Find the Gold

Make a Maze Game controlled by tilting the phone or tablet

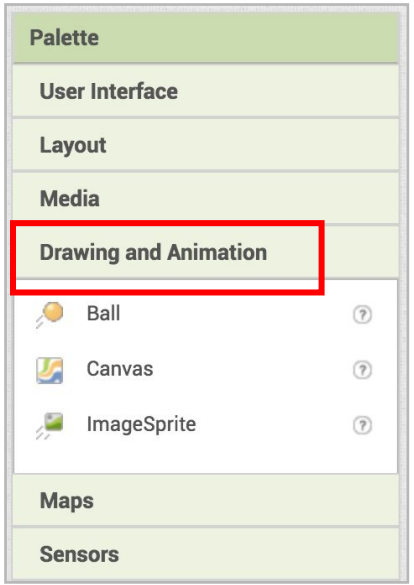
Essential Questions

- How can you control sprites or characters in a mobile game app?
- What sensors can you use in a phone or tablet to control movement of sprites?

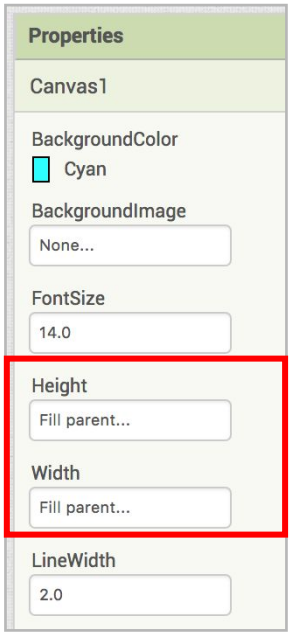
Objectives

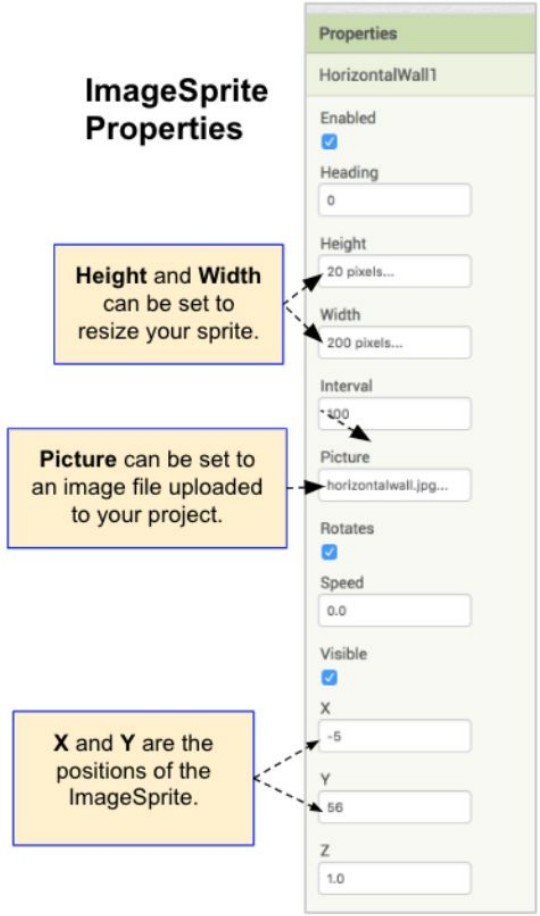
1. Demonstrate how to use Canvas, Ball, and ImageSprite components in App Inventor to create an interesting game app.
2. Demonstrate understanding of placement of ImageSprite and Ball components based on an X,Y coordinate system.
3. Use the Accelerometer Sensor component to navigate a ball through the maze.
4. Apply the Computational Thinking practices of being incremental and iterative, and testing and debugging.
5. Demonstrate understanding of the use of the Notifier component in an app.
6. Use conditionals correctly in a program.
7. Work collaboratively to design, develop, and test new features in an app.

Lesson 1: Drawing and Animation Components

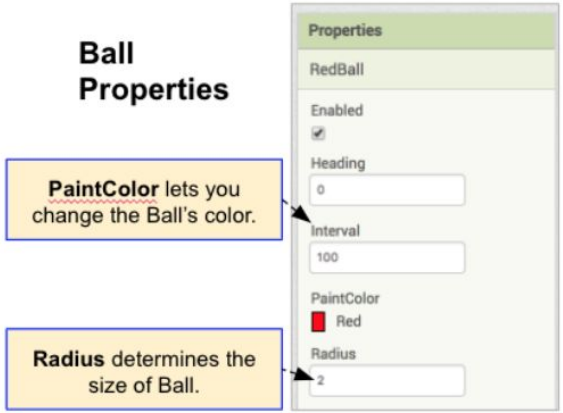


Fill Parent for *Height* and *Width* of the **Canvas** will cause it to fill the device screen.



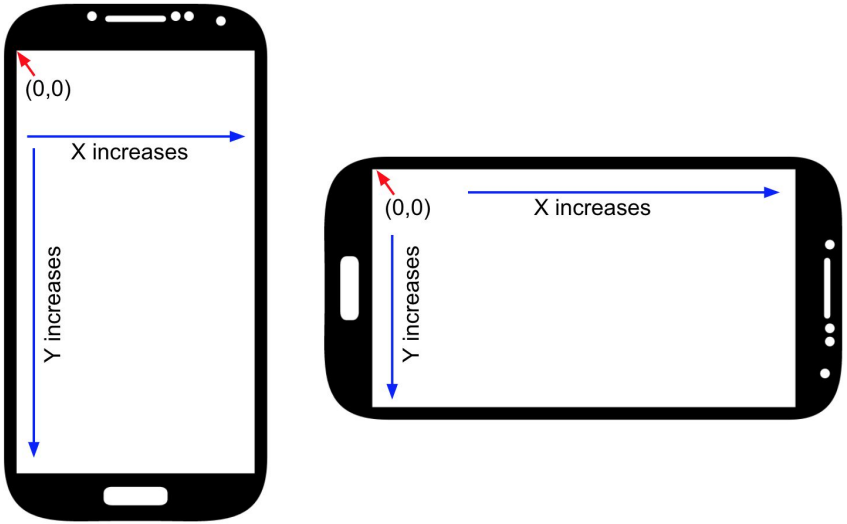


- ImageSprite and Ball components are placed on the Canvas and can be animated and controlled through user input



X,Y Placement

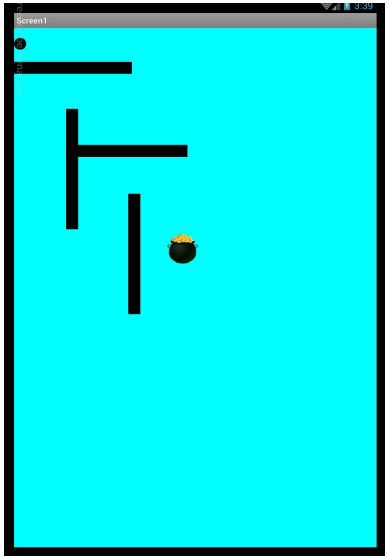
- The Canvas is based on a Cartesian coordinate system.
- However the origin is in the upper left corner.
- X increases to the right.
- Y increases moving down.
- ImageSprite and Ball components have X and Y coordinates that determine where they are on the Canvas.



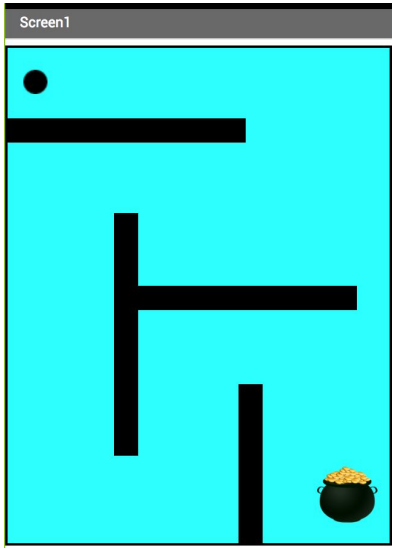
Screen Resolution

- Different mobile devices have different screen resolutions (number of pixels).
- So, X, Y values on one screen might look very different on another screen.

High Resolution

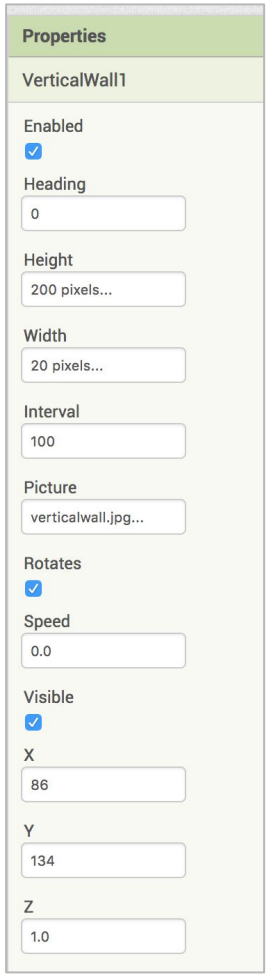


Low Resolution



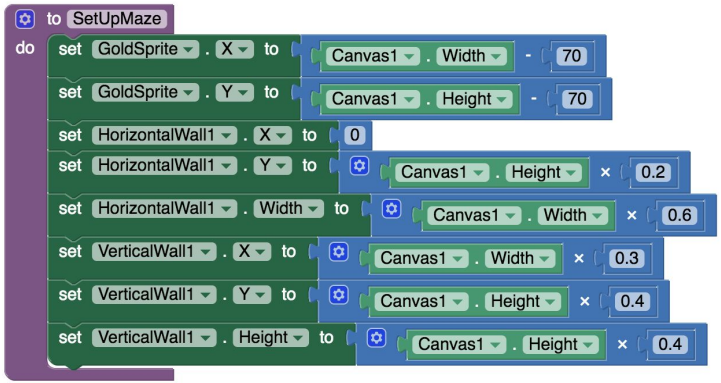
X,Y Placement of ImageSprites

- In the Designer, you can only specify X,Y by pixels.



X,Y Placement of ImageSprites

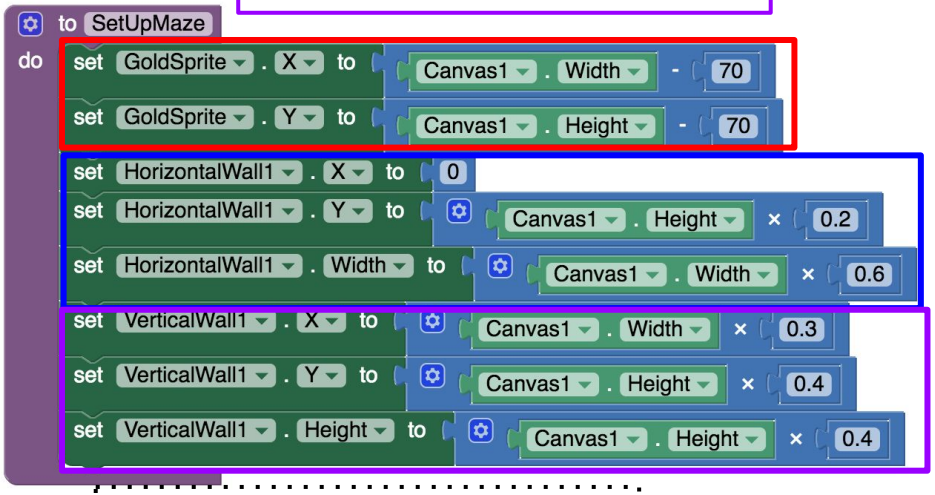
- In code, you can use Canvas.Width and Canvas.Height to set X,Y by a percentage.



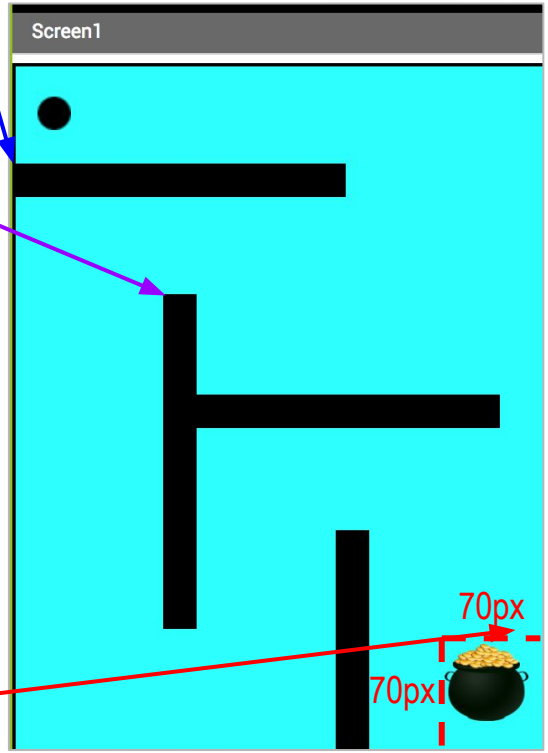
X,Y Placement of ImageSprites

X is 30% of the Canvas Width
Y is 40% of the Canvas Height
Height is 40% of Canvas

X is 0
Y is 20% of the Canvas Height
Width is 60% of the Canvas Width



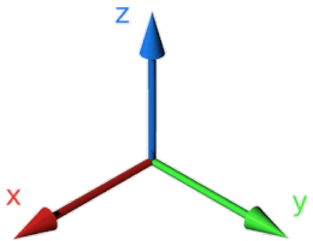
Note that X,Y of ImageSprite is the upper left corner of its image



X,Y is 70 pixels from left bottom corner of the Canvas

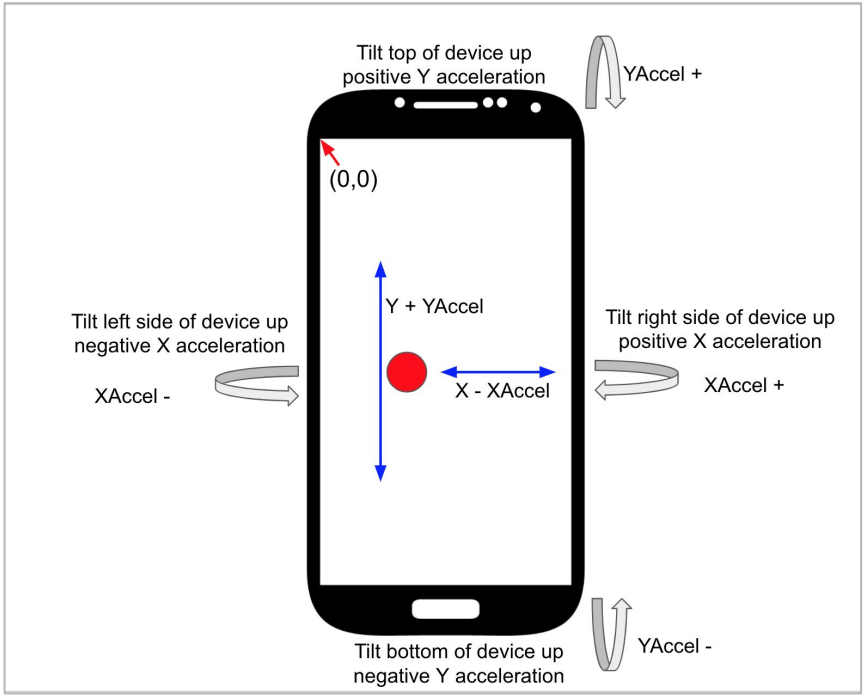
Lesson 1:
Complete Student Guide Part 1:

Lesson 2:
Accelerometer Component



- Measures the tilt of the device in the x, y, and z directions
- You will move the Ball by updating the X,Y coordinates by adding XAccel and YAccel (acceleration)

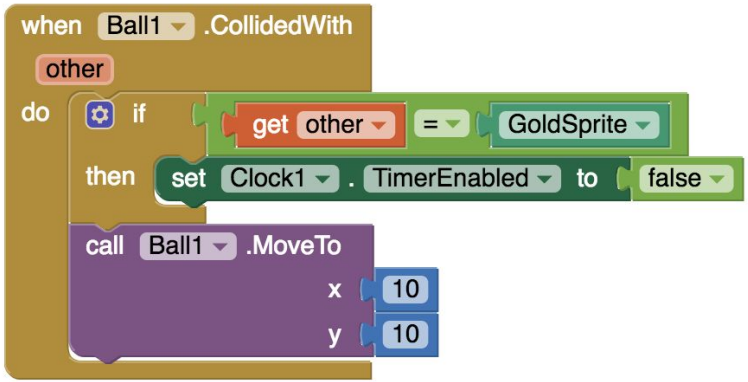
- Note you subtract XAccel from X.
- And add YAccel to Y.

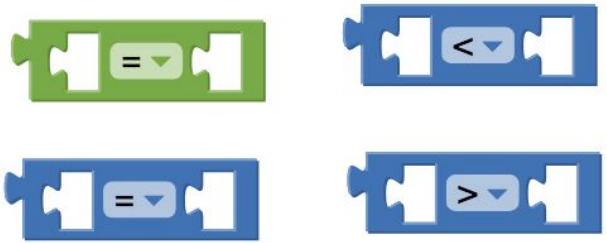


Lesson 2:
Complete Student Guide Part 2:

Lesson 3: Conditionals

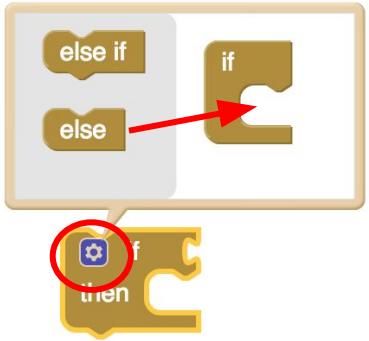
- In Part 1, you tested *if* the Ball collided with GoldSprite.
- **If** blocks allow you to only execute code blocks when certain conditions are true.
- Logic and Math blocks are use to test if something is true or false.

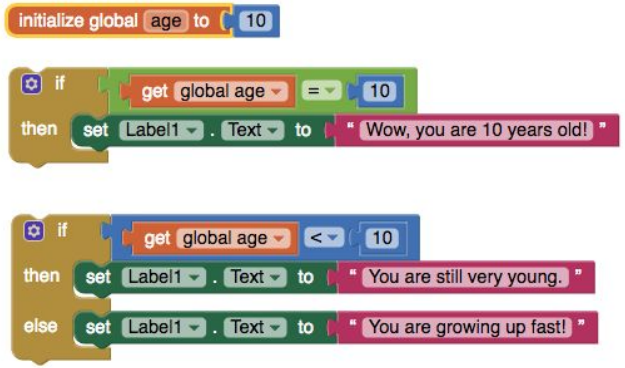




Lesson 3: Conditionals

- Click on the blue gear icon to turn **if-then** into **if-then-else** or **if-then-else-if.**

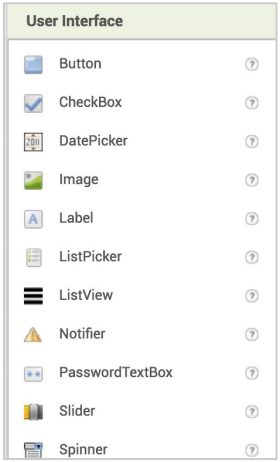


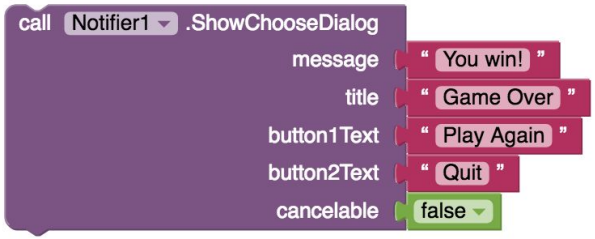


- **if-then** executes the *then* code blocks if the condition is true.
- **if-then-else** allows you to provide blocks for the true case (*then*) and the false case (*else*).

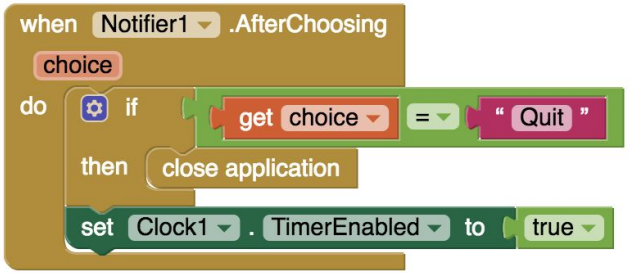
Lesson 3: Notifier

- The Notifier component is an invisible component.
- It lets you code a pop-up message or dialog box in your app.





This block displays a message with two buttons that give a user two possible responses.



Notifier.AfterChoosing is triggered when the user presses one of the buttons. Use an if block to test which answer/button they chose.

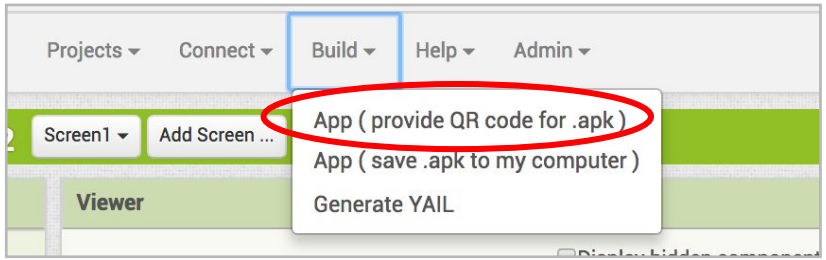
Lesson 3:
Complete Student Guide Part 3:

Lesson 4: New Feature

- Implement new features in the FindTheGold app.
- Choose 2 features to add
- Fill out Find the Gold New Features Worksheet
  - List new components needed
  - List new blocks needed
  - List steps to add each new feature

Lesson 6: Share New Features

- Create apk to install on your mobile device
  - aia is the project file
  - apk is the complete app file
- AI2 Companion lets you test your app
- apk is an installed app that “lives” on your device



- Build apk
- Scan QR code
- Follow instructions to install on your mobile device

Vocabulary Words

Layout

HorizontalArrangement

VerticalArrangement

X,Y coordinates

resolution

Conditional

apk