

1 - App Inventor Tips

Cut, Copy and Paste within the App Inventor Blocks Editor

The Blocks editor has a copy-and-paste feature – but the feature is not obvious and the keystrokes vary depending on the system used to access App Inventor.

Windows

- On Windows, select a group of blocks and then press *Ctrl-C* to copy the blocks to the clipboard. Then press *Ctrl-V* to copy and paste the blocks.
- Select a block (and an its enclosed blocks) by clicking on the block.
- To delete a group of blocks, select the blocks and press *Ctrl-X*.
- If you did not mean to delete those blocks, press *Ctrl-V* and paste them back!

Mac OS X

- On Mac OS X, select a group of blocks and then press *command-C* to copy the blocks to the clipboard. Then press *command-V* to copy and paste the blocks.
- On Mac OS X, to delete a group of blocks, select the blocks and press *command-X*.

Duplicating Blocks in the Blocks Editor

An alternative to copy-and-paste is to use the *Duplicate* blocks feature available from the pop up menu.

Windows

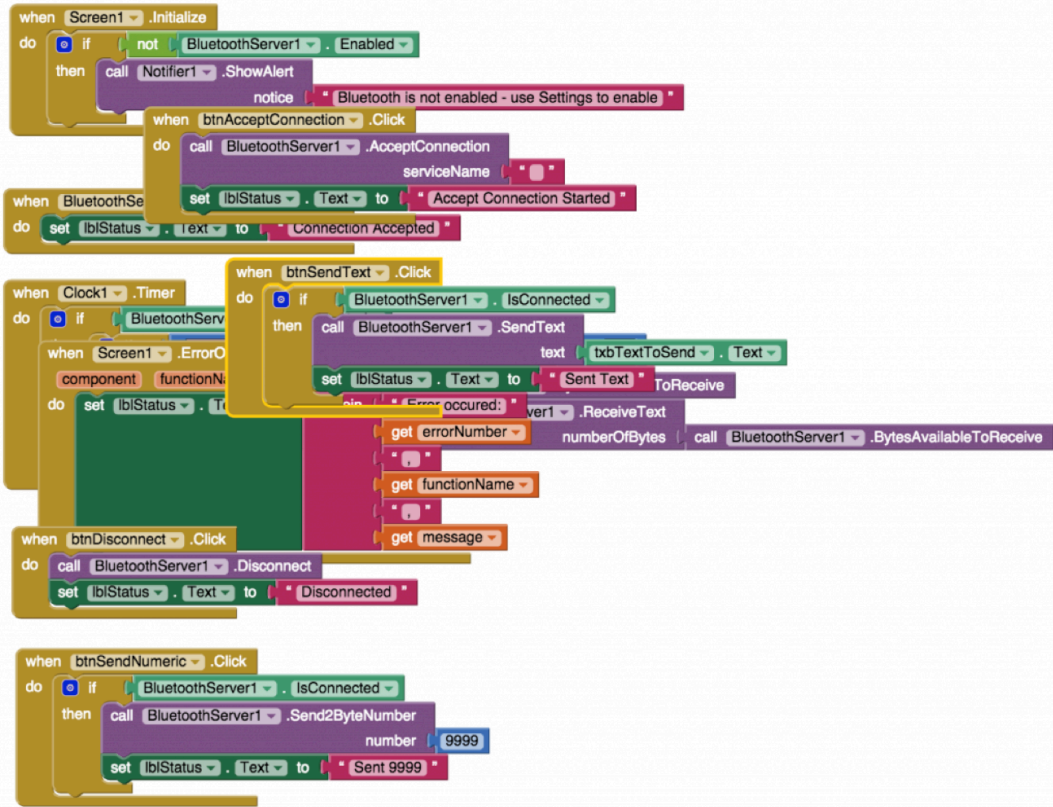
Move the mouse pointer over a block and *right-click* the mouse. Select *Duplicate* from the pop up menu.

Mac OS X

Move the mouse pointer over a block and *ctrl-click* the mouse. Select *Duplicate* from the pop up menu.

Re-arranging, Collapsing and Zooming the Blocks View

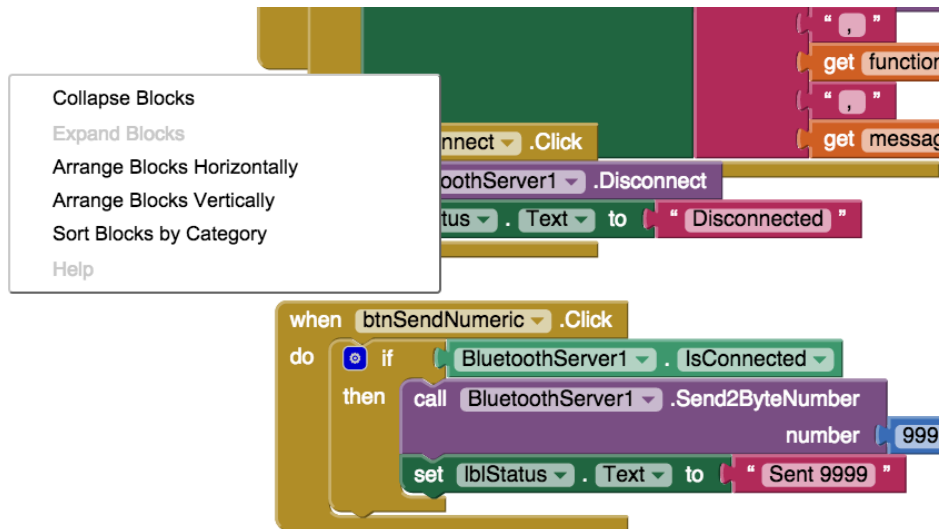
As you develop your App Inventor program using the Blocks editor, do you find your blocks overlapping and crashing in to one another on the screen? You know, like this (the content of the blocks is not important here – it's the mess that counts!):



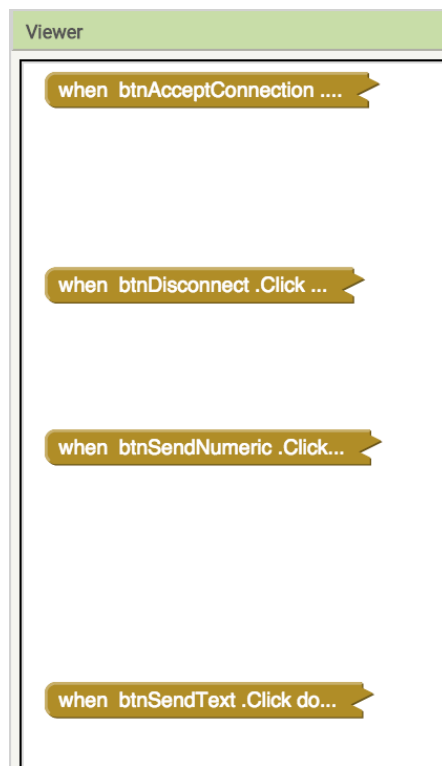
You can drag the blocks on the screen so they no longer overlap, but dragging each block is time consuming. An easier way is to let App Inventor automatically re-arrange the blocks.

- Move the mouse pointer to any part of the white space outside the blocks
- On Windows, right-click the mouse button
- On Mac OS X, press Ctrl and click the mouse button

A pop up menu appears with several options to automatically arrange the blocks:



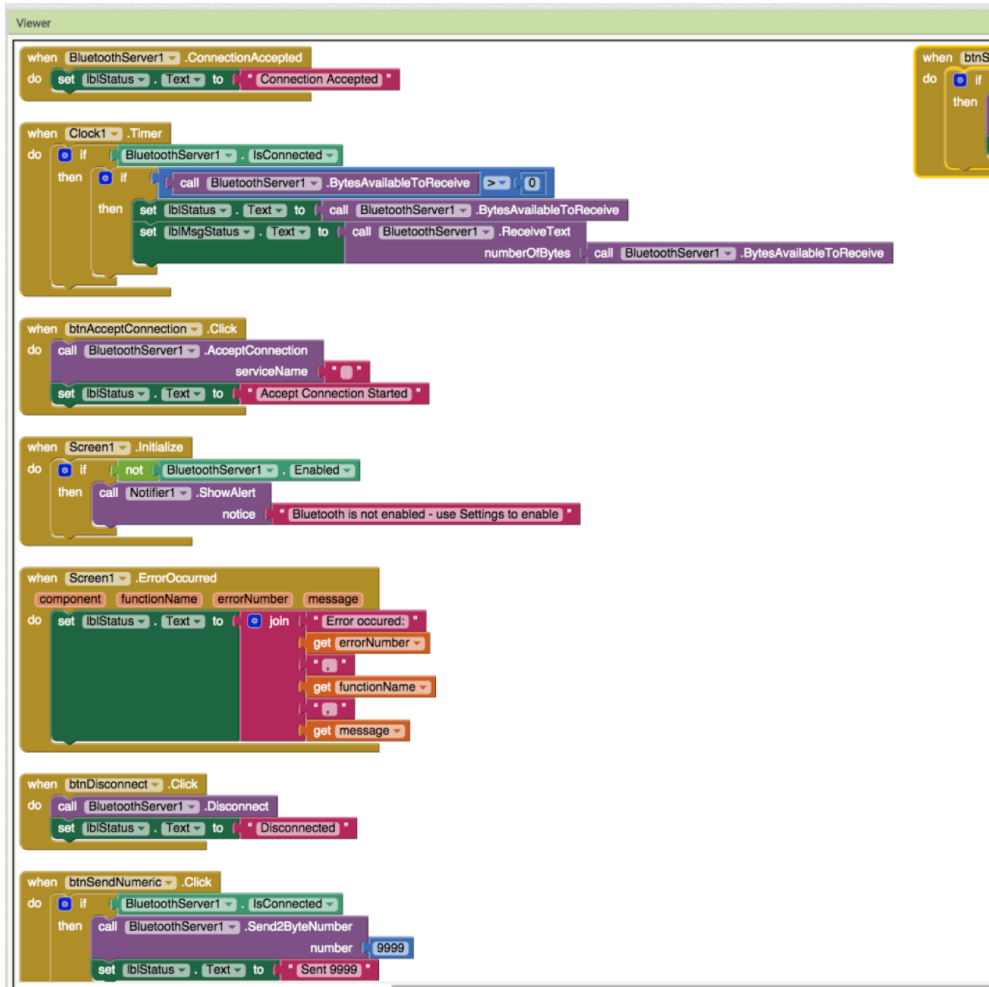
The first option “collapses” each block into a single line, like this:



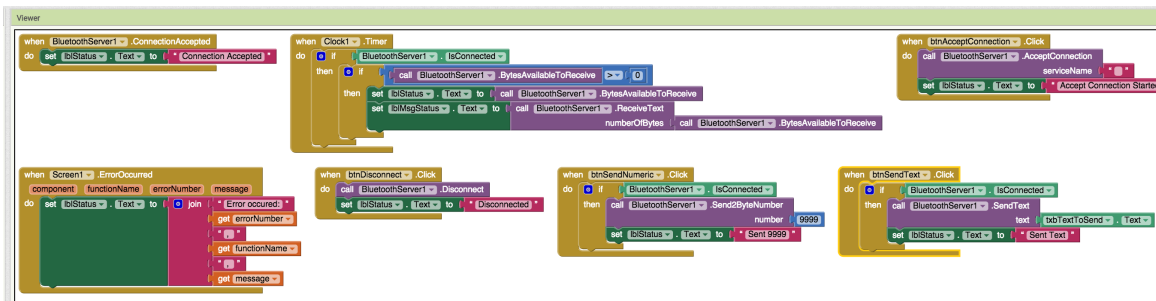
Right-click again and choose *Expand Blocks* – or, right click on individual collapsed blocks to display a pop up menu and an option to expand only the selected block. (You can also right click on a block and collapse individual blocks of code. If using Mac OS X, use *Ctrl-Click* instead of right-click)

To arrange the blocks into a vertical order, select the *Arrange Blocks Vertically* option. The blocks are then arranged into a vertical column up to the maximum number that fit

on the screen in your browser window. If there are more blocks (and there always are more blocks!), the additional blocks will appear in vertical columns to the right. You may have to use the scroll bars to see where the blocks were relocated!



Arrange Blocks Horizontally places the blocks in groups across the screen from left to right:



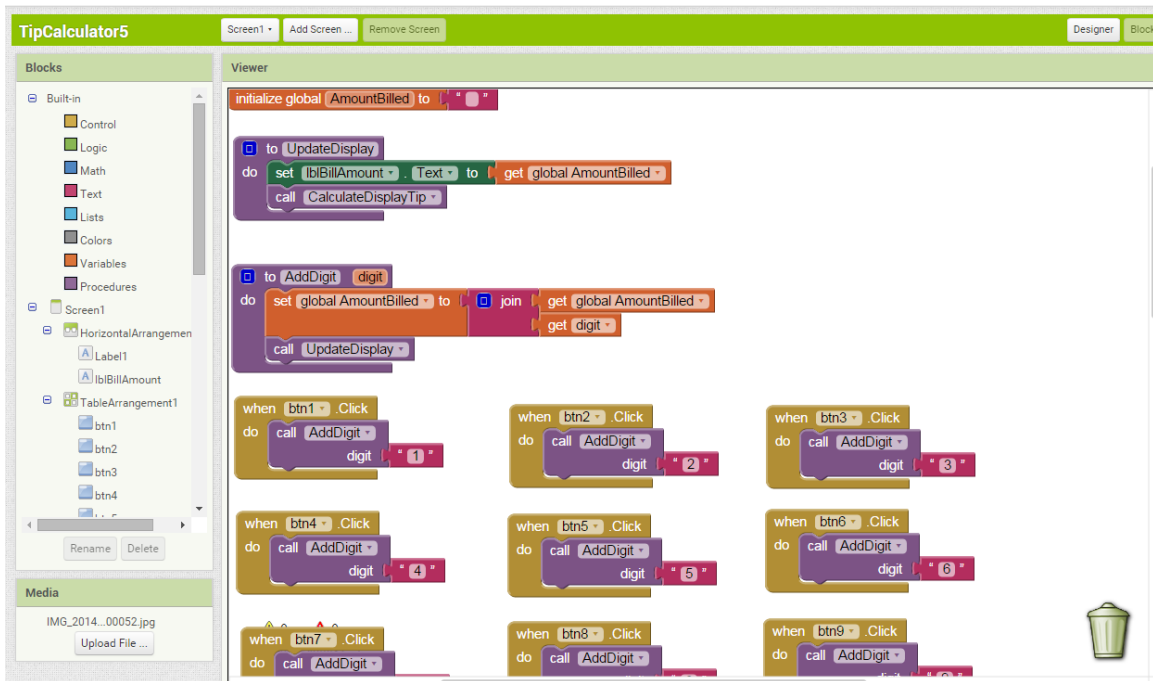
This tip may make your programming more productive – whenever your blocks get too crowded on the screen, let App Inventor’s Blocks editor automatically re-arrange the blocks for you.

(The example code here is meaningless – do not try to use this code! This is an old experiment with Bluetooth code in App Inventor.)

Bonus Tip!

You can use the “zoom” feature of your browser to zoom in and out of the viewing area in the Blocks editor – this feature enables you to view more blocks on the screen at the same time!

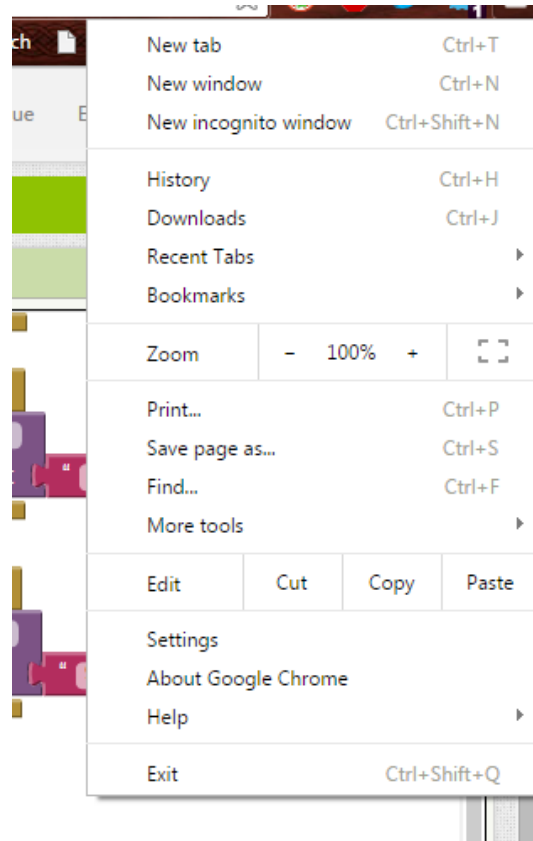
For example, here is a typical App Inventor Blocks editor view:



Use the Zoom option in Chrome, Firefox or other browsers to zoom out and show more of the program blocks.

In the Google Chrome or Firefox browsers, select the zoom option to zoom out of the image.

In Chrome (on Windows), the Zoom option appears in the Chrome menu pull down – click on the “minus” sign to zoom out or on the “+” symbol to zoom in:



After zooming out to a 50% view, much more of the blocks code is visible all at once:

```

Initialize global AmountBilled to 0
to UpdateDisplay
do
  set [billAmount].Text to get global AmountBilled
  call CalculateDisplayTip
end

to AddDigit digit
do
  set global AmountBilled to join get global AmountBilled
  get digit
  call UpdateDisplay
end

when btn1.Click
do
  call AddDigit
  digit 1
end

when btn2.Click
do
  call AddDigit
  digit 2
end

when btn3.Click
do
  call AddDigit
  digit 3
end

when btn4.Click
do
  call AddDigit
  digit 4
end

when btn5.Click
do
  call AddDigit
  digit 5
end

when btn6.Click
do
  call AddDigit
  digit 6
end

when btn7.Click
do
  call AddDigit
  digit 7
end

when btn8.Click
do
  call AddDigit
  digit 8
end

when btn9.Click
do
  call AddDigit
  digit 9
end

when btn0.Click
do
  call AddDigit
  digit 0
end

when btnClearAll.Click
do
  set global AmountBilled to 0
  set [slider].ThumbPosition to 0
  call UpdateDisplay
end

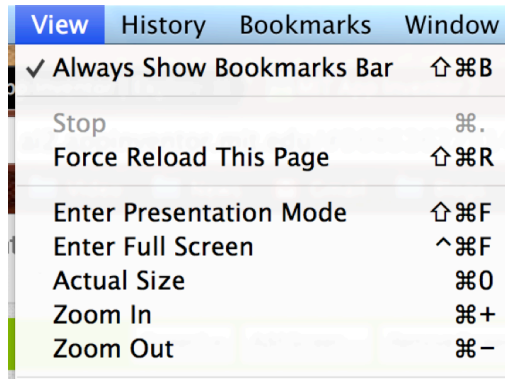
when btnDecPoint.Click
do
  if not contains text get global AmountBilled
  piece 0
  then
    call AddDigit
    digit 0
  end
end

when btnDel.Click
do
  if length get global AmountBilled > 0
  then
    set global AmountBilled to segment text get global AmountBilled
    start 1
    length length get global AmountBilled - 1
  if length get global AmountBilled > 0
  then
    set global AmountBilled to 0
  end
  call UpdateDisplay
end

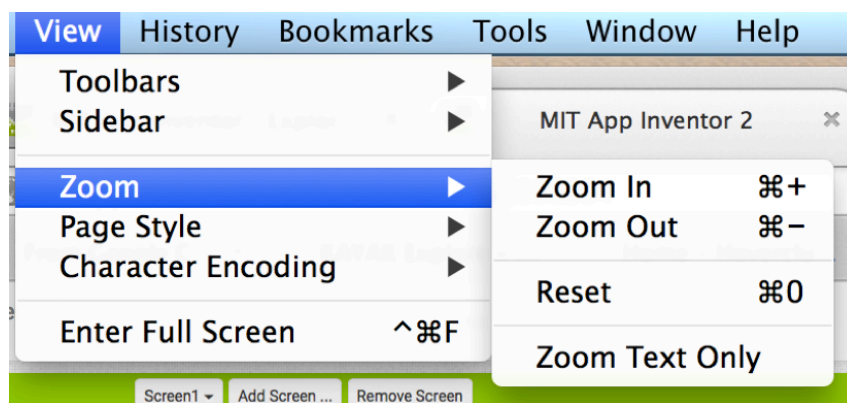
when [slider].PositionChanged
thumbPosition
do
  set [pct].Text to get thumbPosition
  call CalculateDisplayTip
end

```

On Mac OS X, the Zoom option (in Chrome) is located on the View menu:



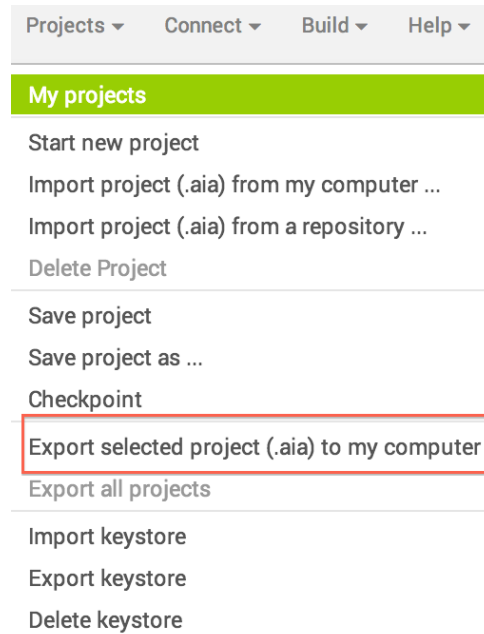
Firefox (on Mac OS X) – use the View menu and then the Zoom option:



Backing Up: Saving App Projects to Your Computer

Back up your App Inventor projects by periodically saving them to your computer's hard drive. During App Inventor's development, there have been occasional losses of all or parts of saved projects from the App Inventor online cloud. A good tip for all computing activities: back up your projects!

To save a copy of an individual App Inventor project, open the project and select *Projects* / *Export selected project (.aia) to my computer*.



Alternatively, with the *My Projects* list showing all of your App Inventor projects, select *Export all projects*. App Inventor creates a file named *all-projects.zip* and downloads this file to your computer. The files are compressed and combined into the common *.zip* file format.

Project files may be read back into App Inventor using the *Projects | Import project (.aia) from my computer* menu selection.

Backing Up: Use “Checkpoint” to save periodic “snap shots” of your project

As we develop our app code, we occasionally make changes to our apps that do not work. In effect, we break our own programs!

When that occurs (and it will!) you will wish you had saved a copy of the file so that you can return to the original code *before messing it up*.

There are several ways to save a copy:

- As described in the previous section, periodically save your app source file (.aia) to your local computer hard drive.
- Use the *Projects | Save project as ...* option to save the project into a newly named project file,
- Or use the *Projects | Checkpoint* method.

Projects | Checkpoint creates a copy of your project with the default name *yourproject_checkpoint1* (you may optionally change this name to something else).

Checkpoint is similar to *Save project as* – except that *Save project as* saves the newly named project and then reloads the newly named project in to the editor. Any new

changes you make are stored in the new project file and not the one you started with. You could, of course, use *Save project as* and then re-open your original file. But there is an easier way – use *Checkpoint*.

Checkpoint takes a snapshot of your project at a moment in time, creating a new copy of your project but leaving your current project in the editor.

- **If you want to keep your current project in the Designer or Blocks editor, use *Checkpoint*.**
- **If you want to start a new project using your current code as the base, then choose *Projects | Save project as ...***

The second (or third or *n*-th time) you select *Projects | Checkpoint*, App Inventor displays a list of your previous checkpoints, including the date and time when the project was saved.

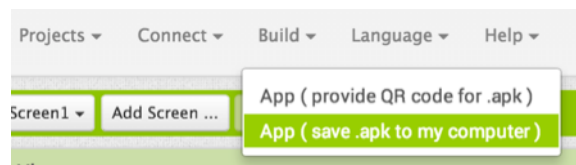
Installing Apps on Your Phone

When developing and testing App Inventor apps on an Android phone or tablet, the app is normally run using the AI Companion app. The AI Companion supports installing, testing and dynamically updating your program as it runs. However, ***the AI Companion does not install the app on to your phone, like a regular app.***

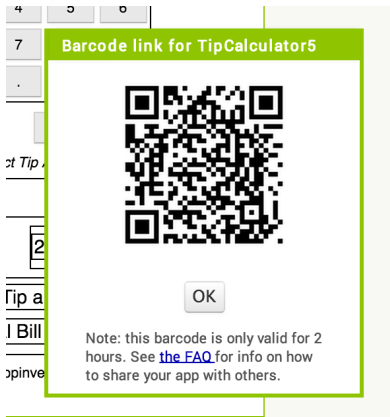
There are two methods for installing your app to your phone *without* AI Companion. Both use the App Inventor “Build” menu. One method uses a QR code, similar to how AI Companion operates, while the other method downloads the Android application file to your personal computer. From your PC, the file can be emailed or copied to your phone (or tablet).

Building an App Using the QR Code Method

To install the app on your phone (as a regular Android app), use the Build menu item “App (provide QR code for .apk)”.



App Inventor prepares the app for installation on your phone and displays a progress bar as your app is converted into an .apk file format. The “.apk” file is the type of file used for all Android applications. Once the app build is finished, you will see a QR code displayed on your screen:



This QR code is handled differently than those used with the AI Companion app. In this scenario, *the QR code is the URL or web address where a temporary copy of the .apk file has been stored.*

To access this QR code, you must install a QR code app and use it to scan the code to obtain the URL. If your phone does not have a QR scanning app, go to the Google Play store and search for “QR code reading” or “QR code scanning” to find an app (most are free). The QR code app uses your phone’s (or tablet’s) camera to scan and interpret the QR code as a web address.

- Follow the QR code app’s on screen prompts to download the .apk file to your phone and then install the app on to your phone.
- Click on the downloaded file shown in the Android Notification area to install.
- Once installed, it will appear in your list of apps like other installed apps.

Where is the downloaded .apk file?

The downloaded installation .apk file is stored in the Android device’s *Download* directory. To locate the *Download* directory, you need to install a File Manager (similar to Windows Explorer or Mac OS X Finder) to look through the file system on your Android device. You can find and install free File Manager apps from the Google Play store.

On my phone, the downloaded files are stored in `/storage/emulated/0/Download`.

Once a file has been downloaded, you must run the downloaded .apk file to install the app on your device. If you have previously downloaded the app on to your device, new versions do not overwrite the older version in the *Download* directory. Instead, the new version is given a modified name. For example, if you have downloaded *MyApp.apk* to the *Download* directory, and then download a new version, the new version will be renamed to *MyApp-1.apk*.

The *Download* directory may collect many downloaded files, including multiple versions of your apps. Most File Manager programs provide a way to list and delete files in the *Download* directory. Use that feature to periodically erase old files.

Download an App for Installation

If you do not wish to use the QR code method, you may build and download the .apk file directly to your computer. Once the .apk file is on your computer, you could email the .apk file as an attachment – to yourself. Then, on your phone, fetch your email and download and install the apk file on to your phone.

If your device is setup for USB connection to your computer, you may also copy the file from your computer to your Android device. Then run the .apk file on the Android device to install it.

Using App Inventor's Official Documentation

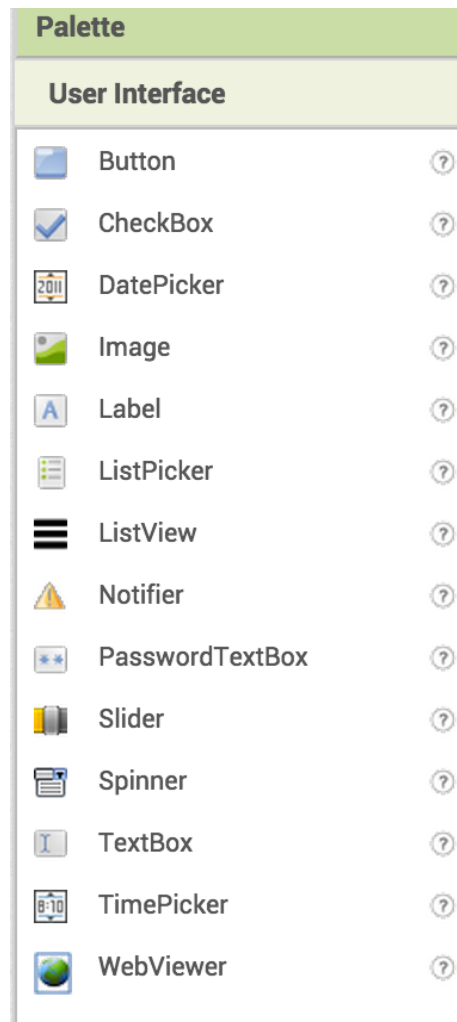
App Inventor programming uses graphical components to layout program functionality. But the official App Inventor documentation uses traditional text descriptions. And that can make reading and understanding the official documentation confusing!

To access the official App Inventor documentation, in your browser go to:

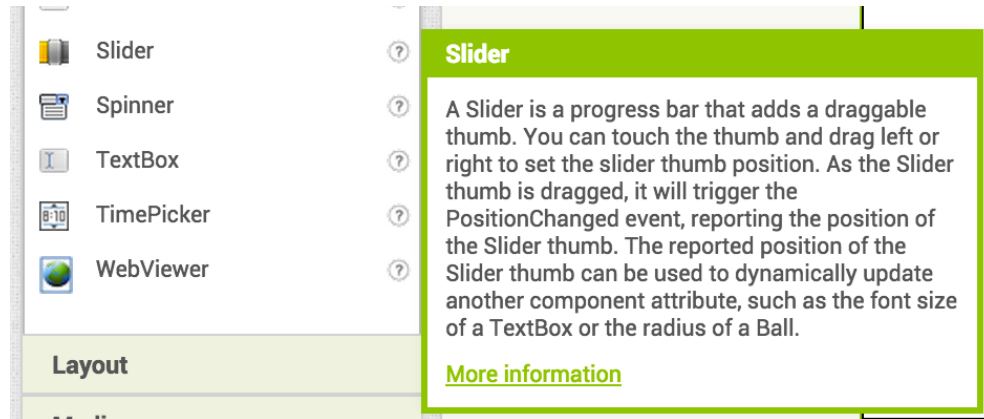
<http://appinventor.mit.edu/explore/library.html>

At the bottom of the page, find the Documentation section and use the link for *Language Blocks* or the link for *Component* documentation.

Alternatively, when using the App Inventor Designer, look for a small question mark inside a circle to the right of each component in the Palette:



Clicking on the question mark brings up a pop up dialog box with a brief description of the component. At the bottom of the brief description there is a “[More information](#)” hyper link. Click on that link to open the official documentation pages in a new browser tab.



The online App Inventor documentation presents a (mostly) textual description under separate headings of “Properties”, “Methods” and “Events”. While these words are traditional programming terms, they may mean little to an App Inventor programmer!

The following sections help you make sense of the App Inventor documentation and explain how “Properties”, “Methods” and “Events” match up with App Inventor.

Events

App Inventor apps – and Android itself – rely on two concepts known as “event driven programming” and “object-oriented programming”. You need not be an expert on these topics to use App Inventor, but learning a bit about these concepts is helpful to understanding App Inventor, the App Inventor documentation and learning other Android programming systems such as the Java programming language.

Event driven programming is easy to understand: a “*When xxx.Click Do*” block describes what to do when an “*event*” occurs such as a user presses a button on the screen. A button push is an *event*. Our program responds to *events* – and tells our program what to do when an event occurs.

App Inventor apps respond to many kinds of events and each event is explained in the “Events” section of the App Inventor documentation.

Properties

Properties appear on the right hand side of the Designer page. A property is an *attribute* that describes something about an object. For example, the color of a button or the text of a label is a property of an object.

Think about properties as they apply to every day objects: A car might have the property “blue in color”. A house might have a property “yellow in color”. Each entity may have multiple properties. For example, a dog might have a property like “breed is German shepherd” and “small dog” or “large dog”. A car may be “blue in color”, “4 wheel drive”, “4 door” and “140 horsepower engine”. Each of these attributes is a property that helps to describe the car.

In App Inventor, each component may have several properties. For example, a button might be square or oval, and blue or gray in color. These attributes are described in the “Properties” section of the documentation.

To change the properties of a component, select the user interface component in the Designer view. For example, change the color of a button by first selecting the button and then changing the color property in the Property section. Most properties may also be changed by blocks code running in the app.

Methods

“Methods” describe the actions or services the component can provide for a program. A method labeled “*Start()*” is an *action* that the component can perform.

Another way to describe “properties” and “methods” is to describe them in terms of human language – a property is like an *adjective* - “small”, “large”, “blue” (as in color) and a method is like a *verb* describing an action.

In this way, each component is an “object” that has properties and can provide services via actions (the methods).

Back to the Documentation

When you look at the official App Inventor documentation, you see lists of *properties*, *events* and *methods* for each component.

For example, the media player plays audio or sound. It has a property “*Volume*” set between 0 and 100 to adjust the player volume. It has methods such as “*Start()*” to begin playing the sound and “*Stop()*” to discontinue playing the sound.

Now that you know what “properties”, “events” and “methods” mean, you should find reading the App Inventor official documentation to be easier.