App Making with App Inventor

1.5 hour session @ Hackathon

Prep (for Chapter Lead)

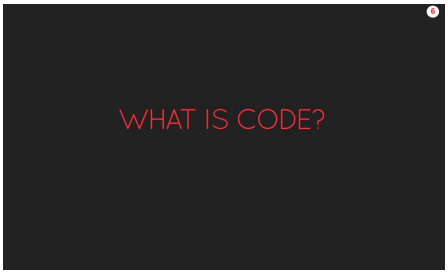
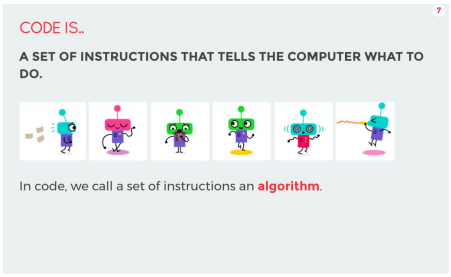
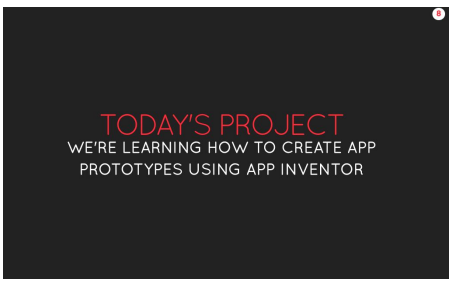
- Install MIT AI2 Companion on Android devices
- Charge devices overnight
- Print wireframe templates

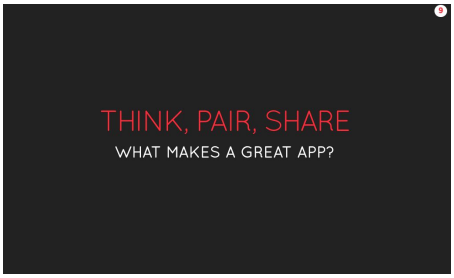
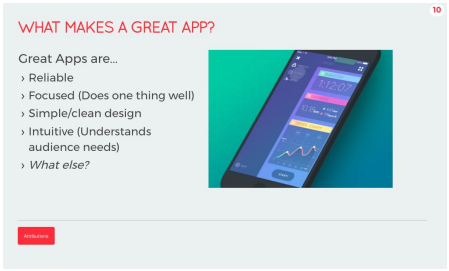
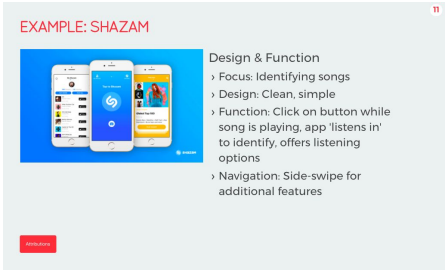
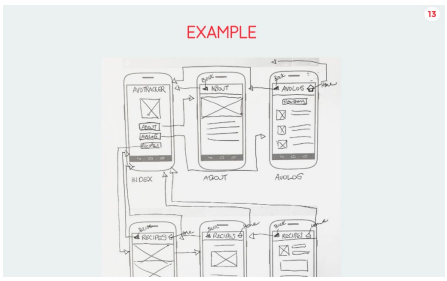
NOTE If you need to borrow an android phone before or during the workshop, please let your Chapter Lead know so they can grab one for you

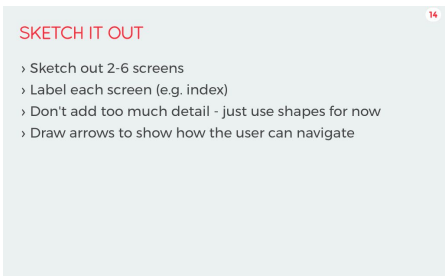
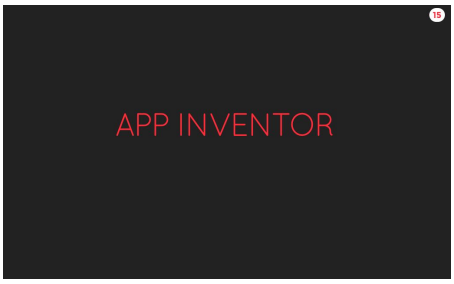
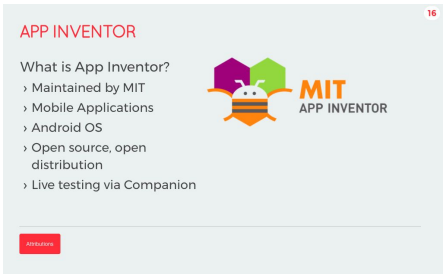
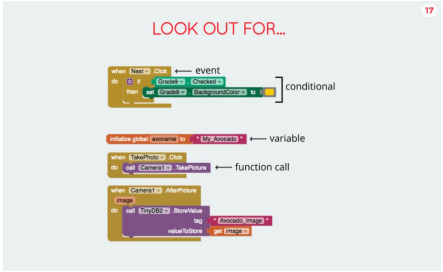
SCHEDULE

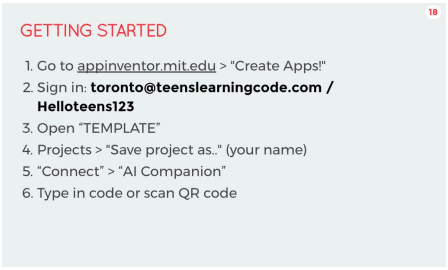
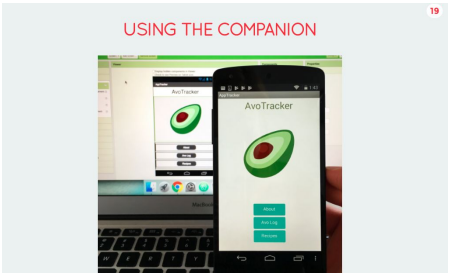
Introduction + Wireframing (30 minutes)
Code-Along (1 hour)

INTRO SLIDES

Slides _____	Notes
	Ask: What is code?
	Explain that we need to break down our ideas into smaller chunks - or steps - to tell our program what our app will look like, and how it will function.
	Ask: What is a prototype? Why make prototypes? Ask: Who has heard of or used App Inventor before?

	Have learners think to themselves first for 30 seconds, then pair up and talk to 2-3 people sitting closeby for 2 minutes. Use timer-tab.com to keep track of time. Once the time is up, have a few learners share with the entire group.
	Review what makes a great app - refer back to the examples raised during the Think-Pair-Share.
	Discuss the example of Shazam. Have learners raise their hand if they've heard of or used Shazam before. Ask them what it does, and to describe the design and function of the app before revealing the answers. Ask what they like or don't like about it.
	Ask: What is a wireframe? Why make wireframes?
	Explain that we use wireframes to map out our app's layout/design and how users will navigate within the app. Point out that the images are just shapes, and text is very general. Arrows are used to show how users navigate between each screen.

	Have mentors help hand out the wireframe templates and pencils. Review the instructions on the slide - stress that we don't need want to spend too much time on detail. Give learners 10 minutes to sketch out their wireframes. Use timer-tab.
	
	Ask: What does Open Source mean?
	Within the blocks of code provided, point out the following: - **Event**: one thing causing another thing to happen (e.g. when our screen is initialized/opened) - **Conditional**: making decisions based on conditions (e.g. IF some condition is met, THEN do something.. ELSE do something else) - **Variable**: stores a piece of information (e.g. the name of our avocado) - **Function call**: when we call/use 'canned' functions - procedures that already exist (e.g. app inventor knows what TakePicture means - we don't need to define this) These are a few coding concepts that we will use when building our apps. *Notice that similar blocks are the same colour.

	Go through steps to get started. Learners do not need to use this email to login - if they prefer their own google account, that works too. After Step 3, a warning message may appear saying "This session is out of date" - have them select "Continue with Both Sessions," then "Continue with Multiple Sessions"
	Stress the importance of testing our apps using the AI2 Companion. Some elements will look and function differently on our phones than in the browser.

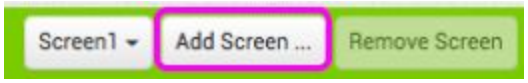
CODE ALONG

On your screen:

1. Open up the TEMPLATE file and "Save Project As..." to save a copy. Rename it.
2. Under "Designer" point out the main elements: Palette, Viewer, and Properties.
3. Under "Blocks": Show where to find blocks, clicking & dragging, piecing together.
4. **Challenge**:
    a. Use the 'properties' tab to try and style the 2nd button the same as the 1st.
    b. Add a 3rd Layout and Button - try to format it the same as the first two.
5. Go through the Code-Along steps **(below)** with the group. After showing learners how to complete a step, give them time to do so on their computers. Check in with the group to see if they are ready to move on, by asking "If you need one more minute to [complete this step] raise your hand"
6. Show learners how to save! (Projects > Save Projects). Remind them to save often.
7. Open the Resources slide:
    a. Direct learners on where to find RGB values/colours and creative commons images (Ask: What does creative commons mean? Why use creative commons images?).
    b. Open up a few of the App Inventor support websites to show learners how to be resourceful and find answers even after the workshop.

DESIGNER MODE

Adding new screens



UI & customization (via properties)

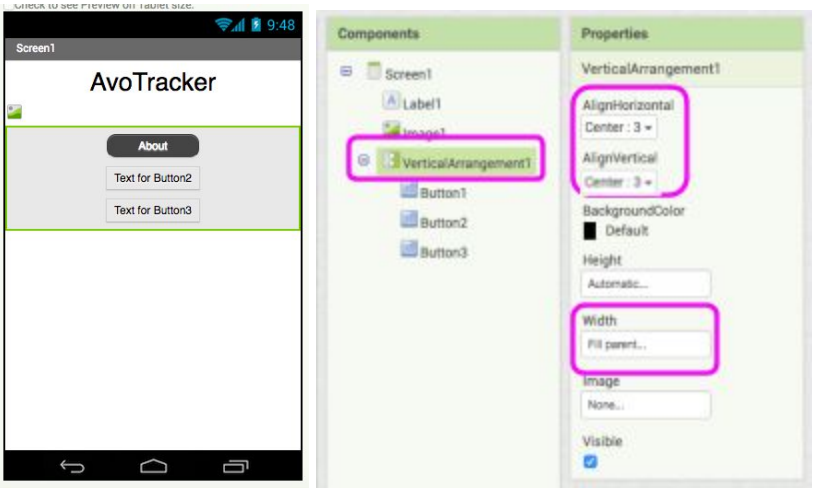
1. Drag UI elements onto screen, in order
2. Go through each and update properties
    a. Text
    b. Alignment (center with → text-align: centre; width: fill-parent;)
    c. Style: Size and Font (We can add specific colours later)
3. **TIP:** Rename everything! (be specific)

Adding Images

- Media > Upload File (images and other)

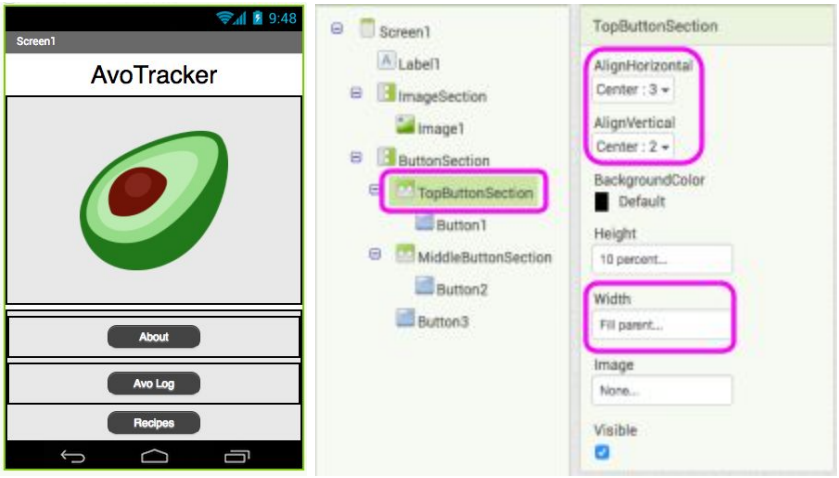
Centering content

- Use Layouts (e.g. vertical arrangement)
- Align horizontal and vertical to Center
- Width: Fill Parent



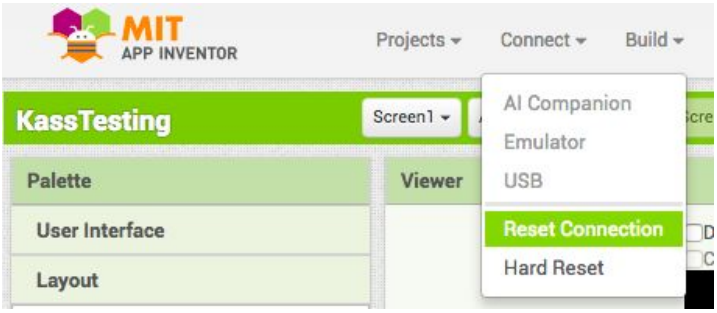
Spacing out elements

- Nest layouts to add space (layouts inside of layouts)
- Make sure you use the right type (either horizontal or vertical)
- Set the width to fill parent, and height to whatever % you want
- To center - align both horizontal and vertical to center



BLOCKS MODE

TIP: Constantly preview and test via the Companion. If your changes don't show right away, try changing screens. If they still don't show, try to reset the connection and connect again.



Linking Screens

- Use buttons!
- When the button is clicked, open another screen

Styling elements

Text colour (e.g. Labels)

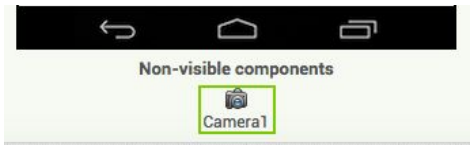
- Choose colour - RGB value - e.g. http://colours.neilorangepeel.com/
- Enter these values into the "make colour" list

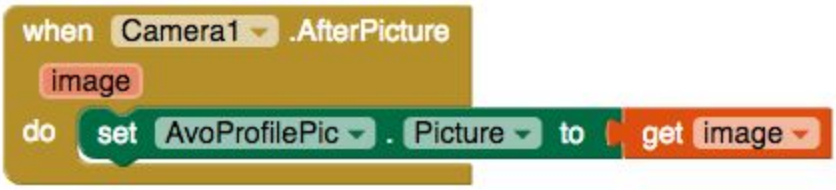
Background colour (e.g. Buttons)

- Same steps as text colour^
- **TIP:** Use the Backpack (right side) to save time when using same colours

Media: Using the Camera

- Drag the camera over to your screen (an icon will be displayed at the bottom)
- Add a button and create an event for when it is clicked to open up the camera
- Add an image (to be replaced by the photo taken by the camera)
- Go to Blocks and find the Camera item in the left menu
- Call the TakePicture function when the button is clicked
- After the picture is taken, set the new photo to replace the original image

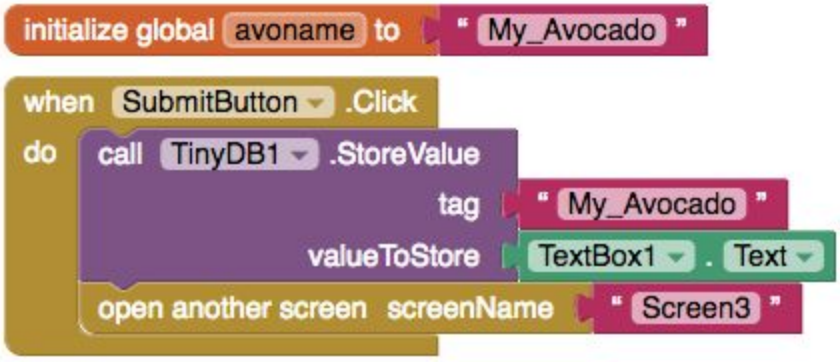




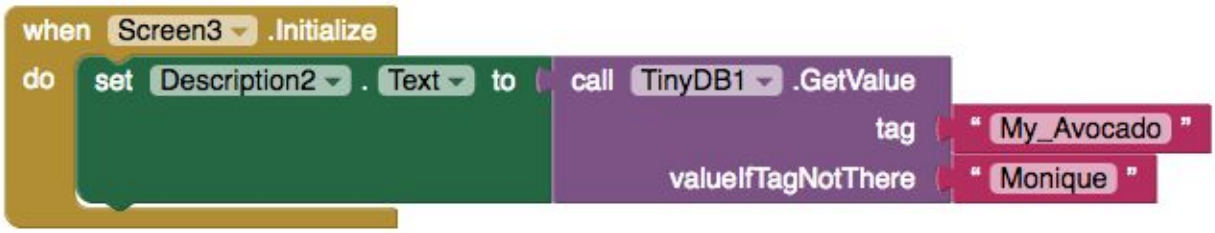
Storage: Using TinyDB

- Drag the TinyDB over to your screen (Under 'Storage') - An icon will be displayed at the bottom

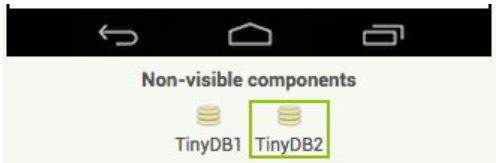
- Go to Blocks and find the TinyDB item in the left menu
- Store information:
    - Create a new variable (e.g. avoname)
    - After an event (e.g. when the submit button is clicked) take the value from the text box (or another element) and store it under the variable you just created



- Retrieve information:
    - Go to the other screen (e.g. Screen 3)
    - When the screen is initialized/opened, make the information stored in our variable (from the other screen) replace the text of an element on this screen



**If you want to store more than one thing, drag multiple TinyDB's over to your screen in Designer mode



WORK SESSION

There is a lot to fit into the 1.5 hour session, so the work session will take place outside of the session, on their own time. Mentors will be around to help out if they can't figure out solutions on their own.

CLOSING

Review the "Today I Learned" slide as a refresher, and ask what other cool things they discovered in App Inventor. If time, have volunteers come up to the front to share what they learned, or DEMO their prototype so far.

PUBLISHING - DAY 3

Instructors do not need to show learners how to publish - we will get to this on Day 3 of the Hackathon. We will guide learners through uploading their files onto their website and creating a QR Code through which users will download their app.