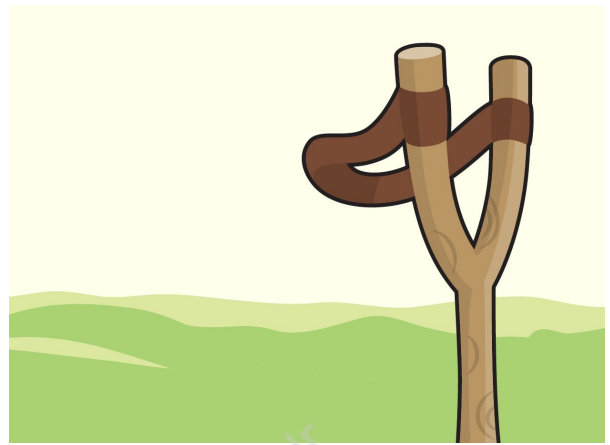**WhiteHat Jr**
Live Online Coding for Kids

Catapult and the rubber band

What is our GOAL for this MODULE?
The goal for this module is to create a catapult for the sling.

What did we ACHIEVE in the class TODAY?
- Placed the images of the catapult in the game
- Used color picker to pick colors for the rubber
- Drew the rubber band for the catapult

Which CONCEPTS/ CODING BLOCKS did we cover today?
- Adding images for catapult.
- Picking colors for the rubber.
- Drawing the rubberband.

How did we DO the activities?

Adding catapult to the game:

Since the catapult itself did not interact with any object in the game, we kept it as a static image. We loaded and placed the image in the game using image() function in p5.js. We loaded the images inside the constructor for slingshot class and positioned it inside the display() function.

```
JS sketch.js    JS Slingshot.js  ✕

AngryBirdsStage3 ▸ JS Slingshot.js ▸ ⁂ SlingShot ▸ ⓥ display
1    class SlingShot{
2        constructor(bodyA, pointB){
3            var options = {
4                bodyA: bodyA,
5                pointB: pointB,
6                stiffness: 0.04,
7                length: 10
8            }
9            this.sling1 = loadImage('sprites/sling1.png');
10           this.sling2 = loadImage('sprites/sling2.png');
11           this.sling3 = loadImage('sprites/sling3.png');
12           this.pointB = pointB
13           this.sling = Constraint.create(options);
14           World.add(world, this.sling);
15       }
16
17       fly(){
18           this.sling.bodyA = null;
19       }
20
21       display(){
22           if(this.sling.bodyA){
23               var pointA = this.sling.bodyA.position;
24               var pointB = this.pointB;
25               strokeWeight(4);
26               line(pointA.x, pointA.y, pointB.x, pointB.y);
27           }
28       }
29
30   }
```
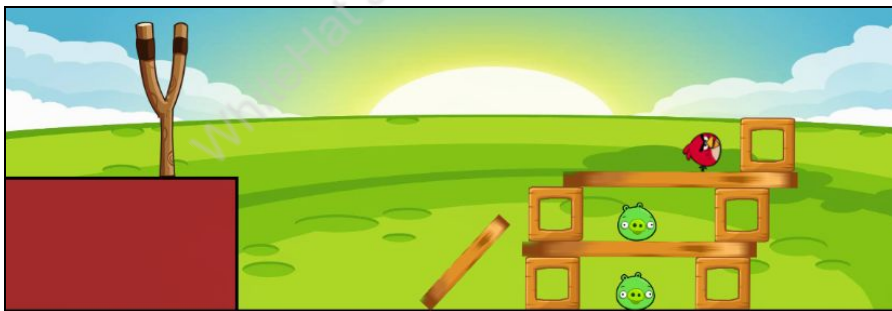
```
AngryBirdsStage3 ▸ JS Slingshot.js ▸ ⁂ SlingShot ▸ ⓥ display
1    class SlingShot{
2        constructor(bodyA, pointB){
3            var options = {
4                bodyA: bodyA,
5                pointB: pointB,
6                stiffness: 0.04,
7                length: 10
8            }
9            this.sling1 = loadImage('sprites/sling1.png');
10           this.sling2 = loadImage('sprites/sling2.png');
11           this.sling3 = loadImage('sprites/sling3.png');
12           this.pointB = pointB
13           this.sling = Constraint.create(options);
14           World.add(world, this.sling);
15       }
16
17       fly(){
18           this.sling.bodyA = null;
19       }
20
21       display(){
22           image(this.sling1,200,20);
23           image(this.sling2,170,20);
24           if(this.sling.bodyA){
25               var pointA = this.sling.bodyA.position;
26               var pointB = this.pointB;
27               strokeWeight(4);
28               line(pointA.x, pointA.y, pointB.x, pointB.y);
29           }
30       }
31
32   }
```

The catapult was then in the right position. Our bird needed to be higher. Thus, we modified script.js to change the position of the bird and the point to which it is anchored.

We had the catapult and the bird in between the two ends. But we did not want the line from the anchor point.

```
AngryBirdsStage3 ▸ JS Slingshot.js ▸ ⚙ SlingShot ▸ ⚙ display
3        var options = {
4            bodyA: bodyA,
5            pointB: pointB,
6            stiffness: 0.04,
7            length: 10
8        }
9        this.sling1 = loadImage('sprites/sling1.png');
10       this.sling2 = loadImage('sprites/sling2.png');
11       this.sling3 = loadImage('sprites/sling3.png');
12       this.pointB = pointB
13       this.sling = Constraint.create(options);
14       World.add(world, this.sling);
15   }
16
17   fly(){
18       this.sling.bodyA = null;
19   }
20
21   display(){
22       image(this.sling1,200,20);
23       image(this.sling2,170,20);
24       if(this.sling.bodyA){
25           var pointA = this.sling.bodyA.position;
26           var pointB = this.pointB;
27           strokeWeight(4);
28           //line(pointA.x - 25, pointA.y, pointB.x, pointB.y);
29       }
30   }
31
32 }
```

Next, we drew two lines from the two ends of the catapult behind the bird. For this we use

Colorzilla.

We loaded and positioned the image.

```
AngryBirdsStage3 ▸ Js Slingshot.js ▸ ⚡ SlingShot ▸ 🔵 display
1    class SlingShot{
2        constructor(bodyA, pointB){
3            var options = {
4                bodyA: bodyA,
5                pointB: pointB,
6                stiffness: 0.04,
7                length: 10
8            }
9            this.sling1 = loadImage('sprites/sling1.png');
10           this.sling2 = loadImage('sprites/sling2.png');
11           this.sling3 = loadImage('sprites/sling3.png');
12           this.pointB = pointB
13           this.sling = Constraint.create(options);
14           World.add(world, this.sling);
15       }
16
17       fly(){
18           this.sling.bodyA = null;
19       }
20
21       display(){
22           image(this.sling1,200,20);
23           image(this.sling2,170,20);
24           if(this.sling.bodyA){
25               var pointA = this.sling.bodyA.position;
26               var pointB = this.pointB;
27               push();
28               strokeWeight(5);
29               stroke(48,22,8);
30               line(pointA.x - 20, pointA.y, pointB.x -10, pointB.y);
31               line(pointA.x - 20, pointA.y, pointB.x + 30, pointB.y - 3);
32               image(this.sling3,pointA.x -30, pointA.y -10,15,30);
33               pop();
```


We used conditional programming to draw different lines at different end points depending on the position of the bird with respect to the catapult.

```
AngryBirdsStage3 ▸ JS Slingshot.js ▸ ⚙ SlingShot ▸ ⊙ display
17    fly(){
18        this.sling.bodyA = null;
19    }
20
21    display(){
22        image(this.sling1,200,20);
23        image(this.sling2,170,20);
24        if(this.sling.bodyA){
25            var pointA = this.sling.bodyA.position;
26            var pointB = this.pointB;
27            push();
28
29            stroke(48,22,8);
30            if(pointA.x < 220) {
31                strokeWeight(7);
32                line(pointA.x - 20, pointA.y, pointB.x -10, pointB.y);
33                line(pointA.x - 20, pointA.y, pointB.x + 30, pointB.y - 3);
34                image(this.sling3,pointA.x -30, pointA.y -10,15,30);
35            }
36            else{
37                strokeWeight(3);
38                line(pointA.x + 25, pointA.y, pointB.x -10, pointB.y);
39                line(pointA.x + 25, pointA.y, pointB.x + 30, pointB.y - 3);
40                image(this.sling3,pointA.x + 25, pointA.y -10,15,30);
41            }
42
43
44            pop();
45        }
46    }
47
48 }
```


Thus, we were able to launch the Angry birds by using the slingshot.

What's NEXT?

In the next class, you will be learning about creating programs for vanishing pigs.

EXTEND YOUR KNOWLEDGE:

Here is an example of a slingshot game. You can analyse it to check the working of a slingshot.

https://codepen.io/liabru/pen/yGbFt?__cf_chl_jschl_tk__=e2d04e28551750e68990c04257118b8d46b08b9a-1597307304-0-Abtnd4DDYemZ5jHp9gs0gijG6qXozbxacnECrO4I1C9tkP-2SZfQyxJkH-vCefsXiyDwkVm_oCZOx0JJMBM-ymzRVAyl6WvO5wfW5RKlDS7DuwGPGoVe9

vAvhp6sLyRSJTr3d0D22taFi2HORUWiU33eoqG4lhCc5ehj5N1RAllCYOlYmpkaTAHLzw6Lo
QFQRQ7FHsw1-0wrkCRpZDjef-MtTaWccmQHxXgYlf8qgxS-4tmA8thJsJflg-sfsssgzAja-wJd
xTBHwSZxEi7C7pYeOglH-ubAHXD_GBMpisvM10HNyOcodUkbMb66OmueE3XdP3yfudYX
K7V2pdTLqEQ6Qv8ivpWUoyGiJlfHzhCc