

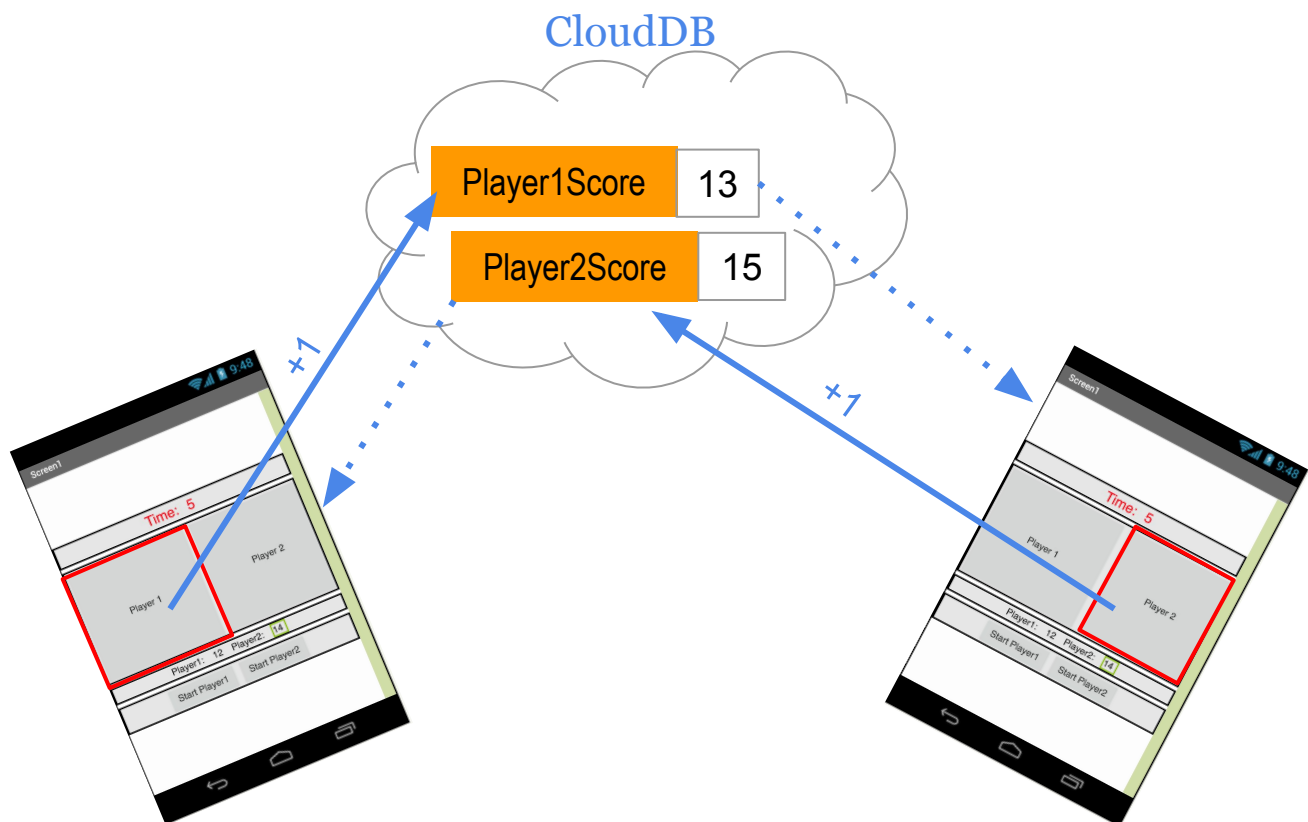
TWO-BUTTON GAME: PART 3



In this lesson, you will be adding functionality to make this a two player game over two devices.

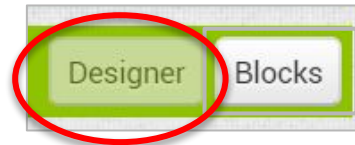
HOW CLOUDDB WORKS

You will use CloudDB in the app to update each player's score on the other player's tablet by adding code to do the following. When a player clicks on their button, they'll store their new score in CloudDB. The DataChanged event will be triggered every time that happens, and that will signal the other player to update the score on their tablet.

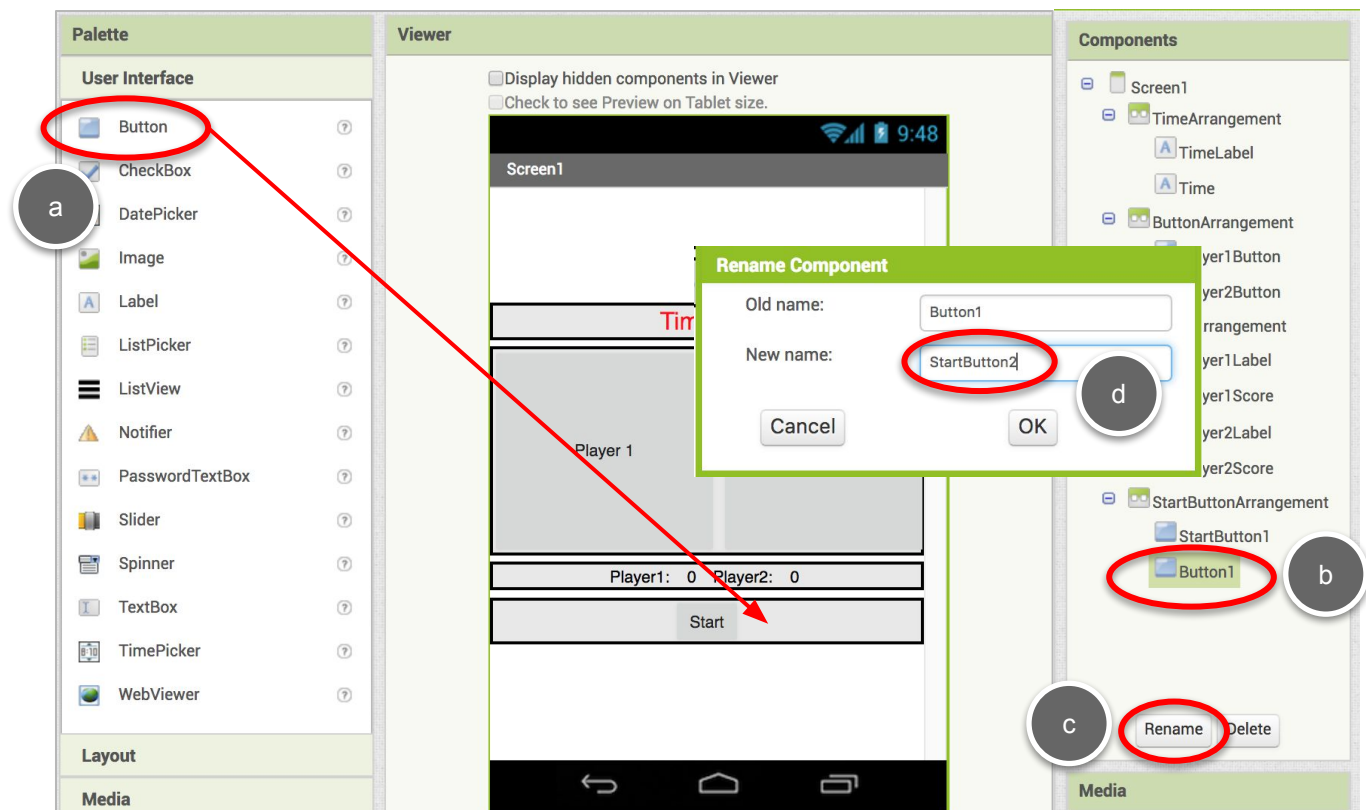


START HERE

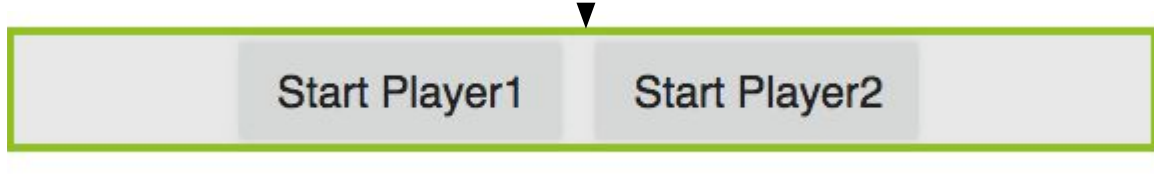
- 1 Open your TwoButtonGame app from Part 2, and switch to the Designer. ----->



- 2 Drag in a second button to **StartButtonArrangement** and rename it **StartButton2**. ----->



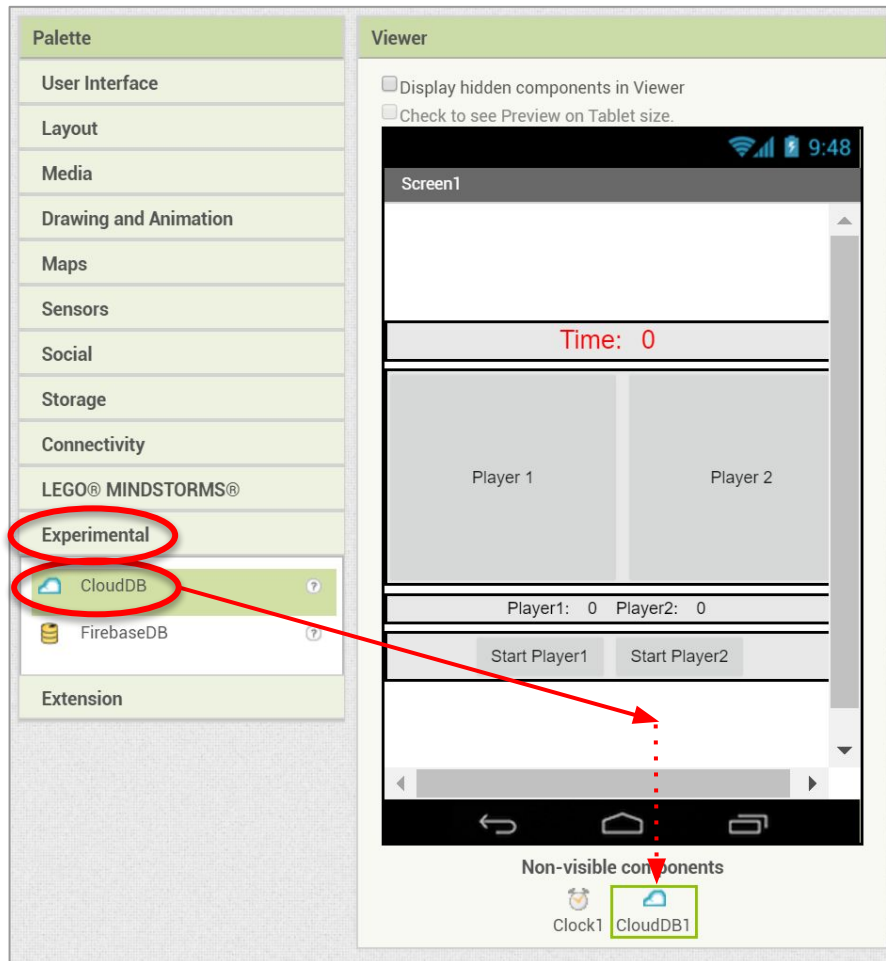
- 3 Change the *Text* of **StartButton1** to “**Start Player1**” and change the *Text* of **StartButton2** to “**Start Player2**”. ----->



ADD CLOUDDB

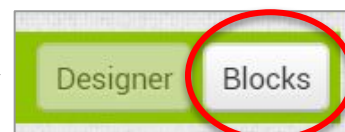
4

Drag in a **CloudDB** component from the Experimental drawer.
It's a non-visible component so it will appear below the Viewer screen.



5

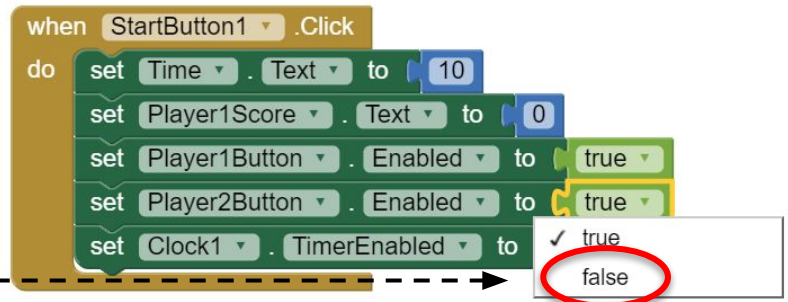
Switch back to the Blocks Editor. — — — — — →



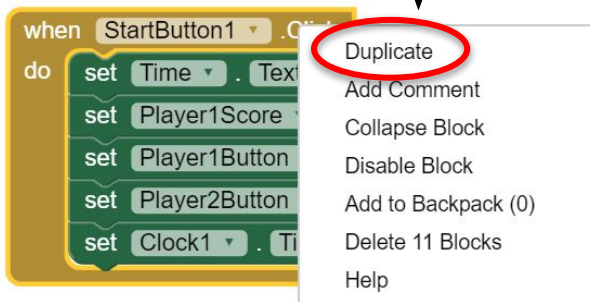
BLOCKS EDITOR

The first thing to do is update the Start buttons. **StartButton1** should be mostly correct already.

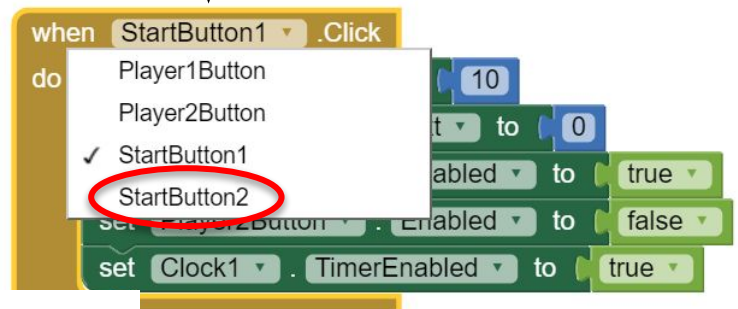
- 6 **Player2Button** should **not** be enabled for Player 1. Change **Player2Button.Enabled** to **false** by clicking on the arrow next to **true** and selecting **false**.



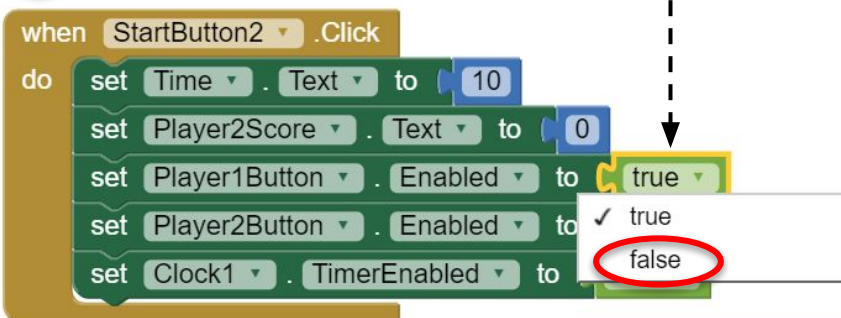
- 7 Rather than rewrite all the code, you can *Duplicate* **StartButton1.Click** and change it. Right click on **StartButton1.Click**, and select **Duplicate**.



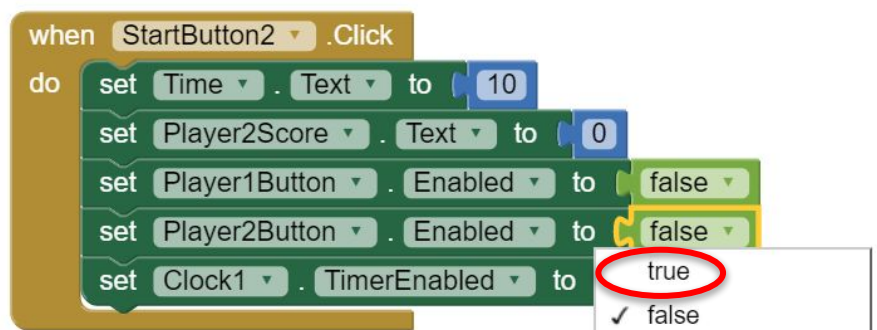
- 8 Click the drop down menu of **StartButton1** and change it to **StartButton2**.



- 9 Change **set Player1.Enabled** to **false**.



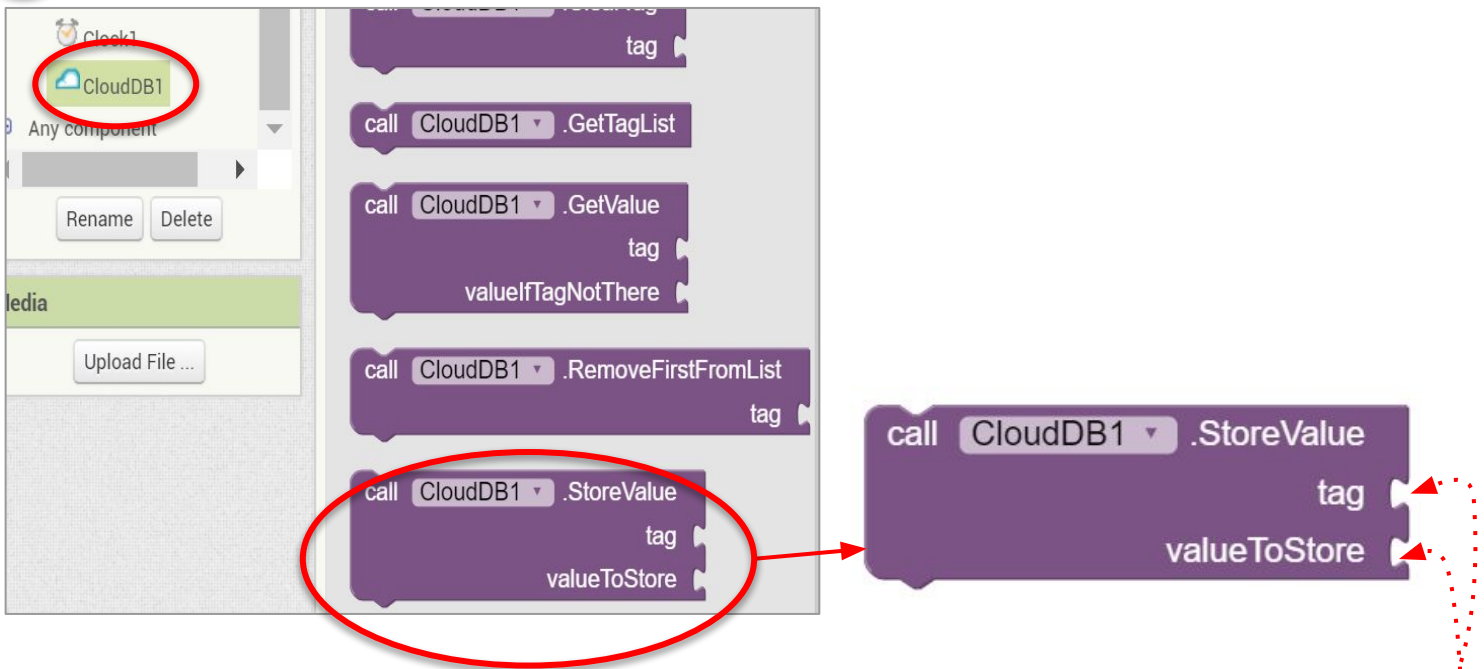
- 10 Now change **set Player2.Enabled** to **true**.



CLOUDDB STORE VALUE

Every time a player scores a point, save the new score in **CloudDB**.

- 11 Drag out a **CloudDB1.StoreValue** block.

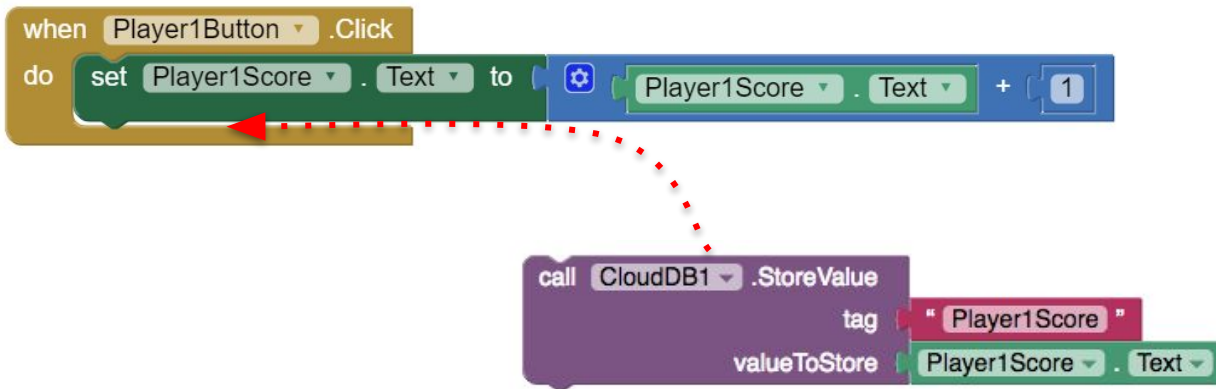


- 12 The *tag* is **"Player1Score"** and the *valueToStore* is **Player1Score.Text**.

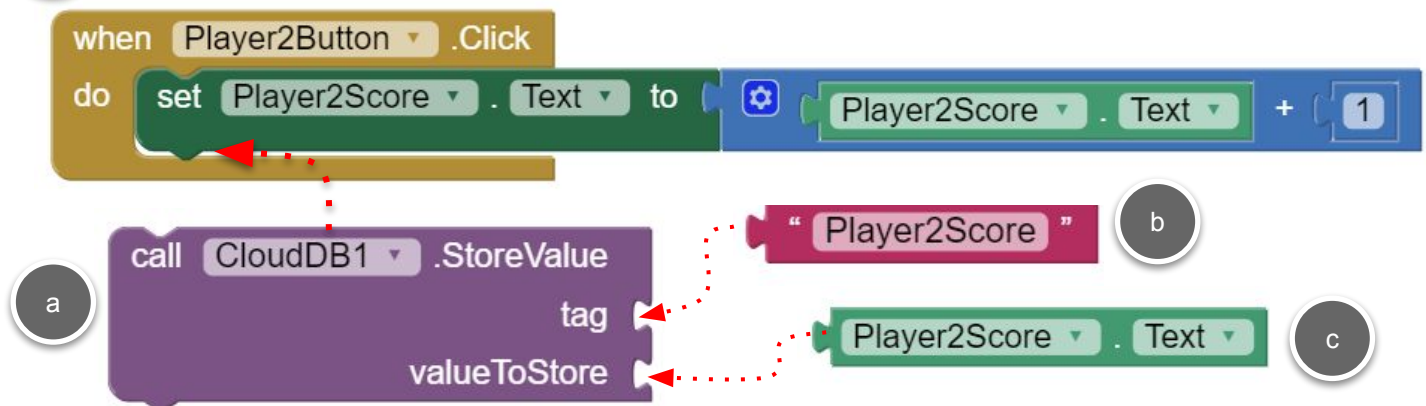


STORING VALUES

- 13 Drag the **CloudDB.StoreValue** block into the **Player1Button.Click** event block.



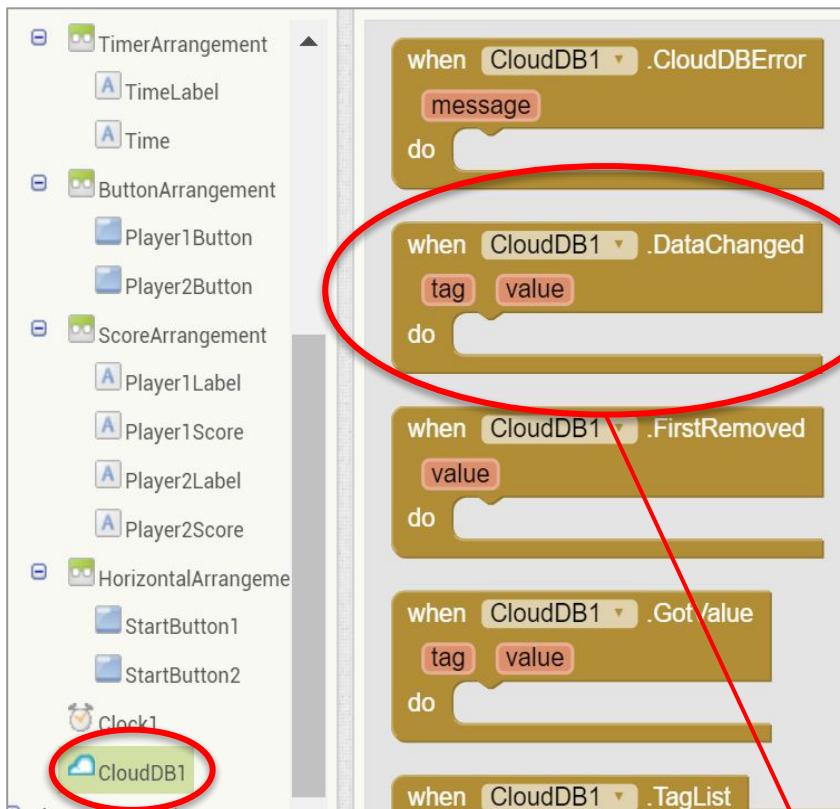
- 14 Repeat steps 11-13 for **Player2Button.Click**, using appropriate tag and valueToStore..



DATA CHANGED

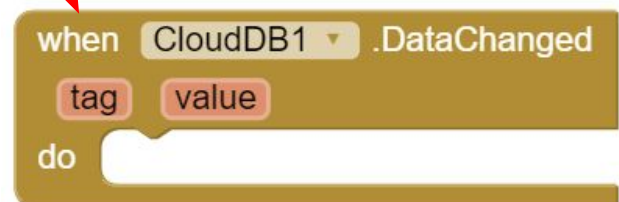
Every time a player's score is saved in CloudDB, that generates a **CloudDB.DataChanged** event.

15 Drag out a **CloudDB1.DataChanged** block.



Tag: There are two possible tags based on what we stored in the previous steps, **Player1Score** and **Player2Score**.

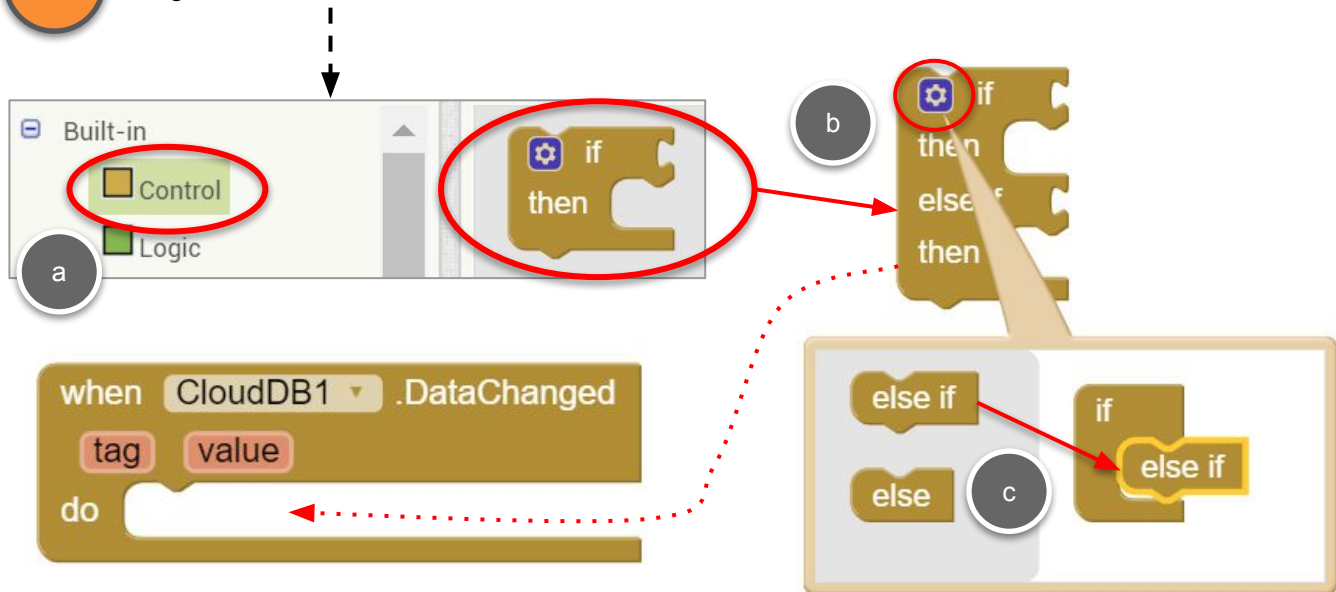
Value: The value is the **ValueToStore** we stored in the **CloudDB.StoreValue** call before.



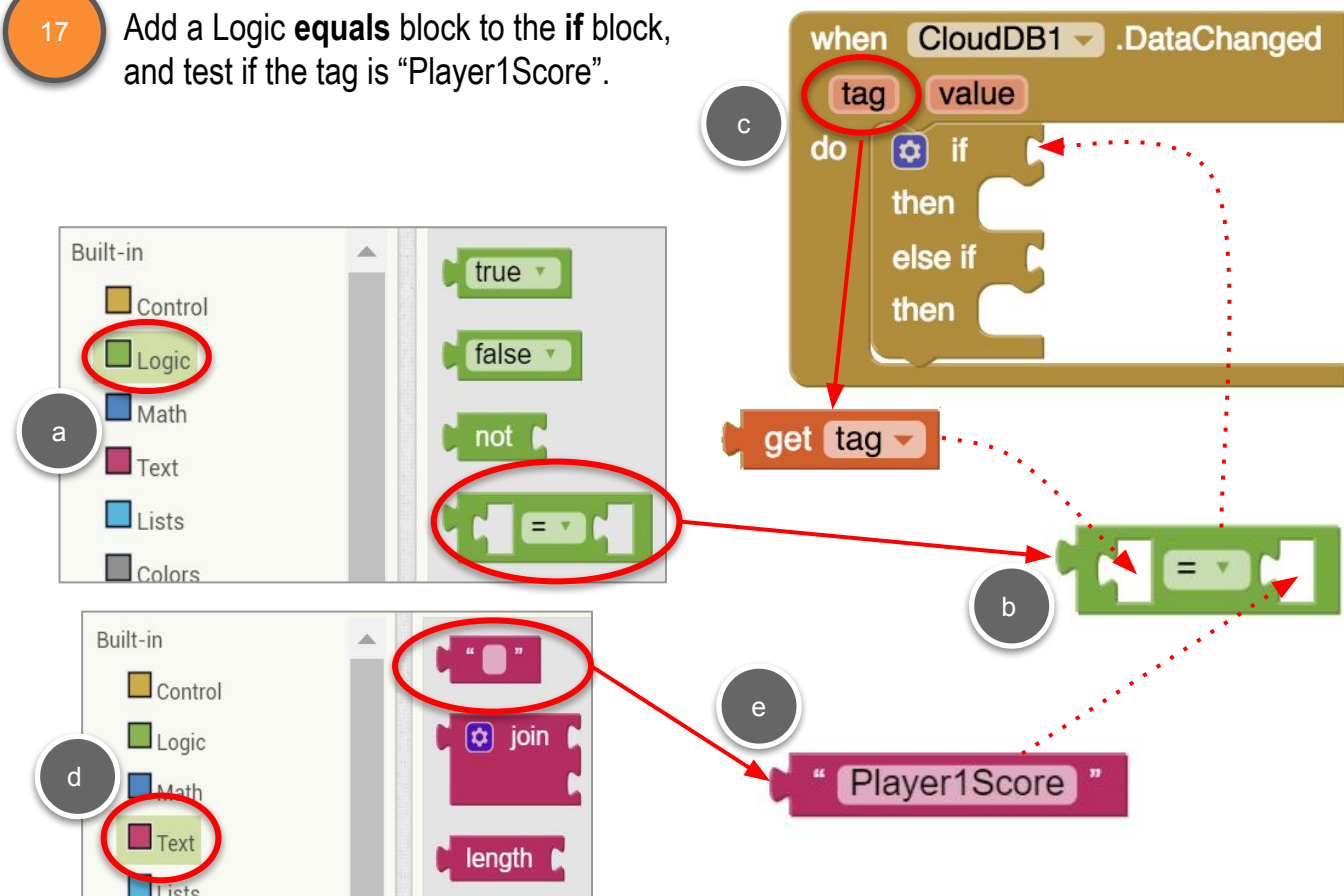
DATA CHANGED

You need to check which tag has been changed.

- 16 Drag out an **if** block, and then use the blue mutator to make an **if-then-else if** block.

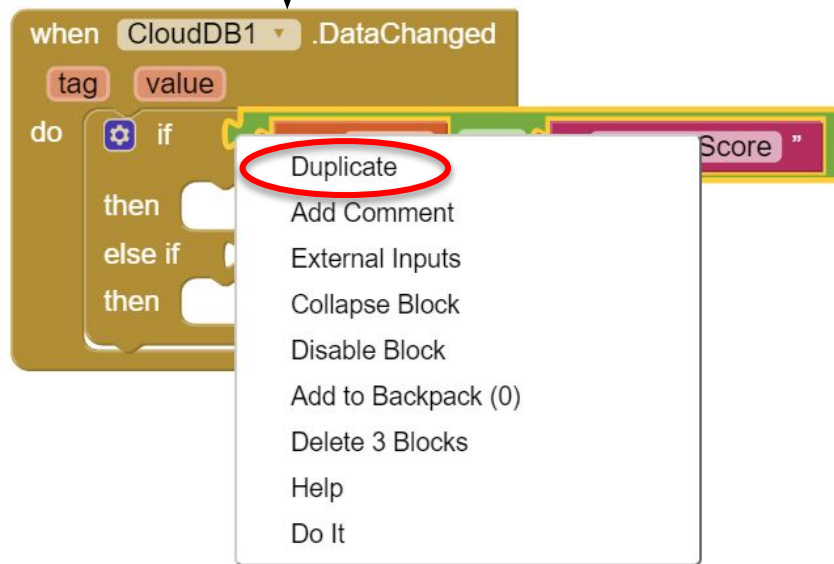


- 17 Add a Logic **equals** block to the **if** block, and test if the tag is "Player1Score".

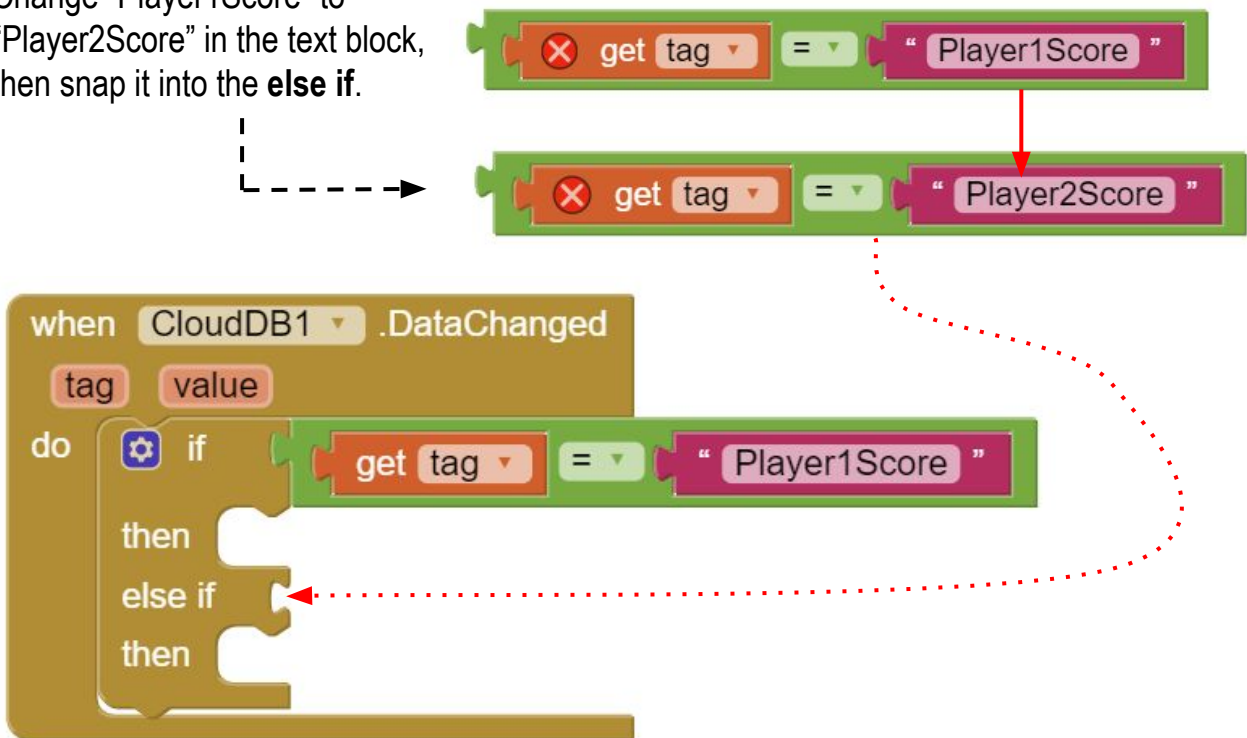


DATA CHANGED (continued)

18 Duplicate the green **equals** block.



19 Change "Player1Score" to "Player2Score" in the text block, then snap it into the **else if**.



DATA CHANGED (continued)

20

Set the corresponding score label to the value passed to **DataChanged**.

The screenshot shows the MIT App Inventor interface. On the left, the 'ScoreArrangement' component is selected, and 'CloudDB1' is highlighted with a red circle and labeled 'a'. On the right, the 'DataChanged' event handler for 'CloudDB1' is shown. It contains a 'do' block with an 'if' statement. The 'if' statement has two branches: 'then' and 'else if'. The 'then' branch contains a 'set Player1Score.Text to' block, which is highlighted with a red circle and labeled 'b'. The 'else if' branch contains a 'set Player2Score.Text to' block. A 'get value' block is highlighted with a red circle and labeled 'c'. Red dotted arrows indicate the flow of data from the 'value' tag in the 'DataChanged' event to the 'get value' block, and then to the 'set Player1Score.Text to' block.

21

Duplicate the **set Player1Score.Text** block and change **Player1Score** to **Player2Score**.

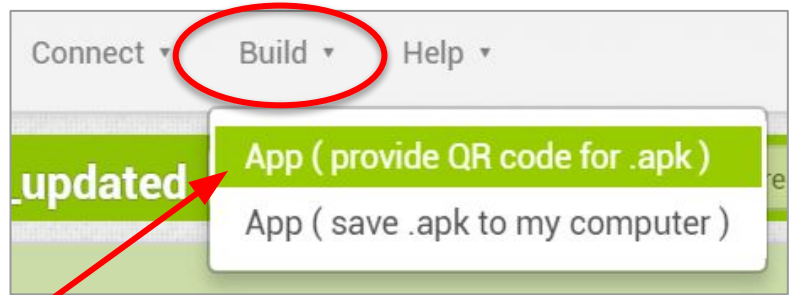
The screenshot shows the MIT App Inventor interface. On the left, the 'ScoreArrangement' component is selected, and 'CloudDB1' is highlighted with a red circle and labeled 'a'. On the right, the 'DataChanged' event handler for 'CloudDB1' is shown. It contains a 'do' block with an 'if' statement. The 'if' statement has two branches: 'then' and 'else if'. The 'then' branch contains a 'set Player1Score.Text to' block, which is highlighted with a red circle and labeled 'c'. The 'else if' branch contains a 'set Player2Score.Text to' block. A context menu is open over the 'set Player1Score.Text to' block, with 'Duplicate' highlighted and labeled 'a'. A 'set Player2Score.Text to' block is highlighted with a red circle and labeled 'b'. Red dotted arrows indicate the flow of data from the 'value' tag in the 'DataChanged' event to the 'get value' block, and then to the 'set Player2Score.Text to' block.

TESTING

Time to test! Because this game app sends scores to the cloud, it's helpful to test using two devices, so you can see that each player sees the other's updated score. You can only test with one AI2 Companion, so you'll make your project an apk file and install the app on two separate tablets.

22

Go to the “Build” menu at the top of the screen, and click on “App (provide QR code for .apk)”. This will start the process of building the app so that it can be installed on any tablet.



23

A QR code will appear in a pop-up window once the app is built. When it appears, both you and your partner should scan it using your devices. Follow the prompts to download and install the .apk on your tablets.



OK

Note: this barcode is only valid for 2 hours. See [the FAQ](#) for info on how to share your app with others.

24

Play the game against your partner on your own device. Does it work correctly? Do the scores update correctly?

Choose Ways to Extend Your App

Here are a
few features you
could add if you
want to expand
your app



Add sounds! One
for Player1 and
one for Player2!

Add a label to
display who is
currently
leading


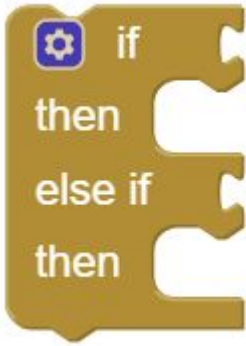
Add a High Score
that is saved in
CloudDB

What other ideas
do you have?

TWO-BUTTON GAME: PART 3

COMPUTATIONAL THINKING CONCEPTS

The following are the Computational Thinking Concepts learned in Part 3.

Two-Button Game	
1. Events:	
2. Conditionals:	
3. Data Manipulation:	