**Timer & Data Tracking**

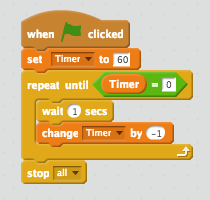
You will often have some value in your program that changes depending on the circumstances. For example, you might have a timer value that is counting up or down so the number of seconds is constantly changing. Or you might want to keep score in a game based on some task the user completes. Similar to algebra, variables are used as “placeholders” for those changing values. In Scratch, variables are represented by oval-shaped blocks. As the programmer, you will need to create the variables necessary for your game. Most variables are global (which is the default when creating them) which means that all of your sprites can use them. Local variables are only used by one sprite.

**#12 Create a Timer Variable**

* Click on the DATA menu (orange)
* Click the gray “Make a Variable” button; a pop-up screen will appear
* Type “Timer” in the Variable Name field and click “OK”
* You should now see the “Timer” variable and four new blocks under the DATA menu; you will also see the Timer added in the upper lefthand corner of your stage (unclicking the Timer variable removes it from the stage)

**#13 Use the Timer to Countdown/End the Game**

Switch to the **Stage** as you will add the following script there:



* Add “When [flag] clicked” from EVENTS menu
* Add “Set Timer to 0” from DATA menu; change the 0 value to 60 for a game that lasts one minute (60 seconds)
* Add “Repeat until…” loop from CONTROL menu
* Add EQUAL SIGN block from OPERATORS menu to the “Repeat...” block
* Add the “Timer” variable from DATA menu on the left side of the EQUAL block and type “0” to the right side of the EQUAL block
* Add “Wait 1 secs” from the CONTROL menu inside the “Repeat…” loop
* Add “Change Timer by 1” from the DATA menu; change the 1 value to -1 so that the timer counts down from sixty to zero
* Add “Stop all” from the CONTROL menu after the “Repeat…” loop - this command will stop all events in the program (end the game)

Note: If you would like, you add a “Game Over” message to your program by creating a second backdrop with that message. To use, you would need to:

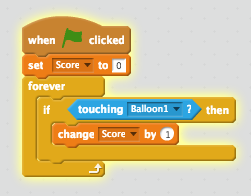
* Add “Switch Backdrop to MainBackdrop” from the LOOKS menu after the “When [flag] clicked” block in the script above (so that your game always starts on the main backdrop)
* Add “Switch Backdrop to GameOver” before the“Stop all” block

**#14 Create a Score Variable** (It’s the same steps as #12)

* Click on the DATA menu (orange)
* Click the gray “Make a Variable” button; a pop-up screen will appear
* Type “Score” in the Variable Name field and click “OK”
* You should now see the “Score” variable and four new blocks under the DATA menu; you will also see the Score added in the upper lefthand corner of your stage (unclicking the Score variable removes it from the stage)

**#15 Use the Score for Data Tracking**

Note: The exact script will depend on how the player earns points in a game. Usually, the points are earned when a sprite touches something, which is outlined below. This section builds are what you learned in #10 and #11.

Switch to the **Ball** as you will add the following script there:

* Add “When [flag] clicked” from EVENTS menu
* Add “Set Score to 0” from DATA menu
* Add “Forever” block from CONTROL menu
* Add the “If...then” block from the CONTROL menu inside the “Forever” loop (so that the conditional statement is always being checked)
* Add the “Touching Balloon1” block from SENSING menu as the condition for the “If...then...” block
* Add “Change Score by 1” from the DATA menu

Another Idea: Add another sprite to game and have the score decreased if the ball touches that sprite.