This adds a building block that snaps together with other building blocks

Launch and Connect the App Inventor Companion App

From the top menu, select Connect > AI Companion. This will generate a QR code and 6-letter code.
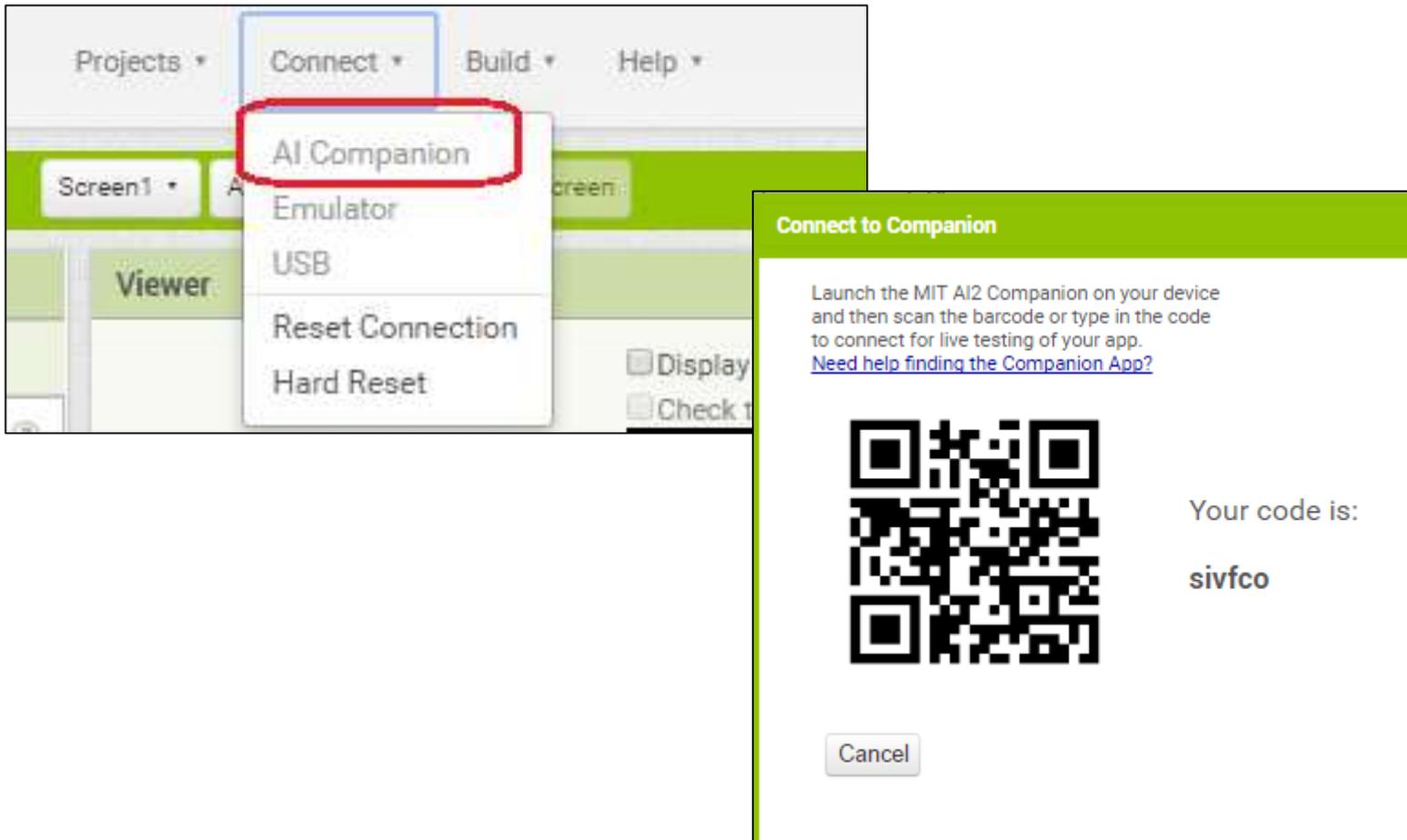
Launch and Connect the App Inventor Companion App

On your phone, launch the MIT Companion app you installed from the Google Play store.

You can either scan the QR code or enter the 6 letter code here.

Once you've created this connection, things that you do on the screen in the browser are updated and reflected on your phone immediately.

It's a great way to see how things will look in the layout, as well as to test your features.

Designer – Palette, Viewer, Components, Properties

Designer – Palette - Choices

Palette	
User Interface	
Button	?
CheckBox	?
DatePicker	?
Image	?
Label	?
ListPicker	?
ListView	?
Notifier	?
PasswordTextBox	?
Slider	?
Spinner	?
TextBox	?
TimePicker	?
WebViewer	?

Palette
User Interface
Layout
Media
Drawing and Animation
Sensors
Social
Storage
Connectivity
LEGO® MINDSTORMS®
Experimental
Extension
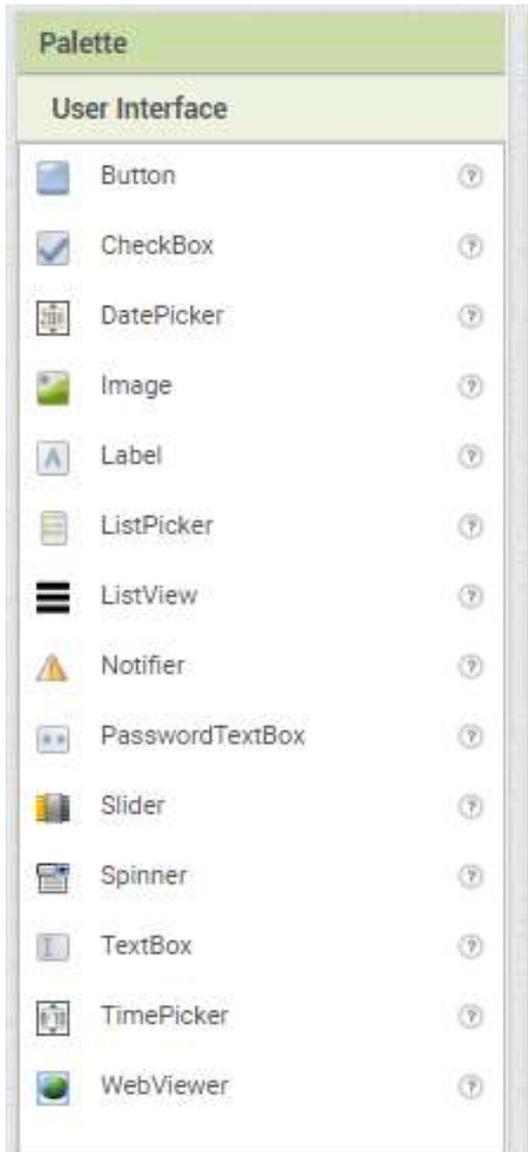
Click through each one of these to see all the choices
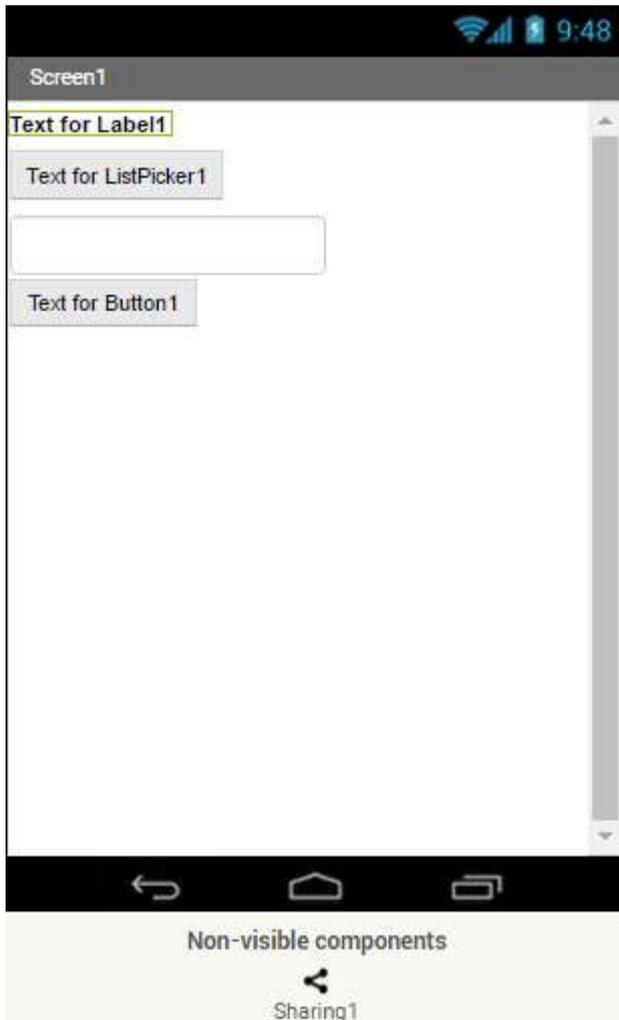
Designer – Drag and Drop User Interface fields
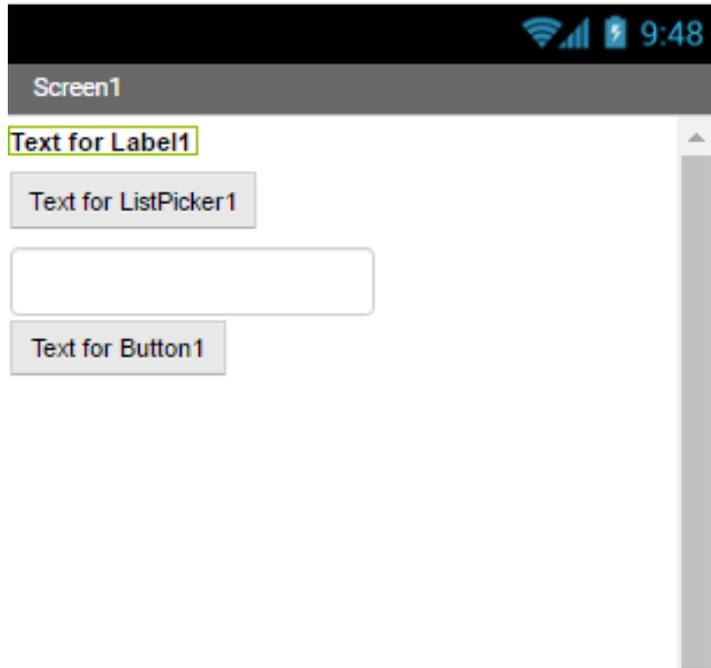
Example for building a small data collection application

From the list in the Palette, in the User Interface area, drag and drop the following to the screen:

1. Label

2. ListPicker

3. TextBox

4. Button

Designer – Drag and Drop User Interface fields

In a real application, you would use one of the Storage options to save your data in some type of database – either on the phone or in the cloud. For this example, let's just have the application open your email so that you can email the data.

We'll also assume that the time and date of the email is the timestamp for the observation (but you can also add controls to set this through MIT App Inventor)

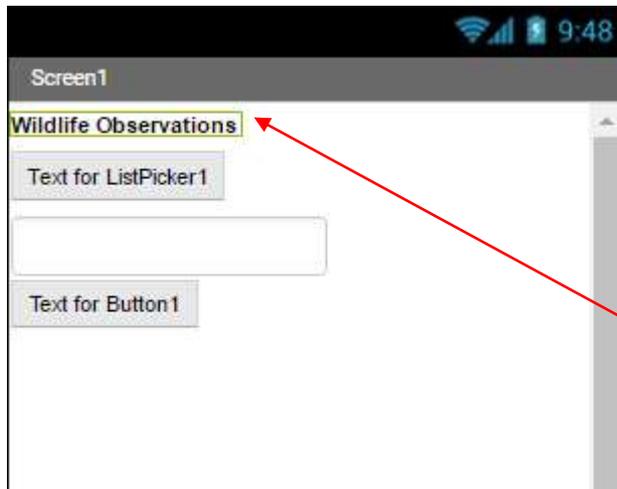Open the Social drawer and add this item:

5. Sharing

Notice how it's added underneath the Screen.

Designer – Configure Label

Click on the Label field, then look at the Properties window.

Change the Text field to a nicer label. Let's call this one 'Wildlife Observations'

After you change the Properties, you'll see the new name on the screen.

Properties

Label1

BackgroundColor
□ None

FontBold
☐

FontItalic
☐

FontSize
14.0

FontTypeface
default ▾

HTMLFormat
☐

HasMargins
☑

Height
Automatic...

Width
Automatic...

Text
Wildlife Observations

Designer – Configure Label

Look at some of the other Properties that you can change.

Let's set the FontSize to 24, and click the FontBold checkbox.

Designer – Configure List Picker

For the List Picker, select it like you previously did for the other fields, and change the Text property to '<Select Species>'.

If you only have a few things to select from, you can add them in the Properties window, in the ElementsFromString field.

Add 'Alligator, Bear, Elk, Turkey' in the ElementsFromString fields.

Select the button on your phone, and you should see a list page displayed with choices for each of the animal types above.
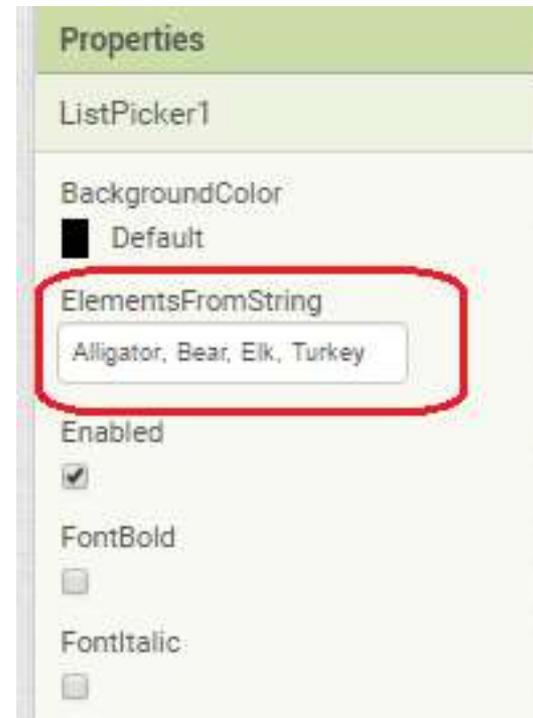
Designer – Configure TextBox

The next field to configure is the TextBox. This will hold the # of animals observed. For this field, it would be useful to provide information to let the user know what type of input is required. You can do this by adding an instruction in the Hint property.

Because you're asking for a number to be entered, you can force the field to only accept numbers by selecting the NumbersOnly property.
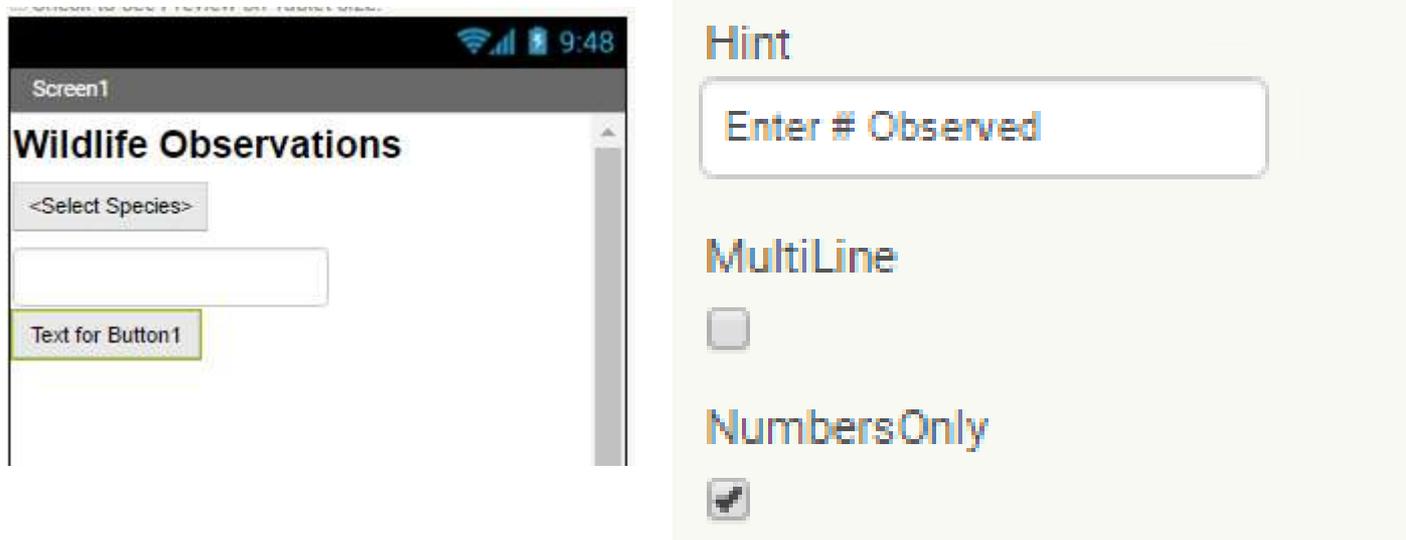
You can test this on your phone by selecting the text field and attempting to enter some information. A numeric keypad should be displayed so that you can enter a number.

Designer – Configure Button

The Button that you added is going to act as the trigger that tells that application to react to the information entered and do something.

In the Properties area, set the Text of the Button to: 'Send"
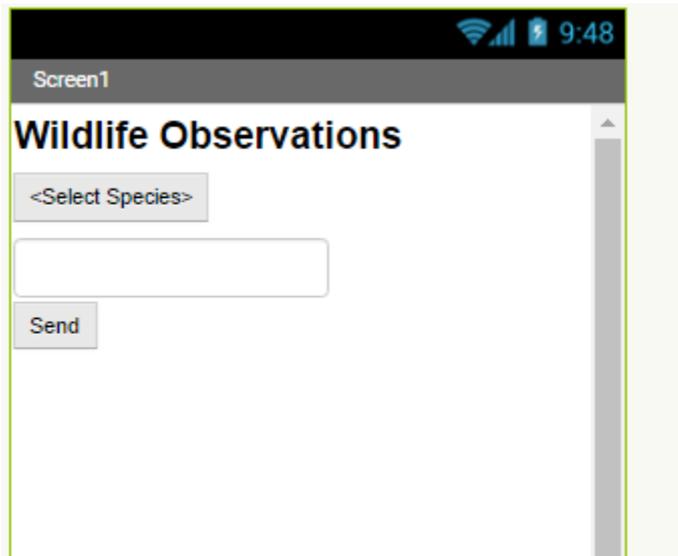
You haven't yet told the application what exactly needs to happen when the Button has been pushed. That comes next in the Block editor.

Blocks Editor

Click 'Blocks' to toggle to the Block editor to create your "code."

As you click on choices on the left, just like in Designer view, you can drag and drop into the Viewer. These creates your code to tell the application how to behave when certain events occur. The pieces snap together like Lego™ blocks.

For our example, locate and drag in the following blocks:

Testing the App

As you make changes, your phone is also updated with both the screen design and the code from the blocks editor.

To test your application, open the list and select a Species then enter a Number Observed and click 'Send."

This will open a window to ask which application you would like to send the data to. Only applications that are already installed on your phone are displayed.

Select your email application, and you'll see that a new message is started and in the body of the message you'll have:
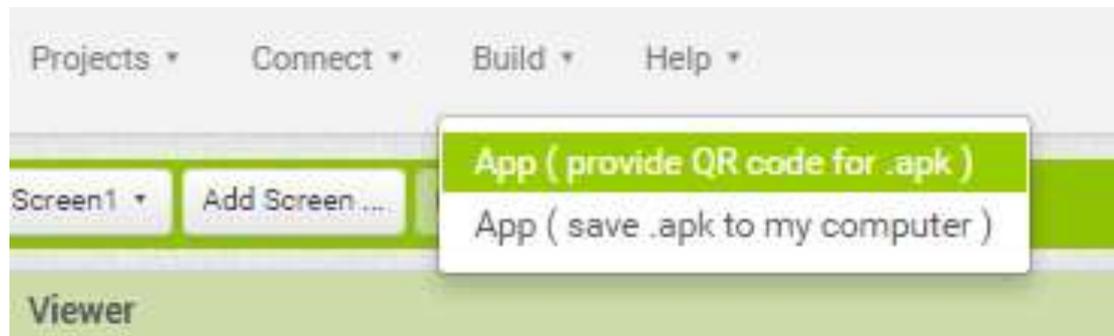
<Species> <Number Observed>

Very, very basic….but you can see the possibilities and how adding additional components (Date, Time, County, GPS Location, Saving to a Database, etc., could expand this into a very powerful, useful tool.

Making a Permanent App

So far, what you have been seeing on your smartphone is a temporary view that goes away once MIT App Inventor is disconnected.

But there are 2 ways to create permanent applications that you can install and are available all the time. Both options are located in the Build menu.

MIT App Inventor – A Good Choice!

This has been a very, very basic example….but you can see the possibilities and how adding additional components and attributes such as

- Date
- Time
- County
- GPS Location
- Saving to a Database
- Photo
- Video
- etc…

could expand this into a very powerful, useful tool.

QUESTIONS?