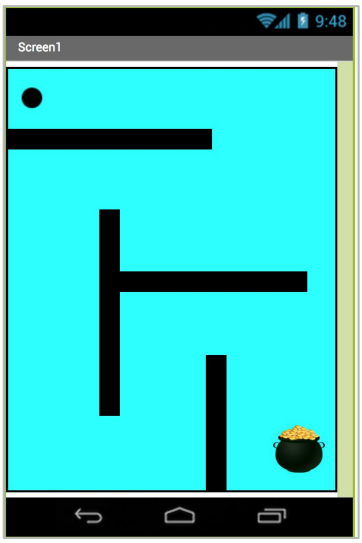
FIND THE GOLD: PART 1

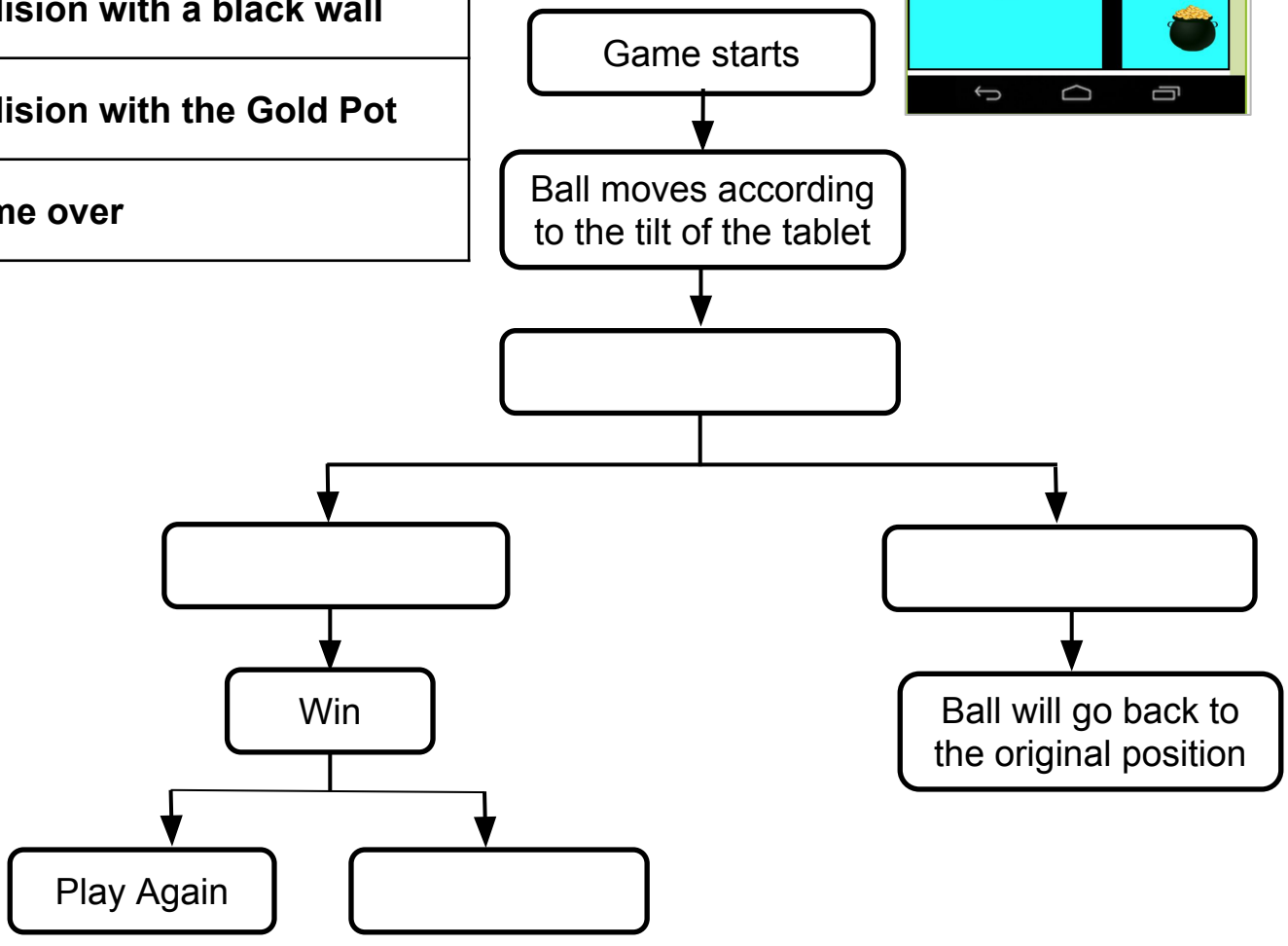
You will make a new game app that moves a ball through a maze when you tilt your smartphone or tablet.



START HERE

1 Look at and discuss the following diagram with your partner. Try to complete the missing steps for this app by selecting A, B, C or D below. Some have been filled in for you.

A. Ball collision detected.
B. Collision with a black wall
C. Collision with the Gold Pot
D. Game over

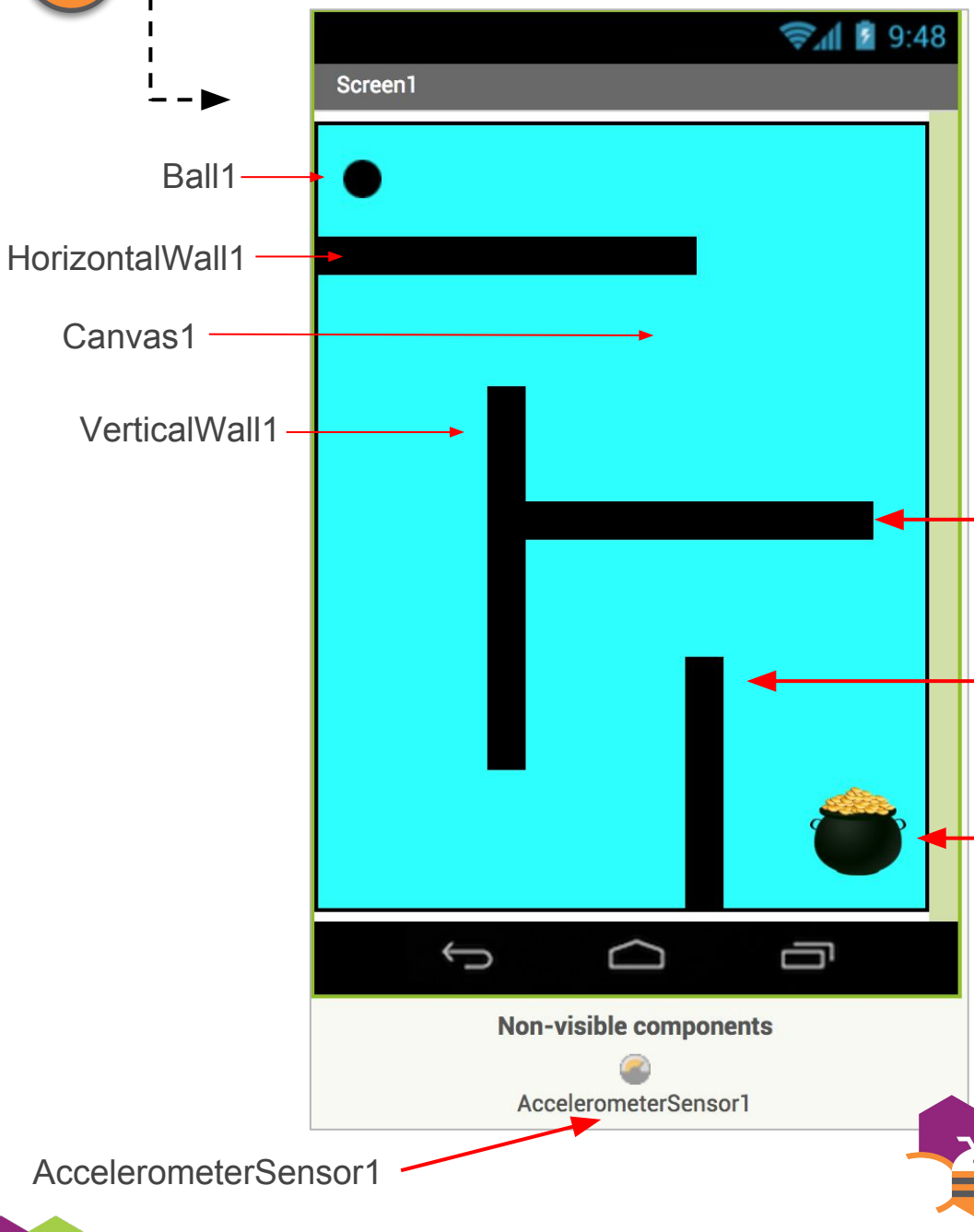


THE DESIGNER

2 Open the **FindTheGold** template project, provided by your teacher, in MIT App Inventor. This is what it should look like in the Designer.

3 Discuss with your partner the function of each of the components.

Canvas, Ball, and ImageSprite components are in the Drawing and Animation drawer

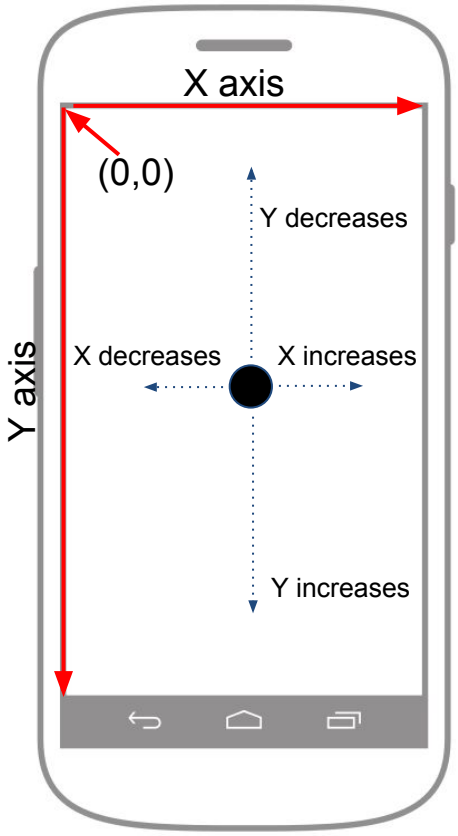


The AccelerometerSensor is in the Sensors drawer.

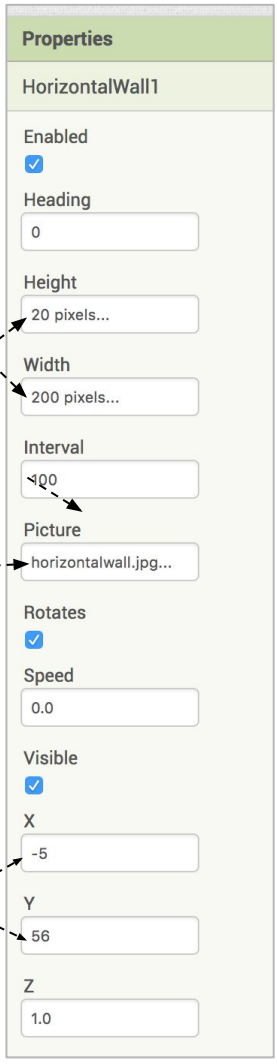
IMAGESPRITE AND BALL COMPONENTS

In the game app, the walls are **ImageSprites**. **ImageSprites** are sprites that are represented by images in the app. While **ImageSprites** can be animated, the maze walls will remain stationary for this game. **Ball** sprites are automatically round. You can change the color and size of a **Ball** component.

You can set the position of **ImageSprites** and **Balls** by their **X,Y** coordinates, just like in the Cartesian coordinate system. One difference is that the origin (0,0) is at the top left corner of the screen. X increases as it moves to the right of the screen. Y increases at it moves down the screen. - - - - ►



ImageSprite Properties

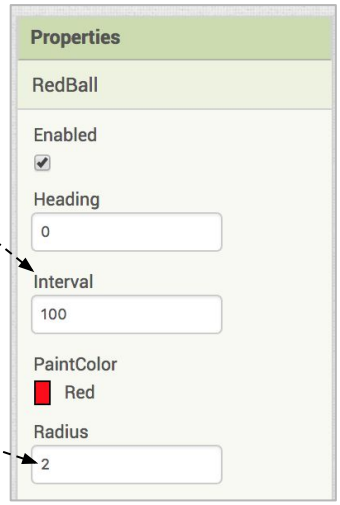


Height and **Width** can be set to resize your sprite.

Picture can be set to an image file uploaded to your project.

X and **Y** are the positions of the ImageSprite.

Ball Properties



PaintColor lets you change the Ball's color.

Radius determines the size of Ball.

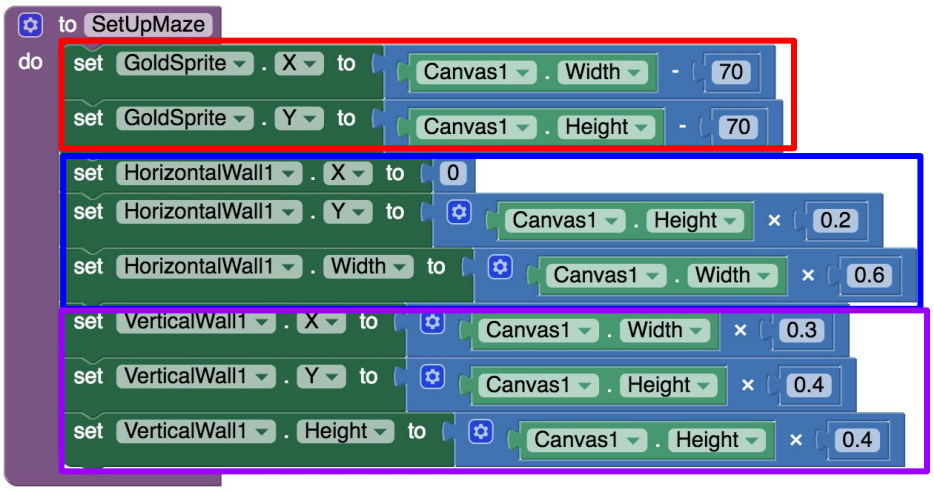
SET UP THE MAZE

Different mobile devices have different ***resolutions***, which means different numbers of pixels on the screen. Phones differ in size, and tablet sizes differ too. So, the size and position of the maze walls must be adjusted to take into account the resolution, or size of the mobile device screen.

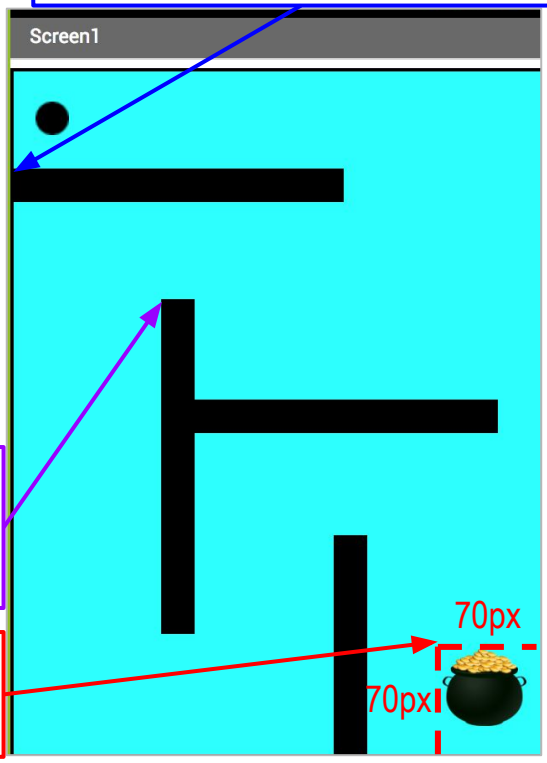
To take care of that, the FindTheGold template includes a procedure, called **SetUpMaze**, that places the Wall **ImageSprites** and the **GoldSprite** on the **Canvas** using percentages of the Canvas size. That way, if the Canvas (or Screen) is larger, the size and placement scales up too.

4 Switch to the Blocks Editor. - - - - - - - - - - - - - ➔

5 Find the **SetUpMaze** procedure and look at the blocks. Can you see how the percentages of the **Canvas** *Height* and *Width* are used to place the **ImageSprites**?



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



The top left corner of each **ImageSprite** is where its X,Y coordinate is located.

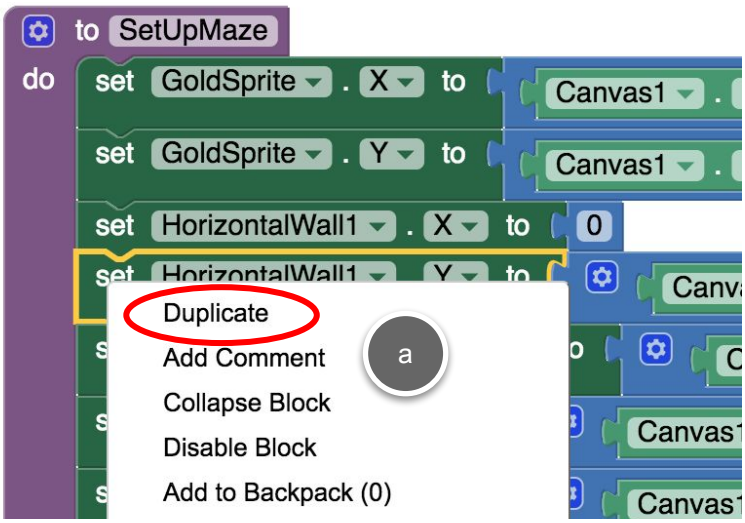
X is 30% of the Canvas Width
Y is 40% of the Canvas Height
Height is 40% of Canvas Height

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

SET UP THE MAZE

But wait! **HorizontalWall2** and **VerticalWall2** haven't been placed yet. Using **HorizontalWall1** and **VerticalWall1** as examples, add code blocks for **HorizontalWall2** and **VerticalWall2** so that the placement and size work well for your maze.

6 An easy way to do this is to Duplicate a corresponding block, and change the parts. For example, Duplicate **set HorizontalWall1.Y**, and then using the dropdown, change **HorizontalWall1** to **HorizontalWall2**. Then change the percentage (using a decimal number) to whatever you want.

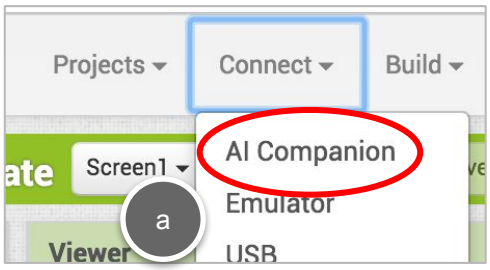


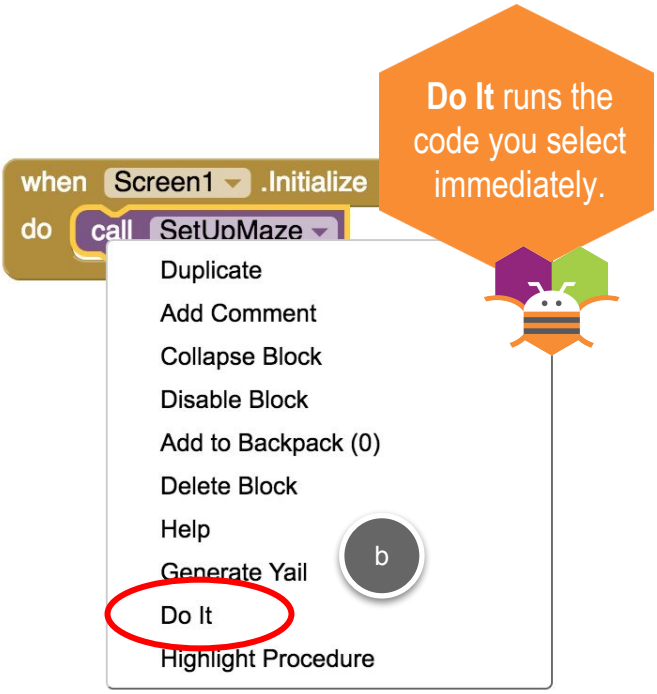
7 Add blocks to **SetUpMaze** to set the **X**, **Y**, **Width** or **Height** for **HorizontalWall2** and **VerticalWall2**.

SET UP THE MAZE (continued)

8 Use the following blocks to make sure the Walls and GoldSprite are placed correctly when the app starts.

9 Connect to MIT AI2 Companion on your mobile device, and check how your maze looks! If it doesn't look quite right, try changing the numbers in your code blocks. To check your changes, you can use the **Do It** command. Right click on **call SetUpMaze** and select **Do It**.





COMPUTATIONAL THINKING CONCEPTS

The following are the Computational Thinking Concepts learned in Part 1.

Find the Gold
1. Events: 
2. Naming: ImageSprites