Introduction to App Inventor

Sam Scott and Pejman Salehi, Sheridan College

Materials and Resources

1. **The App Inventor Site: http://appinventor.mit.edu**
   - Look under Teach, then Curriculum or Resources
   - Two of our favorites from the Resources section
     - "Video Tutorials for Beginners"
     - "Introduction to Software Application Development with App Inventor and Python"

2. **Stuff We Made: http://www-acad.sheridanc.on.ca/staff/scottsam/acse2012**
   - Eight apps to upload and explore
   - Some materials we used in our 2011 class
   - Links to resources mentioned in this handout

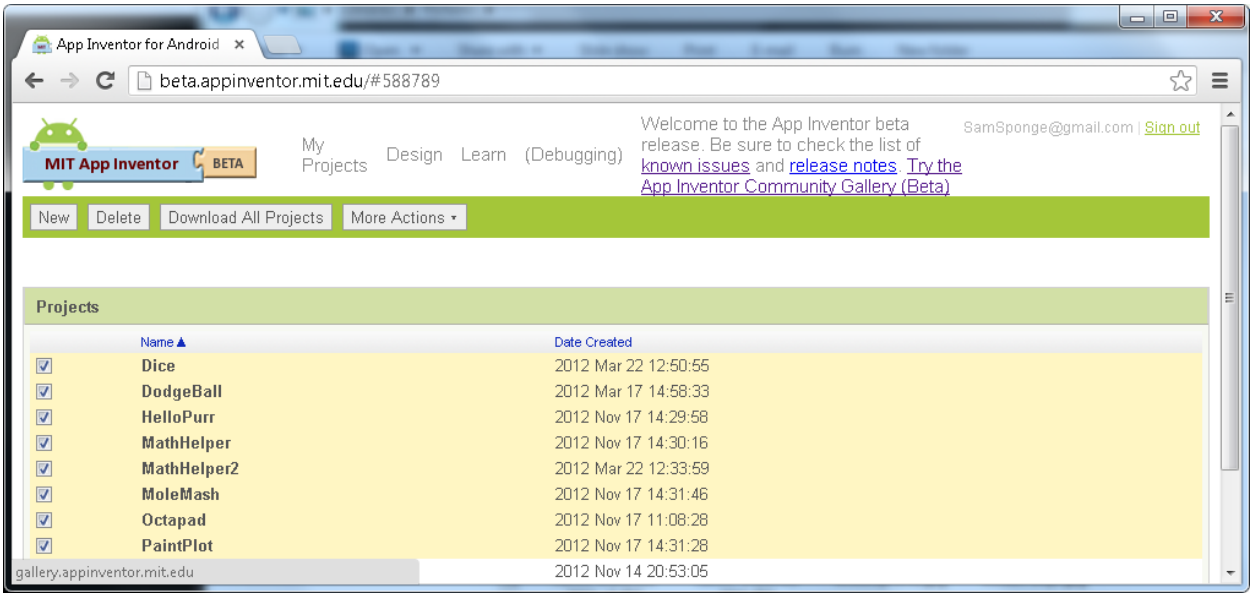
What You Need to Get Going

1. **Must Haves**
   - A Google account
   - Java 6 or higher
   - An up-to-date browser
     - We recommend Chrome or Firefox
   - Setup software installed
     - Go to http://appinventor.mit.edu, then Teach, then Curriculum, then Setup Instructions and scroll down to step 3 to find the setup software for your platform

2. **Would be Nice to Have**
   - An android device and USB cable
     - Will require some settings changes on the device
     - May require driver installation on the device
     - May require a change to the adb_usb.ini file in your .android folder
     - See http://appinventor.mit.edu/teach/curriculum/phone.html for more info

App Inventor Project Management

This is what you will see when you first click on Invent from the App Inventor home page. You can create and delete projects here and you can also download/upload zipped projects here. This is cloud computing – all your work is stored on line.



Anatomy of the App Inventor: Overview

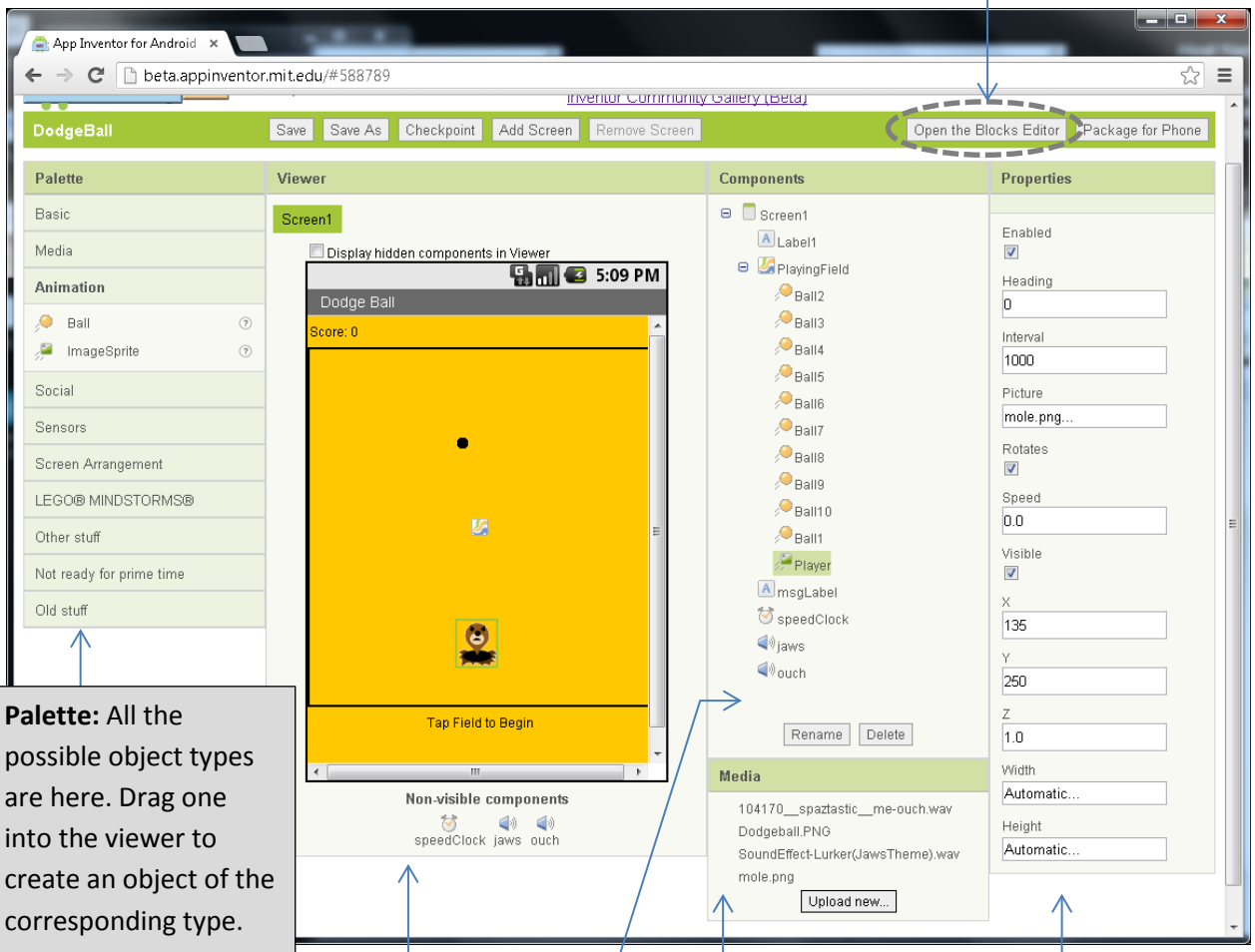
The app development process may seem a little strange at first. While developing an app, you will typically be juggling the three components shown below. You create and configure objects in the Design Screen, program behaviours graphically in the Blocks Editor, and run the app on an emulator or connected device.

Anatomy of App Inventor: The Design Screen

The screen below is the first thing you will see when you open a project.

Note: When you have a project on the go, the "Invent" button might take you directly here. To get back to the project management screen click the "My Projects" link at the top (not shown in the picture below).

Next page describes what happens when you click this



Palette: All the possible object types are here. Drag one into the viewer to create an object of the corresponding type.

Viewer: All objects in the project will show here. You can specify the layout of the visible objects (sprites, buttons, etc.). The non-visible objects (timers, sounds, etc.) will be listed at bottom.

Components: This view shows the logical structure of the objects in the project. You can select, rename, and delete them here.

Media: If you want to use images, sounds, etc. you upload them here first, then you can include them as properties of other objects (e.g. the mp3 for a Sound object or the background png for a Canvas object…)

Properties: Allows you to configure the initial values for the selected object. In this example the "player" ImageSprite is selected and you can set its speed, direction, position, associated image, etc.

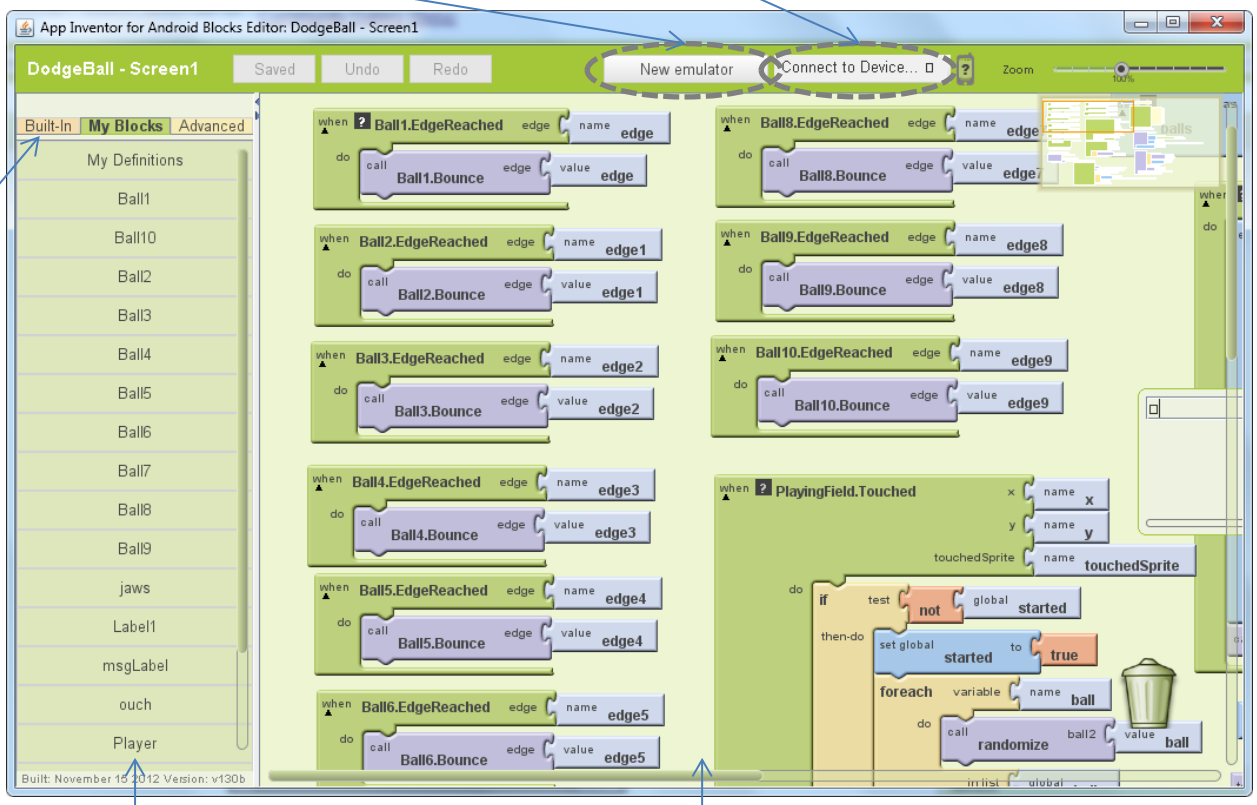
Anatomy of App Inventor: The Blocks Editor

When you click “Open the Blocks Editor” on the Design Screen, App Inventor will attempt to use Java Web Start to download and run a .jnlp program. Depending on your browser settings you may have to click through some permissions or even go and find the .jnlp program in your downloads and run it manually.

Click here to launch an emulator if you need one.

And then here to connect to your emulator or connected device.

Flip ahead 2 pages for more information…



My Blocks: All objects you created on the design screen will be here. Click the name of one to get a list of code blocks that can be dragged onto the canvas and snapped together to define behaviors for the app.

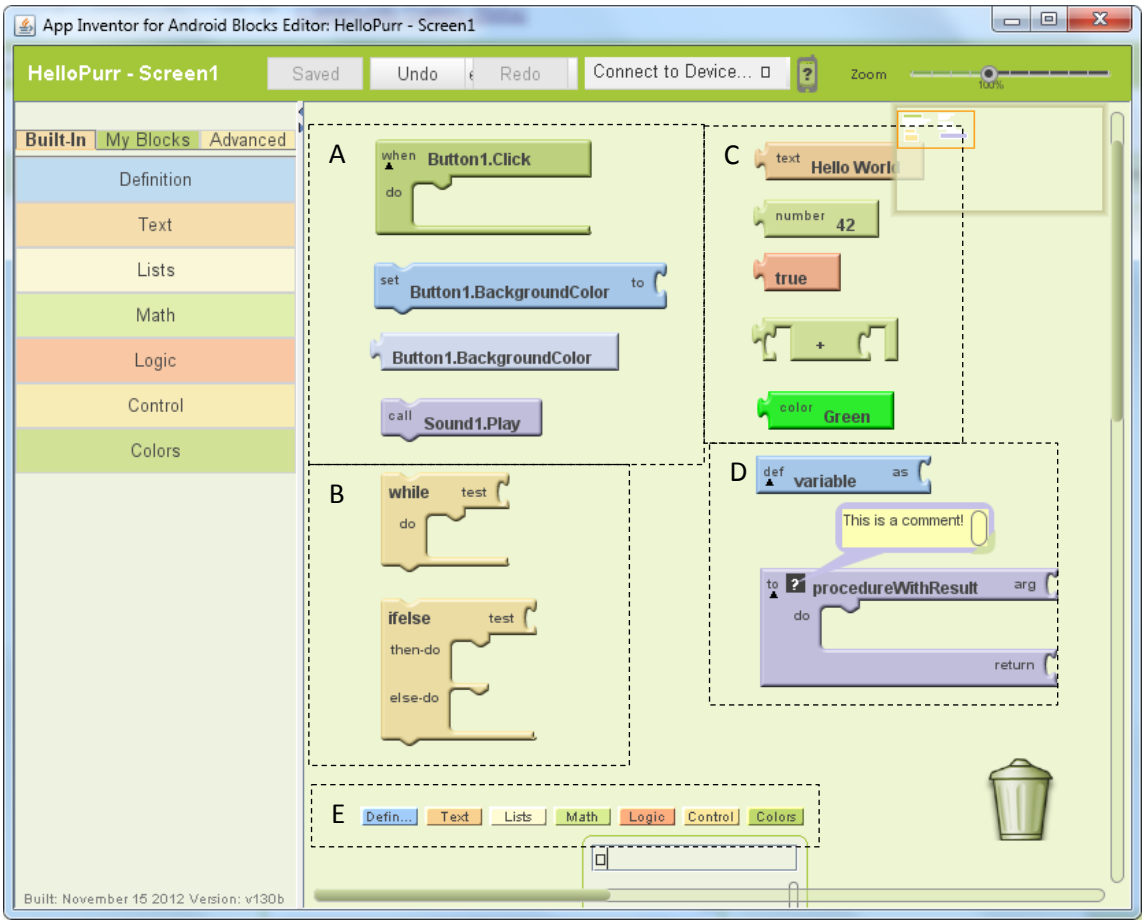
Behavours: Different colors and shapes define different code block types (event handlers, property setters, values, expressions, etc.) More info on code block types on the next page.

Built In: Look here for the blocks realted to numbers, logic, text (strings), lists, selection and repetition, variable and procedure definition, etc.

Shortcut: If you click the behavours screen, you will get the same “Built In” menu but presented horizontally.

Anatomy of App Inventor: The Blocks Editor II

Programming in App Inventor is based on the Scratch visual programming language. You create a program by configuring and snapping together puzzle pieces. There are no syntax errors – if the pieces don't snap together you're doing something wrong.



Legend

A: Four blocks from "My Blocks". Button1 object's Click event handler, setter for background color, and background color property, as well as a call to the "play" procedure for the user-defined Sound1.

B: Two blocks from "Control". A while loop and an if-else statement. The test (a Boolean expression) must be plugged in as well as blocks to repeat or select.

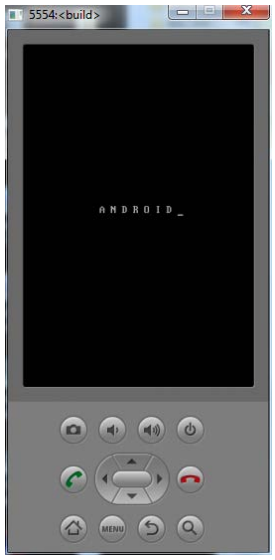
C: Five blocks from "Text", "Logic", "Math", and "Colors". There are four literals, one of each type, and an expression block from the "Math" section. You would plug in the operands and then you can use this block anywhere you could use a literal.

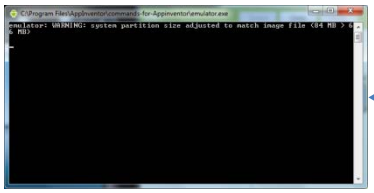
D: Two blocks from "Definition". A global variable definition and a procedure definition. Click "variable" or "procedureWithResult" to set the name. Note the comment on one of the blocks.

E: The convenience menu. Click anywhere to bring up this version of the "Built-In" menu.

Anatomy of App Inventor: The Emulator

When you click the “New Emulator” button in the Blocks Editor, a Java-based Android phone emulator will start up locally. You must wait for it to start and then unlock it (as shown below) before you press the “Connect” button and select the emulator.





Just ignore this window. But don’t close it or the emulator will crash.

Anatomy of App Inventor: Connecting

When you connect, either to a device or the emulator, App Inventor will immediately seize the device or emulator and run the current project on it. Changes you make to the design screen or blocks editor should be applied right away, though it may take some time to download if you are using a physical device.

Anatomy of App Inventor: Packaging

Note that just connecting to a phone does not install the App on it. To do that you must go back to the Design Screen and press the “Package for Phone” button. Then you must wait for the compilation progress bar to complete. And then you must still wait for a dialog to pop up saying it is finished. Then you will find the App on the phone.