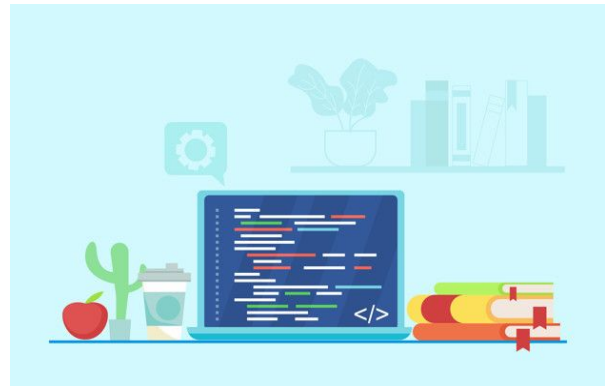**WhiteHat Jr**
Live Online Coding for Kids

CONDITIONAL PROGRAMMING

What is our GOAL for this MODULE?
We used conditional programming to add control to the ball's movements. We also built a little game using the ball's movements and added some challenge to it.

### What did we ACHIEVE in the class TODAY?
- Used conditional programming to add control to the ball's movements if a certain condition holds true.
- Made a challenging game using the ball's movements.

Which CONCEPTS/ CODING BLOCKS did we cover today?
- If block
- Keyboard Events

How did we DO the activities?

1. Find the **if conditional** block.
   - Use this instruction to tell the computer - if this condition happens, do these things.
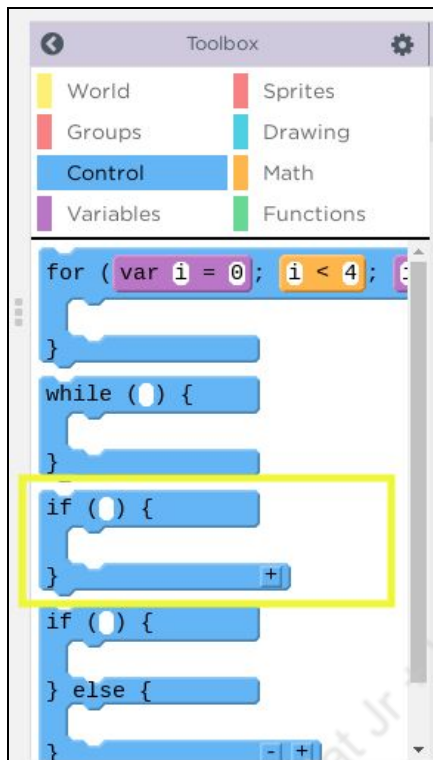
2. Place the condition inside "( )" and statements/instructions we want the computer to run if that condition is met inside "{ }".

```
var ball = createSprite(200,200,10,10);

ball.velocityY = 2;
ball.velocityX = 3;

function draw() {
  background("white");
  if(){

  }
  createEdgeSprites();
  ball.bounceOff(edges);

  drawSprites();
}
```

```
1   var ball = createSprite(200,200,10,10);
2
3   ball.velocityY = 2;
4   ball.velocityX = 2;
5
6 ▾ function draw() {
7       background("white");
8
9 ▾     if (condition) {
10          //do this
11          //do this
12      }
13
14
15      createEdgeSprites();
16      ball.bounceOff(edges);
17      drawSprites();
18  }
19
```

```
1   var ball = createSprite(200,200,10,10);
2
3   ball.velocityY = 2;
4   ball.velocityX = 2;
5
6 ▾ function draw() {
7       background("white");
8
9 ▾     if (up arrow key is pressed) {
10          //do this
11          move the ball up
12      }
13
14
15      createEdgeSprites();
16      ball.bounceOff(edges);
17      drawSprites();
18  }
```

3. Apply conditional programming to control the movements of the ball.

```
1   var ball = createSprite(200,200,10,10);
2
3   ball.velocityY = 2;
4   ball.velocityX = 2;
5
6 ▾ function draw() {
7     background("white");
8
9 ▾   if (keyDown("UP_ARROW")) {
10      //do this
11      ball.velocityX = 0;
12      ball.velocityY = -2;
13    }
14
15
16    createEdgeSprites();
17    ball.bounceOff(edges);
18    drawSprites();
19  }
20
```

4. Write three more IF conditions to make the ball go down, right, and left when the respective keys are pressed.

```
if(keyDown("up")){
   ball.velocityX = 0;
   ball.velocityY = -2;
}

if(keyDown("down")){
   ball.velocityX = 0;
   ball.velocityY = 2;
}

if(keyDown("left")){
   ball.velocityX = -2;
   ball.velocityY = 0;
}

if(keyDown("right")){
   ball.velocityX = 2;
   ball.velocityY = 0;
}
drawSprites();
```
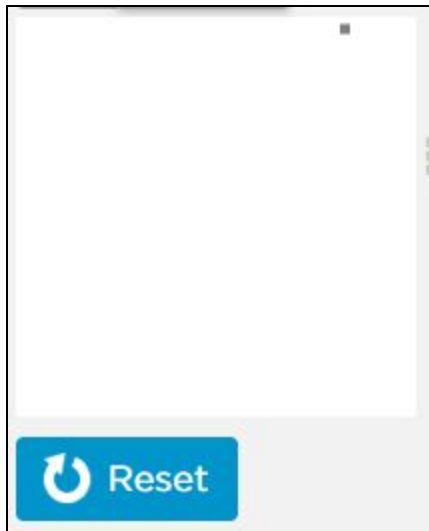
Output:

5. Create wall sprites to build the maze as a second activity

```
var ball = createSprite(200,200,10,10);
ball.velocityX = 2;
ball.velocityY = 3;

ball.shapeColor = 'blue';

var wall1 = createSprite(10,50,20,100);
wall1.shapeColor = 'red';

var wall2 = createSprite(50,50,20,100);
wall2.shapeColor = 'green';

var wall3 = createSprite(50,130,100,20);
wall3.shapeColor = 'brown';

function draw() {
    background("white");
```
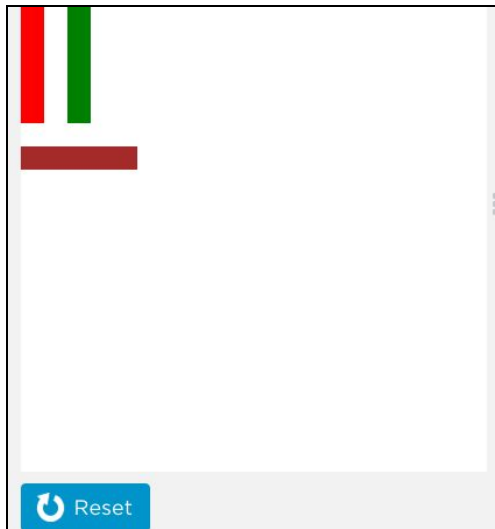
6. Use **sprite.isTouching** property to check if the ball is touching one of the walls. If the ball is touching one of the walls, change the position of the ball to its starting point. Repeat this for all the walls in the maze.

```
11   wall2.shapeColor = 'green';
12
13   var wall3 = createSprite(50,130,100,20);
14   wall3.shapeColor = 'brown';
15
16
17 ▾ function draw() {
18       background("white");
19
20 ▾     if(ball.isTouching(wall1)){
21           ball.x = 200;
22           ball.y = 200;
23       }
24
25 ▾     if(ball.isTouching(wall2)){
26           ball.x = 200;
27           ball.y = 200;
28       }
29
30 ▾     if(ball.isTouching(wall3)){
31           ball.x = 200;
32           ball.y = 200;
33       }
34
35
36
37 ▾     if(keyDown("up")){
38           ball.velocityX = 0;
39           ball.velocityY = -2;
```

7. Use the || operator to combine all the conditions.

```
11  wall2.shapeColor = 'green';
12
13  var wall3 = createSprite(50,130,100,20);
14  wall3.shapeColor = 'brown';
15
16
17  function draw() {
18      background("white");
19
20      if(ball.isTouching(wall1) || ball.isTouching(wall2) || ball.isTouching(wall3)){
21        ball.x = 200;
22        ball.y = 200;
23      }
24
25
26      if(keyDown("up")){
27        ball.velocityX = 0;
28        ball.velocityY = -2;
29      }
30
31      if(keyDown("down")){
32        ball.velocityX = 0;
33        ball.velocityY = 2;
34      }
35
36      if(keyDown("left")){
37        ball.velocityX = -2;
38        ball.velocityY = 0;
39      }
```

What's next?:
We will make the game a little more challenging by adding more objects.

EXTEND YOUR KNOWLEDGE
1. Read more about if statements**:** https://studio.code.org/docs/applab/ifBlock/