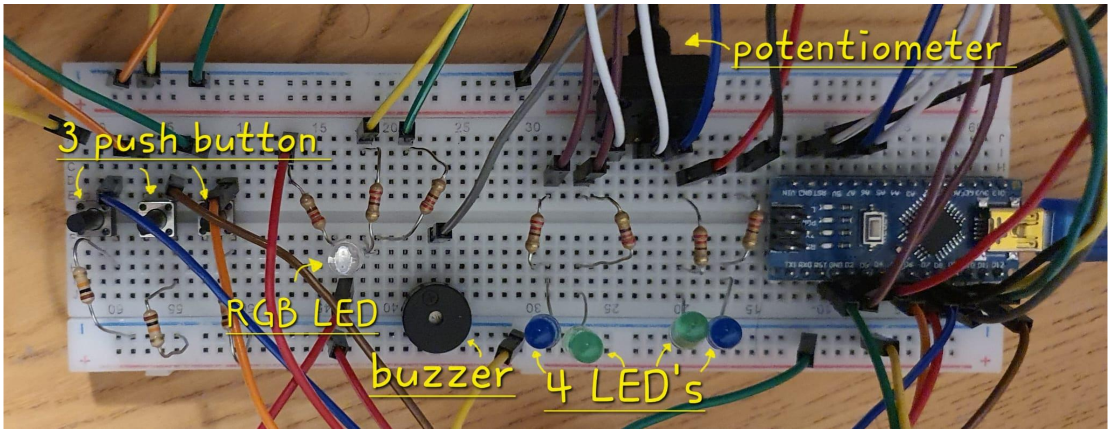
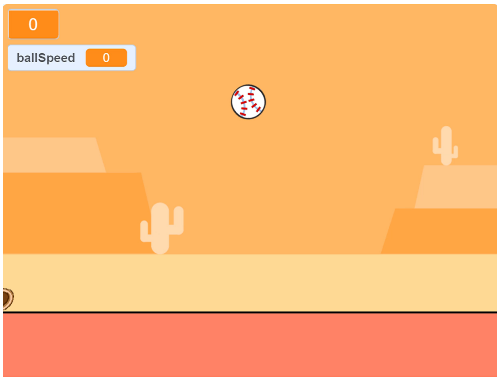
Introduction:-

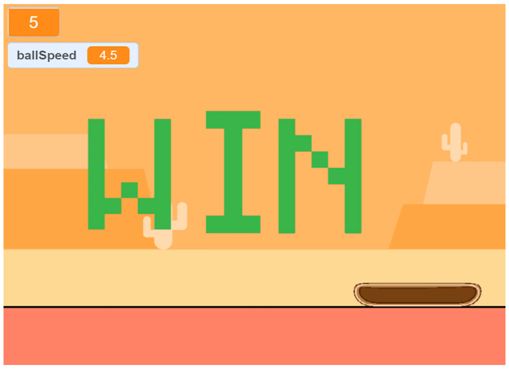
Using mblock and an Arduino, I designed a game for this portion of the lab assignment.
You may play games with an Arduino and its components.
In this game potentiometer is used as a controller and LED's follows the path of movement of potentiometer. Ever button has individual function
And RGB and Buzzer are if I win or lose the game.

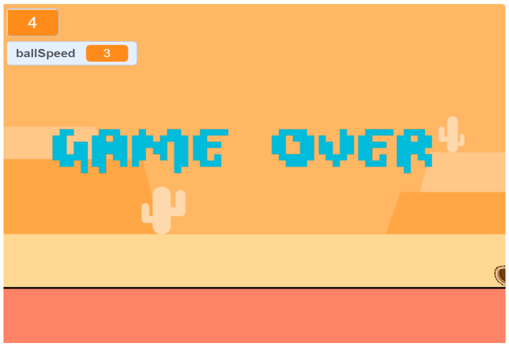
For this experiment I have choose Component Option 1 :-
1x RGB-LED, 1 buzzer, 3x push button, 1x potentiometer, 4xLEDs

Photo of Circuit Board:-



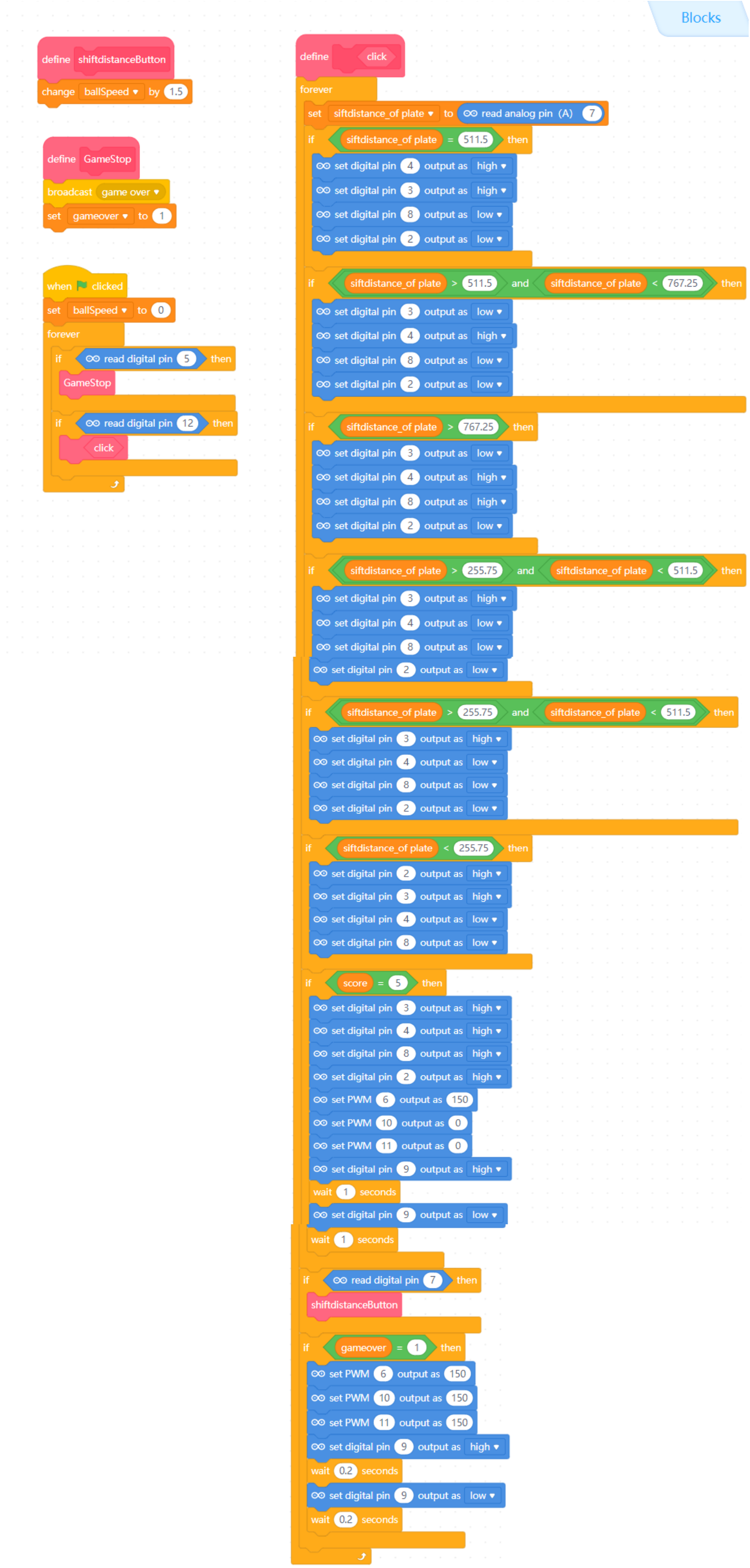






:-When game start   :-if I score 5 points i will WIN   :- if score <5

Code For arduino :-



```
define shiftdistanceButton
change ballSpeed ▾ by 1.5

define GameStop
broadcast game over ▾
set gameover ▾ to 1

when 🏁 clicked
set ballSpeed ▾ to 0
forever
    if read digital pin 5 then
        GameStop
    if read digital pin 12 then
        click

define click
forever
    set siftdistance_of plate ▾ to read analog pin (A) 7
    if siftdistance_of plate = 511.5 then
        set digital pin 4 output as high ▾
        set digital pin 3 output as high ▾
        set digital pin 8 output as low ▾
        set digital pin 2 output as low ▾
    if siftdistance_of plate > 511.5 and siftdistance_of plate < 767.25 then
        set digital pin 3 output as low ▾
        set digital pin 4 output as high ▾
        set digital pin 8 output as low ▾
        set digital pin 2 output as low ▾
    if siftdistance_of plate > 767.25 then
        set digital pin 3 output as low ▾
        set digital pin 4 output as high ▾
        set digital pin 8 output as high ▾
        set digital pin 2 output as low ▾
    if siftdistance_of plate > 255.75 and siftdistance_of plate < 511.5 then
        set digital pin 3 output as high ▾
        set digital pin 4 output as low ▾
        set digital pin 8 output as low ▾
        set digital pin 2 output as low ▾
    if siftdistance_of plate > 255.75 and siftdistance_of plate < 511.5 then
        set digital pin 3 output as high ▾
        set digital pin 4 output as low ▾
        set digital pin 8 output as low ▾
        set digital pin 2 output as low ▾
    if siftdistance_of plate < 255.75 then
        set digital pin 2 output as high ▾
        set digital pin 3 output as high ▾
        set digital pin 4 output as low ▾
        set digital pin 8 output as low ▾
    if score = 5 then
        set digital pin 3 output as high ▾
        set digital pin 4 output as high ▾
        set digital pin 8 output as high ▾
        set digital pin 2 output as high ▾
        set PWM 6 output as 150
        set PWM 10 output as 0
        set PWM 11 output as 0
        set digital pin 9 output as high ▾
        wait 1 seconds
        set digital pin 9 output as low ▾
        wait 1 seconds
    if read digital pin 7 then
        shiftdistanceButton
    if gameover = 1 then
        set PWM 6 output as 150
        set PWM 10 output as 150
        set PWM 11 output as 150
        set digital pin 9 output as high ▾
        wait 0.2 seconds
        set digital pin 9 output as low ▾
        wait 0.2 seconds
```

Explanation of code:

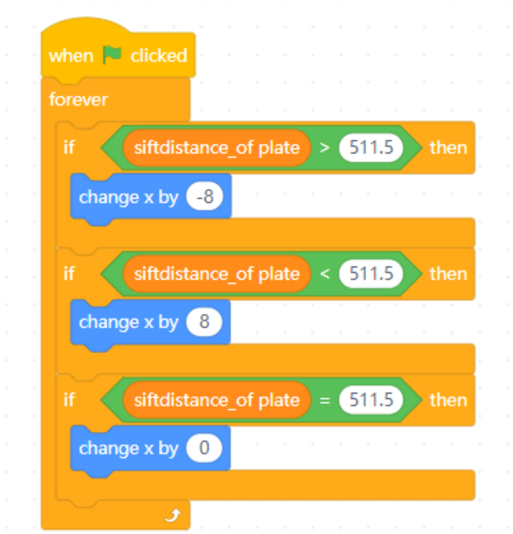
A function that executes when the "Green flag" button is clicked is found in the first section of the code in the example above. We used a number of different factors in the code; the list of variables and their functions are as follows.
Score = which store score of game
Ballspeed = which use to change ball movement speed
gameover = which is used to stop the game.
shiftdistance of plate = is used to determine shift distance of plate , which is mapped with potentiometer.

On Green flag Press :-
It will set ball speed to zero. It indicates that only the controller is launched, not the entire game. The button that is attached to digital pin 7 allows you to increase speed.

Click function(to start Game):-
The infinite loop contains all function conditions. As a result, it will continue to run until the stop condition is met.
Upon pressing the button corresponding to digital pin 12, It will carry out the click function.
Everything that is connected to the breadboard is present in this function, so pressing this button will activate all of the breadboard's components, including the potentiometer, LEDs, and speed ball speed-increasing button.
The analog pin 7 is connected to the potentiometer.
Additionally, an LED control dependent on the potentiometer's position or shift distance was used.
Additionally, we incorporated the scoring-based victory condition. When the score reaches 5, LEDs will begin to blink.
The same is true for the game-over conditions that are also listed in a function.

GameStop function:-
The button that is connected with the digital pin 5 will end the Game and (Game over) message will appear.

Code of control bar :-



```
when ⚑ clicked
forever
  if siftdistance_of plate > 511.5 then
    change x by -8
  if siftdistance_of plate < 511.5 then
    change x by 8
  if siftdistance_of plate = 511.5 then
    change x by 0
```

Bar

Explanation of code:

This code controls the moment of the bar, if potentiometer(0-1023) analog output is < 511.5 then bar will move towards (-8) in x-axis and if potentiometer (0-1023) analog output is > 511.5 then bar will move towards (8) in x-axis and in case of =511.5 bar move towards 0.

Lesson Learned:-

By using mblock i am able to learn things easily and it is easy through this experiment I got a better understanding of potentiometer and why different components require different arduino pins like for **RGB LEDs** :- PWM pins are required to adjust brightness. The PWM pins will give a signal a different duty cycle to the RGB LED to obtain different colors. **Potentiometer** :- signal pin is connected to analog input pin (A0 to A5) because it is a device that provides a differing amount of resistance if we rotate the shaft of potentiometer, So to measure the amount of resistance produced by a potentiometer as an analog value potentiometer is connected to analog pin.

Summary :-

To sum up, potentiometer is used to control the bar in the game and the 4 LED lights show the position of the shaft of potentiometer. First switch (pin 5) is for Game over to stop the game , second button is to start the controller, third button is to change the speed of the ball . Buzzer and RGB LED is used when the game is over or if we win the game .