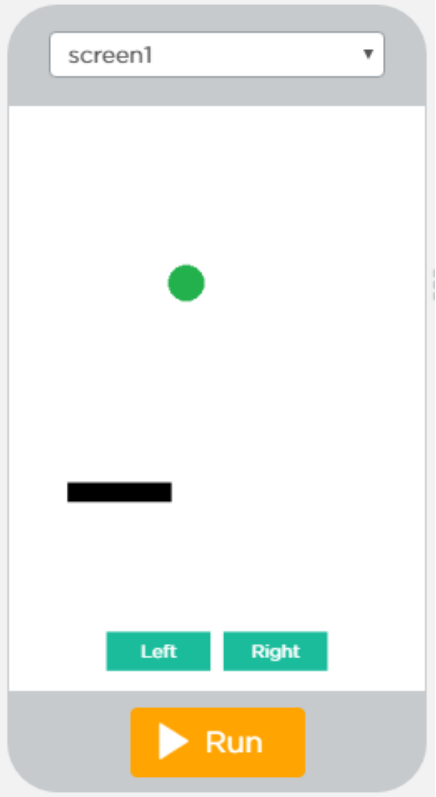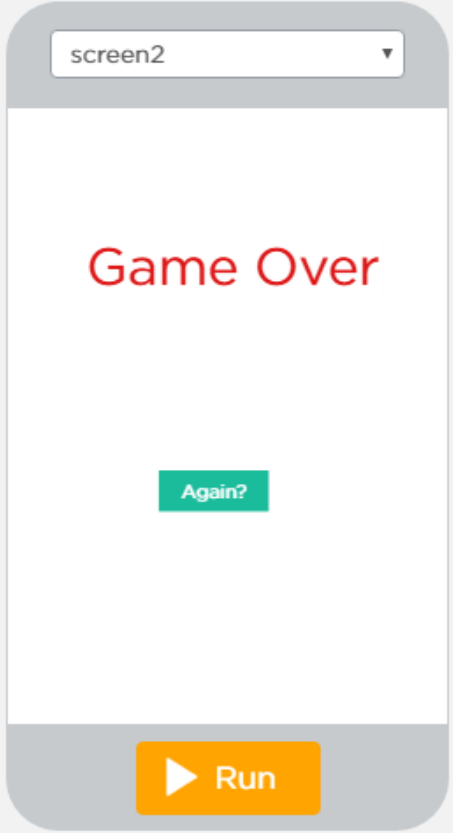# C6: Pong

Design Mode:

Screen1
Ball is an image with the id 'ball'.
Paddle is an image with the id 'paddle'.
Left is a button with the id 'Left'
Right is a button with the id 'Right'

Screen2
There is a label with reads Game Over
Again? is a button with the id 'again'.

Code Editor

Start with variables for the ball's position and direction, as well as some for the paddle.


```
var x = getXPosition( ▼ "ball") ;
var y = getYPosition( ▼ "ball") ;
var dir = "up";
var side = "right";

var paddle_x = getXPosition( ▼ "paddle") ;
var paddle_y = getYPosition( ▼ "paddle") ;
```

First we need to make the right and left buttons work.

```
onEvent(▼ "Right", ▼ "click", function(event) {
    if ( paddle_x+50 < 320 ) {
        paddle_x = paddle_x + 30;
        setPosition(▼ "paddle", paddle_x, paddle_y, 80, 15); ←
    }
});
```

If the right hand edge of the paddle (paddle_x+50) is less than the edge of the screen (320), then: move the paddle.

Similarly, the left button:

```
onEvent(▼ "Left", ▼ "click", function(event) {
    if ( paddle_x>0 ) {
        paddle_x = paddle_x - 30;
        setPosition(▼ "paddle", paddle_x, paddle_y, 80, 15); ←
    }
});
```

The ball works exactly the same way as the ball in bouncing ball.

```
setInterval( function() {
    if ( dir == "up" ) {
        y = y - 3;
    } else {
        y = y + 3;
    }
    if ( side == "left" ) {
        x = x - 3;
    } else {
        x = x + 3;
    }

    if ( y <= 0 ) {
        dir = "down";
    }
    if ( y >= 450 ) {
        dir = "up";
    }
    if ( x <= 0 ) {
        side = "right";
    }
    if ( x >= 320 ) {
        side = "left";
    }
    setPosition(▼ "ball", x, y, 32, 32); ←
}, 20);
```

Run your program to see that you can move the paddle and that the ball bounces around.

Then, switch over to the text view of the blocks editor. `</> Show Text`
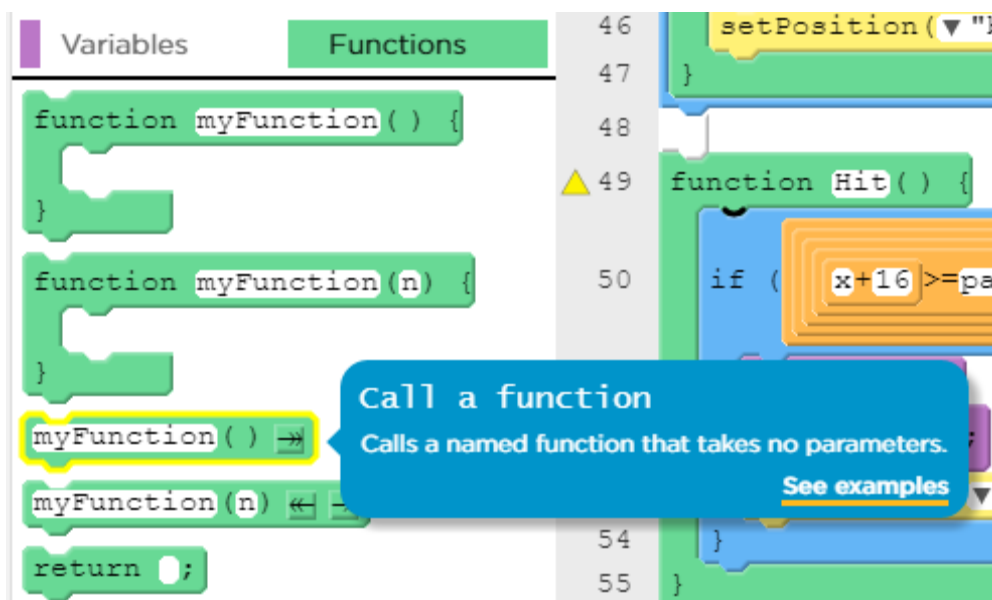
At the bottom, outside any brackets, paste these two methods.

```
function Hit() {
   if (x+16 >= paddle_x && x+16 <= paddle_x+80 && y+16
>= paddle_y && y+16 <= paddle_y+15) {
      dir = "up";
      y = y - 16;
      setPosition("ball", x, y, 32, 32);
   }
}

function dead() {
   if(y+16> paddle_y+15) {
      setScreen("screen2");
   }
}
```

The methods check if the ball is below the paddle (dead) and if the paddle hit the ball (hit).

Then, we need to call these methods in many places in our program. Go to the functions tab in the toolbox. Select the block shown.

Add these two methods at the bottom of the ball's setInterval block.

```
    side = "left";
}
Hit ( ); ⇥
dead ( ); ⇥
setPosition (▼ "ball", x, y, 32, 32); ⇤
}
                                    , 20);
```

Add them again in the left block.

```
onEvent (▼ "Left", ▼ "click", function (event) {
    if ( paddle_x>0 ) {
        paddle_x = paddle_x - 30;
        Hit ( ); ⇥
        dead ( ); ⇥
        setPosition (▼ "paddle", paddle_x, paddle_y, 80, 15); ⇤
    }
});
```

Add them again in the right block.

```
onEvent (▼ "Right", ▼ "click", function (event) {
    if ( paddle_x+50 < 320 ) {
        paddle_x = paddle_x + 30;
        Hit ( ); ⇥
        dead ( ); ⇥
        setPosition (▼ "paddle", paddle_x, paddle_y, 80, 15); ⇤
    }
});
```

As you can see, functions are a way of repeating code without cutting and pasting it into place. You put the code you want to repeat in a function and then you call it in the place you want it to run.

Run your code. See it is working.

Last, we need to code the again block.

```
onEvent(▼"Again", ▼"click", function(event) {
    x = 100;
    y = 200;
    dir = "up";
    setScreen(▼"screen1");
}                                  );
```

Move the ball's x, y co-ordinates to a decent position and change it's direction to up. Switch the screen back to number 1.