

# SKETCH AND GUESS: CHALLENGE






In the Challenge, you can add color and line thickness to your drawing!

## REVIEW OF CLOUDDB TAGS

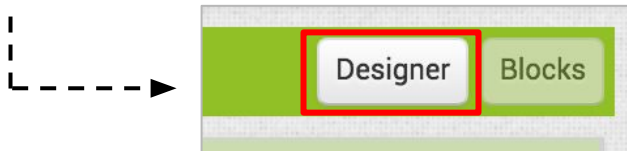
To make this app more fun, you start the challenge by adding **PaintColor** and **LineWidth** as part of the **DrawingData** to be stored on **CloudDB**.

Review the table below for the tags that are used in this app.

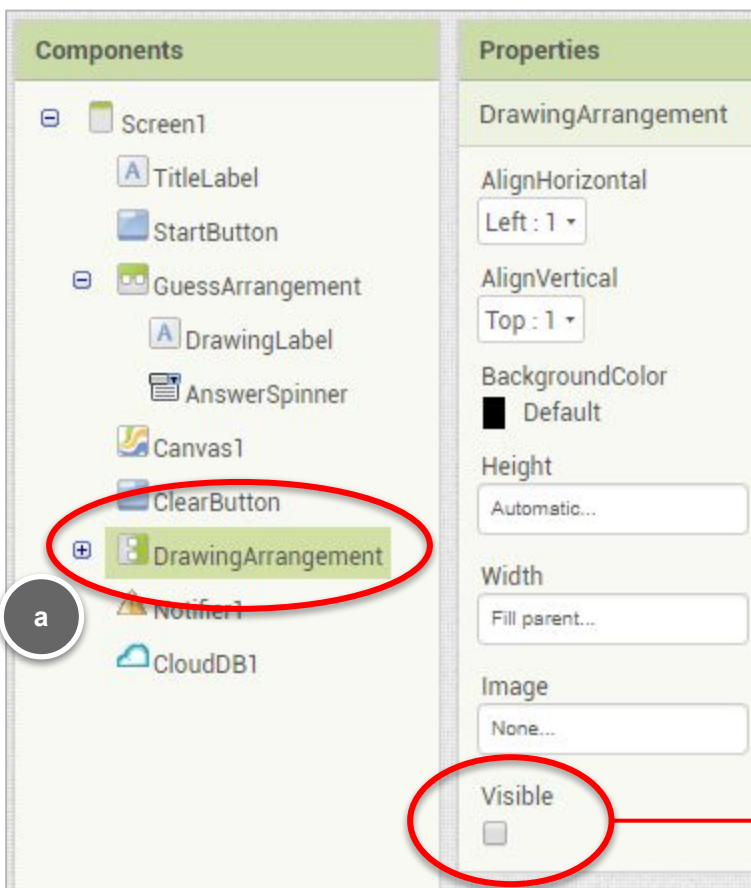
Tags	Meaning	Sketcher	Guesser
	The start point and end point for drawing.	Store the coordinates of drawing	Get the coordinates of drawing
	Who is the Sketcher	Stores their userID.	Gets the sketcher's userID.
	The drawing option for drawing	Store the random generated drawing option.	Get the CurrentDrawing for answer checking.

## CHANGE VISIBILITY IN DESIGNER

- 1 Open your project from Part 4 and switch to the Designer view.



- 2 Click on **DrawingArrangement** in the Components list and click on the **Visible** checkbox so it is checked.

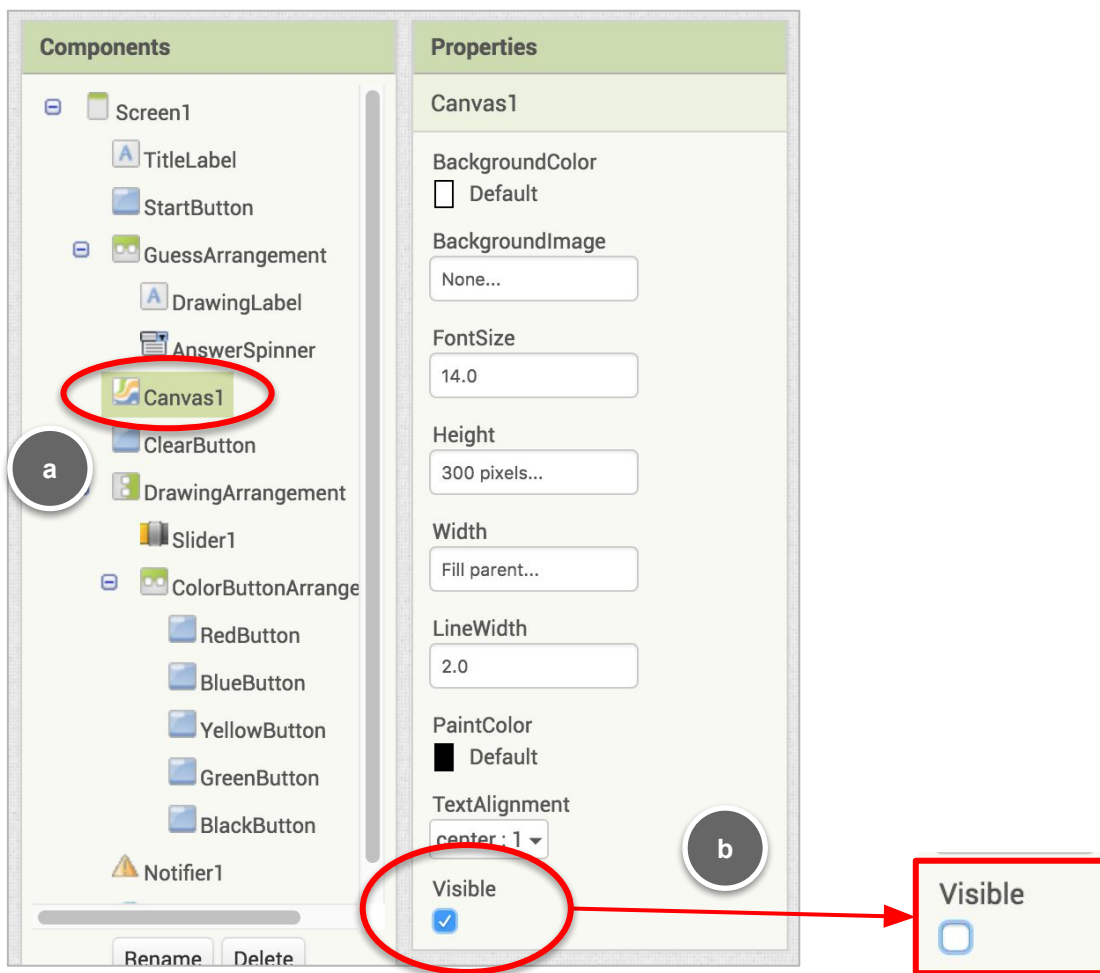


You won't see anything change in the Designer, because the **DrawingArrangement** is at the bottom, and off the screen.

## SEE CHANGES IN DESIGNER VIEW

To see the **DrawingArrangement**, you can make the **Canvas** invisible temporarily.

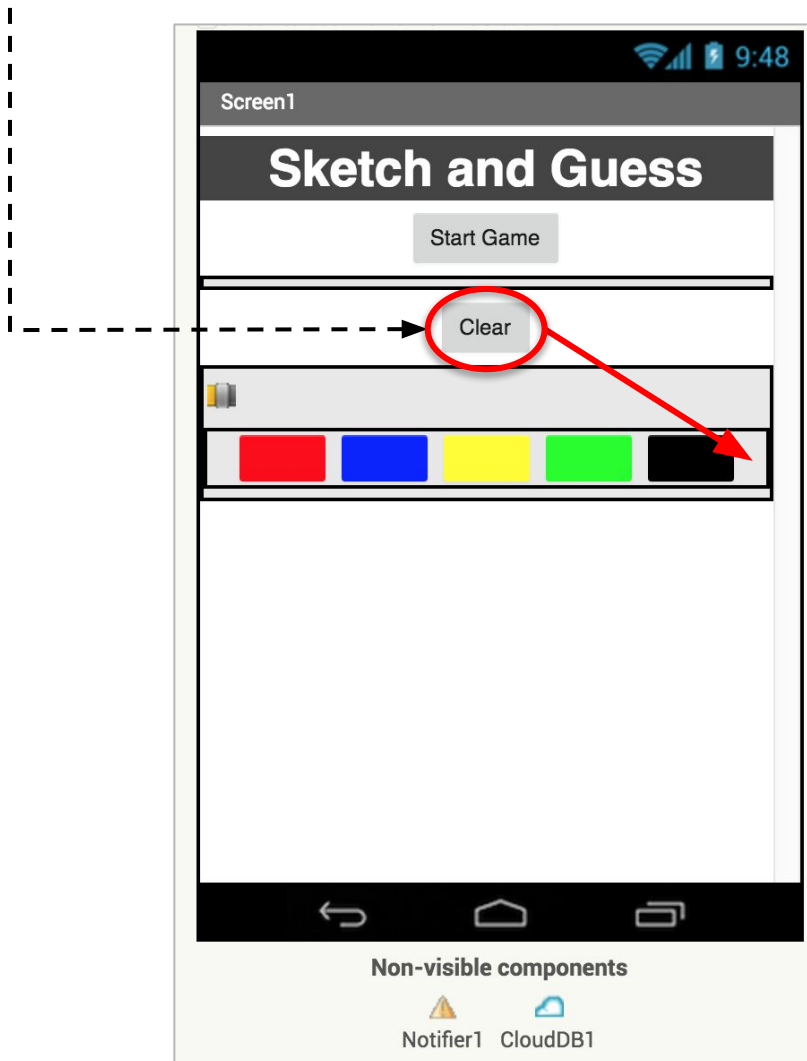
- 3 Click on **Canvas1** and uncheck the **Visible** checkbox.



## REARRANGE BUTTONS

Now **DrawingArrangement**, including a slider and 5 color buttons, appears. The buttons are red, blue, yellow, green, and black. These components will enable the Sketcher to change the line width and colors in the drawing.

- 4 Drag the **ClearButton** into the **DrawingArrangement** next to the color buttons.

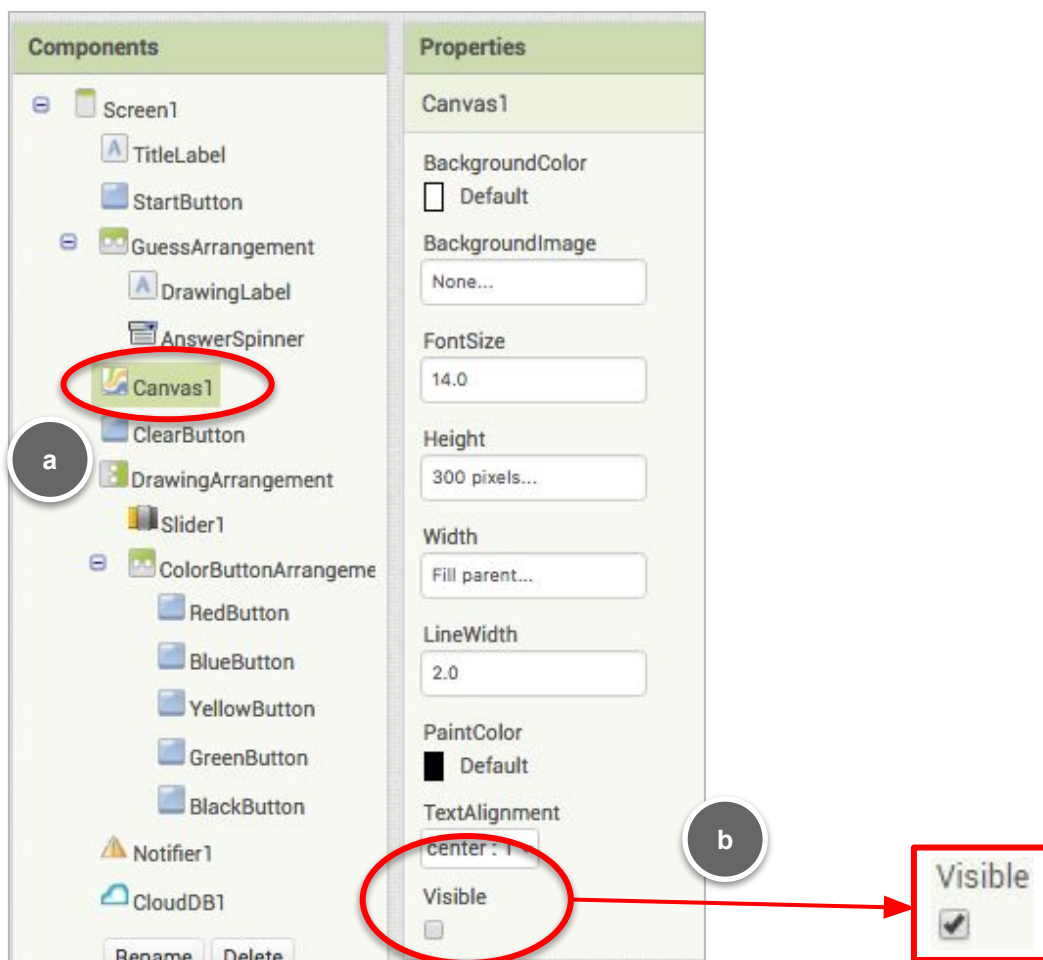


## MAKE CANVAS VISIBLE AGAIN

Make the **Canvas** visible again now that you have set up **DrawingArrangement**.

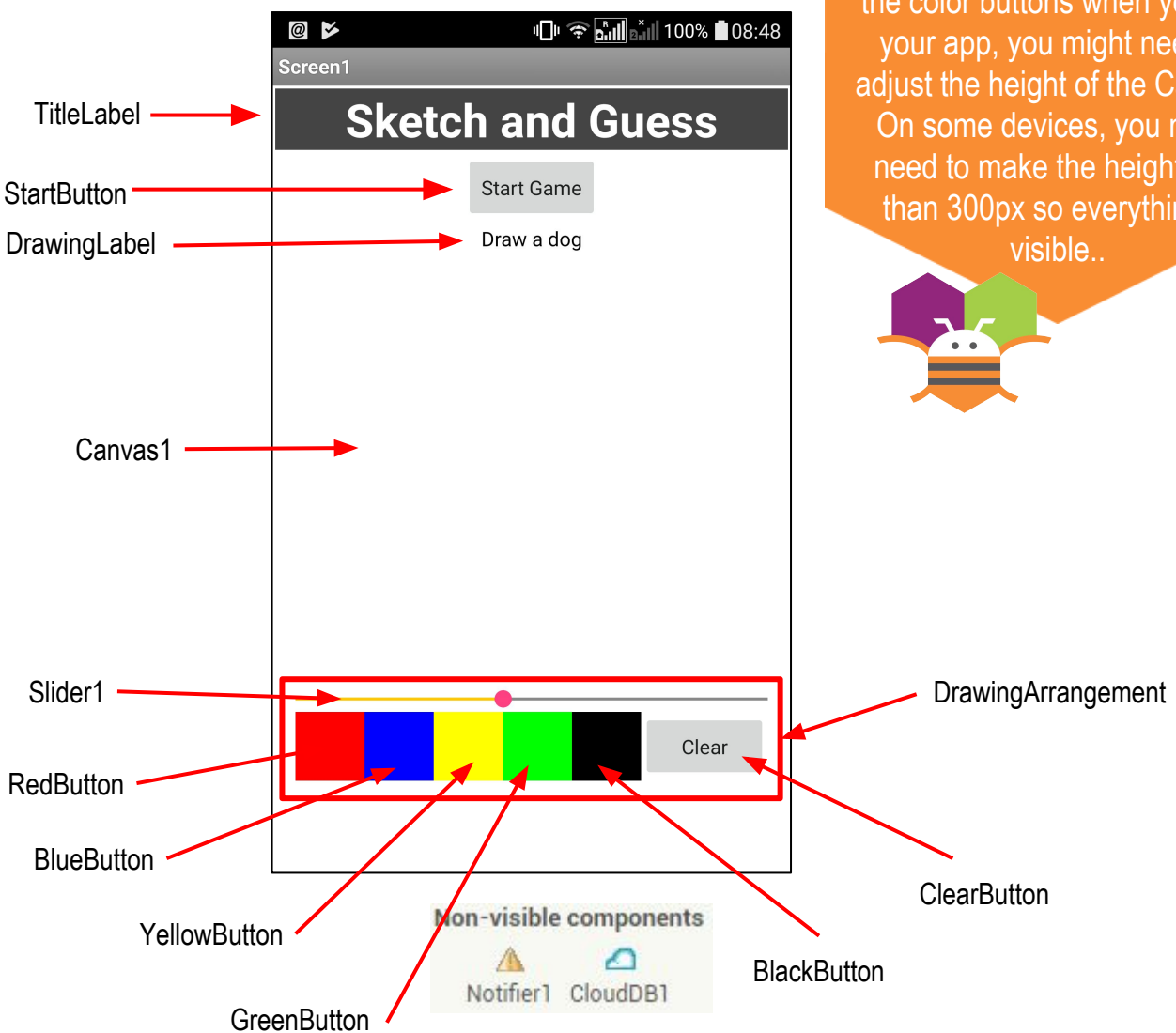
5

Click on **Canvas1** and check the **Visible** checkbox.



## FINAL DESIGNER VIEW

Here is what the final Designer View should look like. You may not see the **DrawingArrangement** because of the size of the **Canvas**.

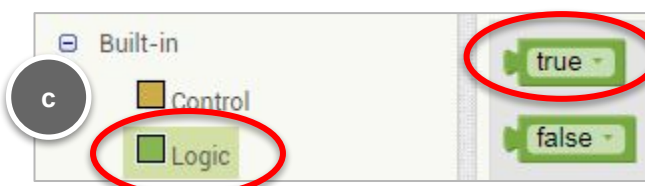
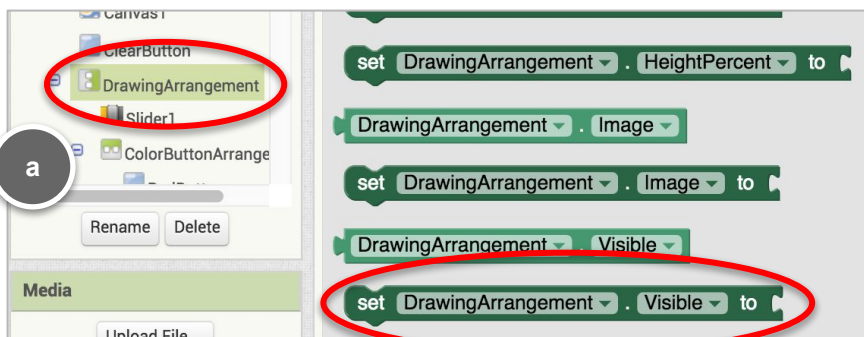


## CHANGE COMPONENT VISIBILITY

When the user clicks on the **Start** button, they become the Sketcher. To enable the Sketcher to change paint colors and line width, the **DrawingArrangement** must be visible.



6 Drag out the blocks to make **DrawingArrangement** visible.





## CHANGE COMPONENT VISIBILITY (continued)

The **DrawingArrangement** should not be seen on the Guesser's screen.

7

Duplicate the block you created in **StartButton.Click** and change true to false. Then add it to the **CloudDB1.DataChanged** event as shown below.

The image shows the Scratch code editor with the following logic:

- when StartButton .Click**
  - do
    - set global currentDrawing to pick a random item list
    - get global drawingOptions
    - set global isDrawer to true
    - set DrawingLabel . Text to join ( " Draw a " , get global currentDrawing )
    - set AnswerSpinner . Visible to false
    - set DrawingArrangement . Visible to true (highlighted with a red box and labeled 'a')
    - call CloudDB1 .StoreValue
      - tag " CurrentDrawing "
      - valueToStore get global currentDrawing
    - call CloudDB1 .StoreValue
      - tag " CurrentDrawing "
      - valueToStore get global currentDrawing
- CloudDB1 .DataChanged**
  - tag value
  - do
    - if ( get tag == " CurrentDrawing " )
      - then set global currentDrawing to get value
    - if ( get tag == " DrawingData " and not get global isTheDrawer )
      - then
        - if ( is list empty? list get value )
          - then call Canvas1 .Clear
        - else
          - set Canvas1 . PaintColor to select list item list get value index 5
          - set Canvas1 . LineWidth to select list item list get value index 6
          - call Canvas1 .DrawLine
            - x1 select list item list get value index 1
            - y1 select list item list get value index 2
            - x2 select list item list get value index 3
            - y2 select list item list get value index 4
    - if ( get tag == " CurrentDrawer " )
      - then
        - if ( get value != get global userID )
          - then
            - set global isTheDrawer to false
            - set Spinner1 . Visible to true
            - set DrawingLabel . Text to " Guess the drawing "

A red dotted line connects the duplicate block (labeled 'b') to its new location in the CloudDB1.DataChanged event (labeled 'c'). A dropdown menu for the 'true' value in the duplicate block shows 'true' and 'false' options, with 'false' selected (labeled 'b').



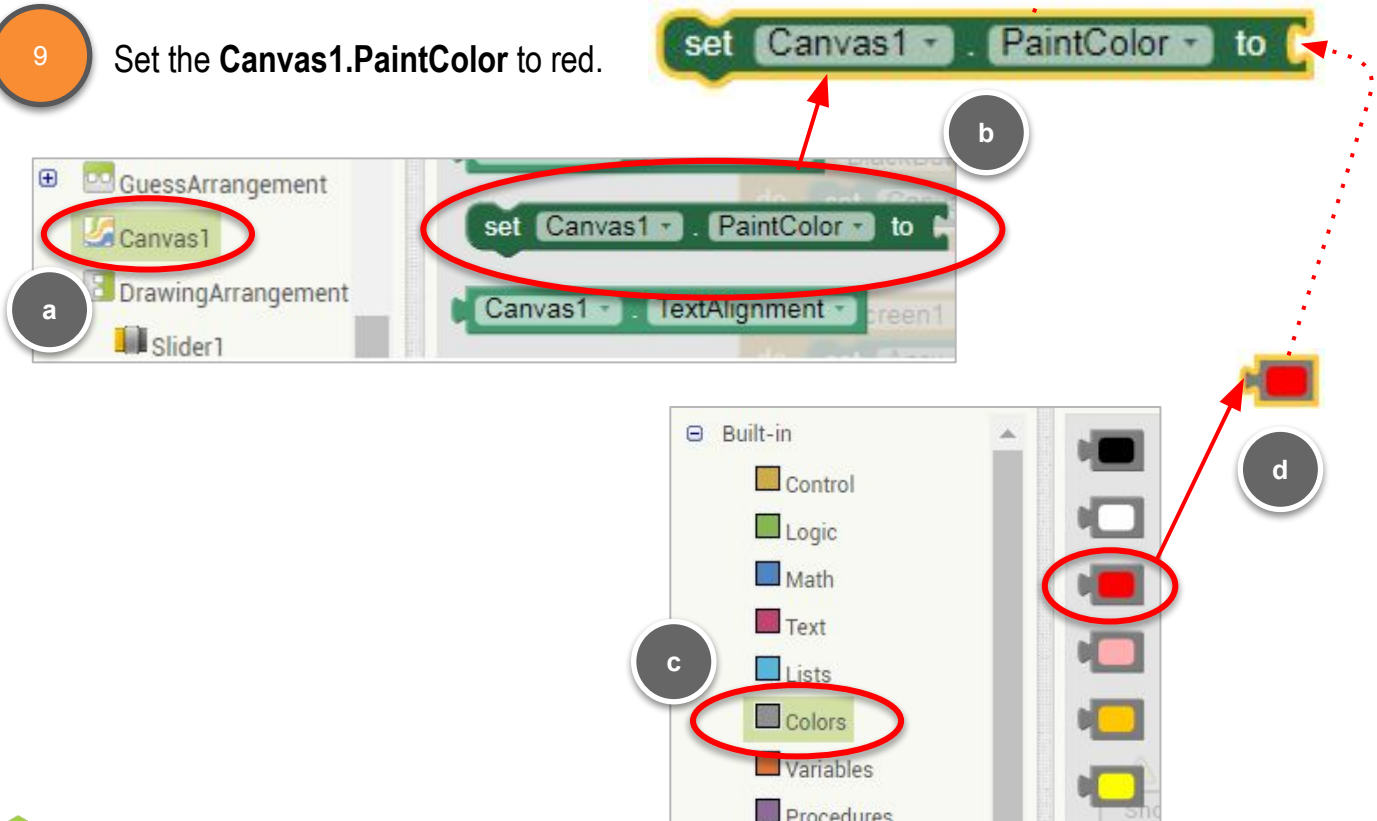
## COLOR BUTTONS

When the Sketcher clicks on one of the color buttons, you need to set the **Canvas1.PaintColor** to that color.

8 Drag out a **when RedButton.Click** event block.



9 Set the **Canvas1.PaintColor** to red.

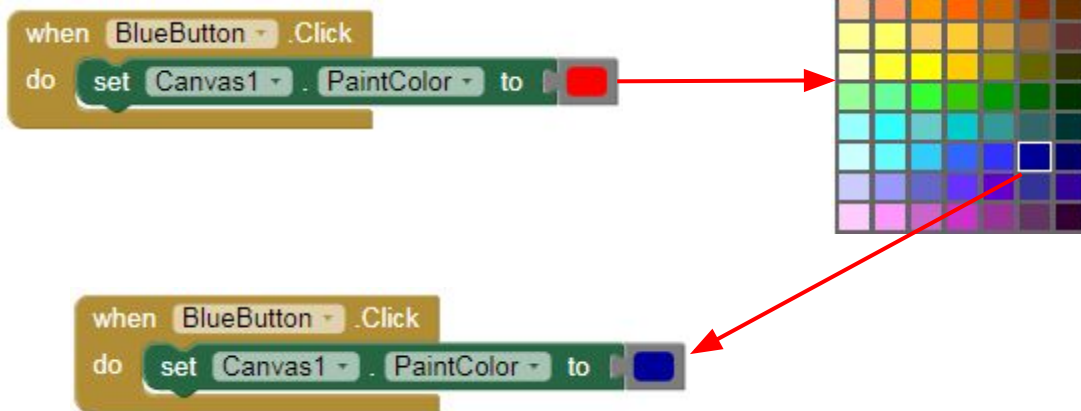


COLOR BUTTONS (continued)

- 10 Duplicate the **when RedButton.Click** block and change **RedButton** to **BlueButton**.

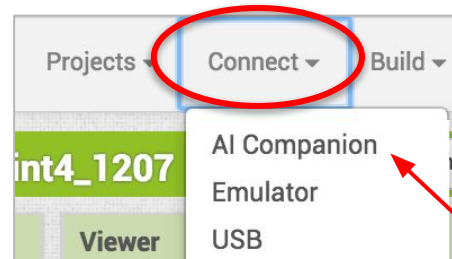


- 11 Click on the red color block to popup the color grid and change it to blue.



- 12 Do the same for the Green, Yellow, and Black buttons.

- 13 Test it out with MIT AI2 Companion. Try changing the color and see if your drawing colors change!



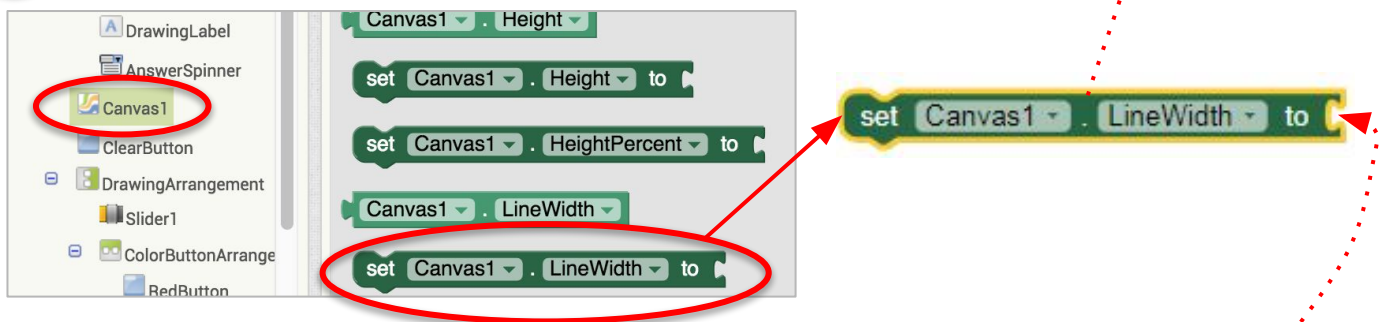
## SLIDER TO CHANGE LINE WIDTH

You will add code so when the Sketcher moves the slider to the left, the line drawn will be thinner, and when the slider is moved to the right, the line will be thicker.

- 14 Click on **Slider1** and drag out the **Slider1.PositionChanged** block.



- 15 Click on **Canvas1** and drag out a **set Canvas1.LineWidth** to block.

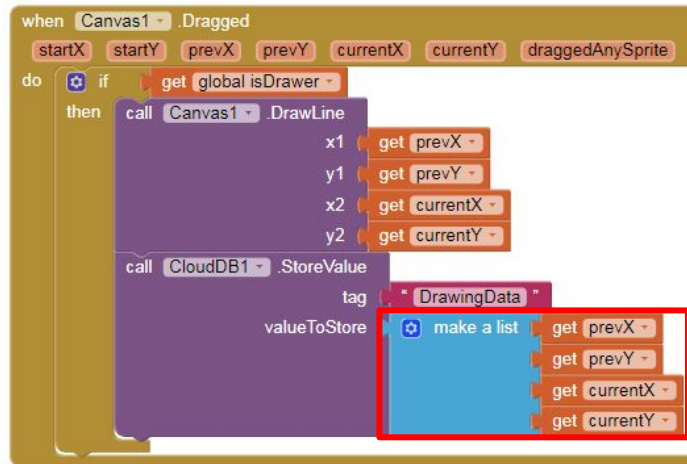


- 16 Mouse over **thumbPosition** to get the **get thumbPosition** block to snap in.

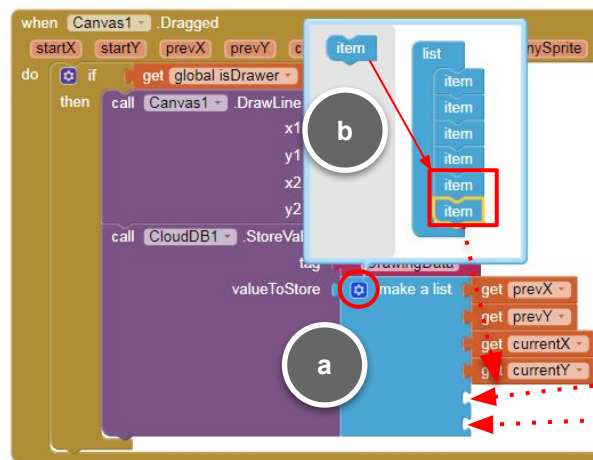


## SAVE THE PAINT COLOR AND LINE WIDTH PROPERTIES TO CLOUDDB

In the **Canvas1.Dragged** event, you will expand the **DrawingData** list from 4 elements to 6 elements for **PaintColor** and **LineWidth**.



- 17 Click on the blue setting icon of the **make a list** block, then drag two more items to the end of the list.



Make sure these are in the correct order!

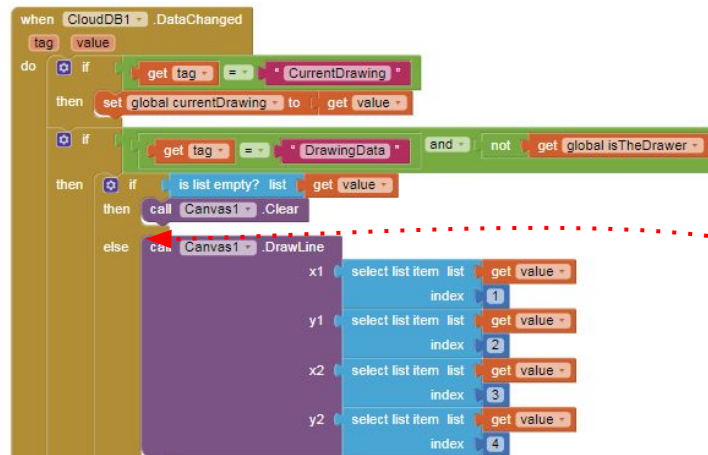
- 18 Add **Canvas1.PaintColor** and **Canvas1.LineWidth** as the two new items.





## GET THE PAINT COLOR AND LINE WIDTH PROPERTIES FROM CLOUDDB

**LineWidth** and **PaintColor** should be updated for the Guesser *before* the line is drawn.



- 19 Get the **set Canvas1.PaintColor** to block and the **set Canvas1.LineWidth** to blocks from **Canvas1** drawer.



- 20 Right-click and duplicate the **select list item** block from above twice.

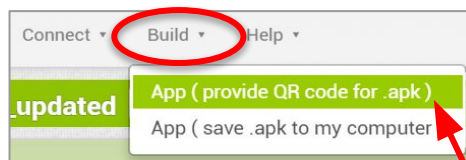


- 21 Update the index number box to **5** and **6** on the duplicated blocks



Make sure these match the order used in StoreValue.

- 22 Test with your partner. Build the apk using the QR code option, scan the QR code and download and install the apk on your individual devices.



## COMPUTATIONAL THINKING CONCEPTS

The following are the Computational Thinking Concepts learnt in this lesson.

### L3U6.2 & 6.3 / L3U10.2 & 10.3 Sketch And Guess

#### 1. Manipulation of data and elementary data structures

