# Using Loops to Make a Gravity System (for Video Games)

In this lesson you will build a gravity system that can be used in video games. When a character jumps, they will move in the air 10 spaces then gravity will pull them back to the ground. In the past we have used keyboard control blocks to send the message to move a character up and down. **This is NOT what we will do with this program**. In this example, we will use a process called "looping" that will do this for us automatically. While this is much more difficult to program (and understand) it is much more realistic and gives the game a more natural feel.
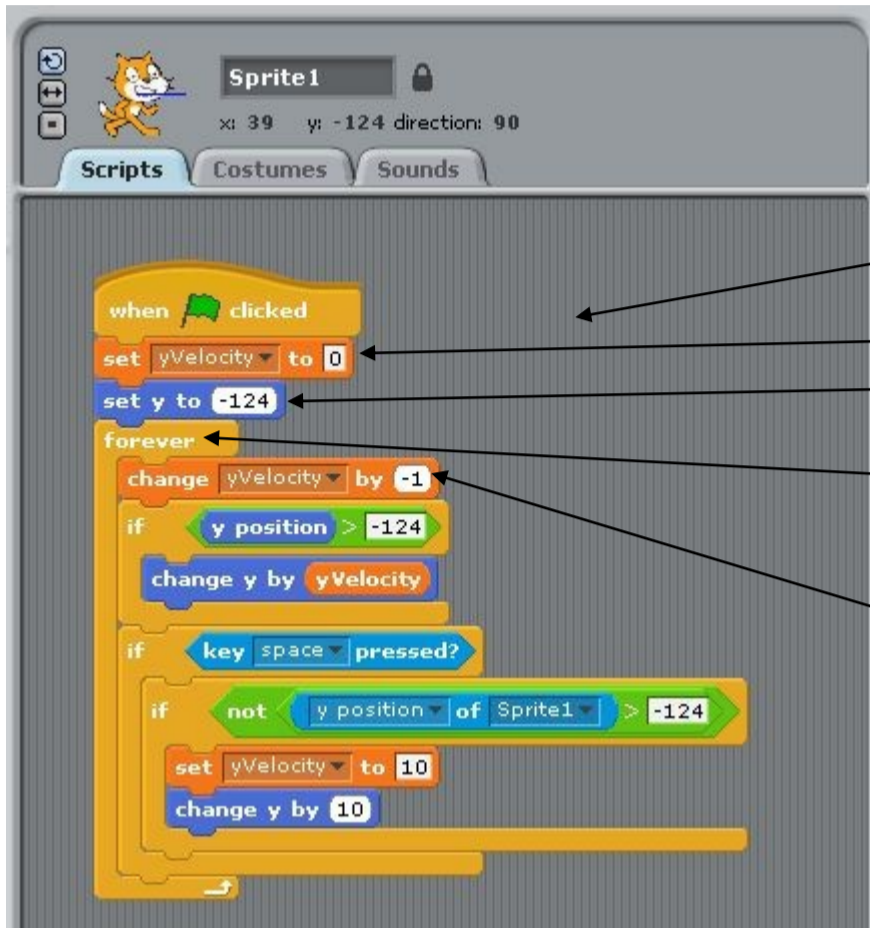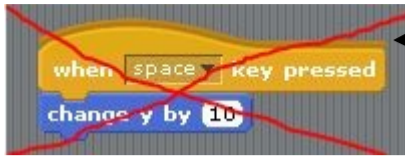

Start by creating a **Variable** called yVelocity. This variable will be used to track the speed a character is moving up or down on the screen. Then make the computer code on the left. Now when you tap the spacebar the character jumps in the air and is pulled back to earth by gravity. Here is how it works:

The program starts when the green flag is clicked and the yVelocity variable is set to 0 (not moving). The characters Y position is set to its position on the floor (in our case –124). This is where it will be pulled back down to by gravity.

Next a loop is started and continues forever (or until we tell it to stop). Each time through the loop we check to see if certain things are happening such as keys are pressed and where our character is, etc. We then start to subtract 1 from the value of yVelocity. This will happen each time through the loop.
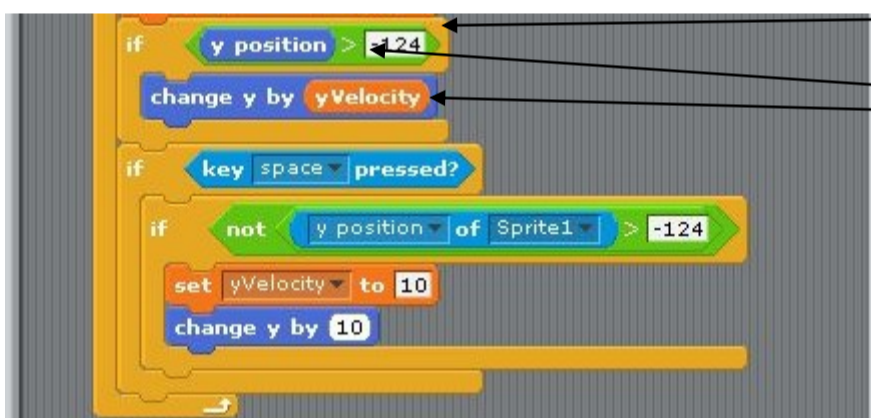
We will then check to see IF our characters y position is greated than -124 (meaning it is up in the air). If it is we will change our characters y position by yVelocity. As yVelocity is always subtracted by 1 at the top of the loop this will ensure our character will always fall back to the start y position of –124 where it will no longer be greater than –124 so will stop.
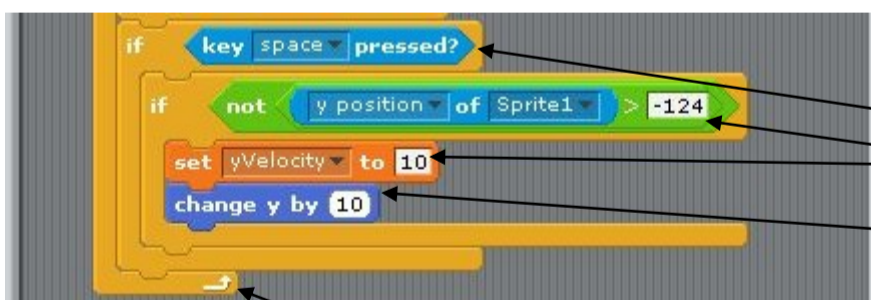
As we continue down the loop our program checks to see IF the space bar is pressed. IF it is then it check to see IF the Y position or our character is NOT greater than –124 (meaning it is on the ground). If this is true is sets yVelocity to 10 and moves our character 10 spaces in the air (makes them jump)

The program now goes back to the top of the loop where we start to take away 1 from yVelocity and the first IF yPosition >-124 is not true our character will start to fall until it is at its starting value of –124.

Complete Gravity Computer Code