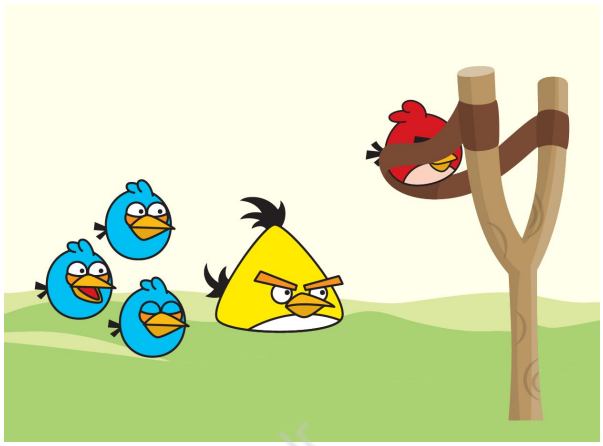
PRO-C28

WhiteHat Jr
Live Online Coding for Kids

SlingShot



What is our GOAL for this MODULE?

The goal of this module is to create a slingshot effect.

What did we ACHIEVE in the class TODAY?

Created a slingshot effect in the Angry Birds game and employed the mouse events like **mouseDragged** and **mouseReleased**.

Which CONCEPTS/ CODING BLOCKS did we cover today?

- Mouse Drag event
- Mouse Release event

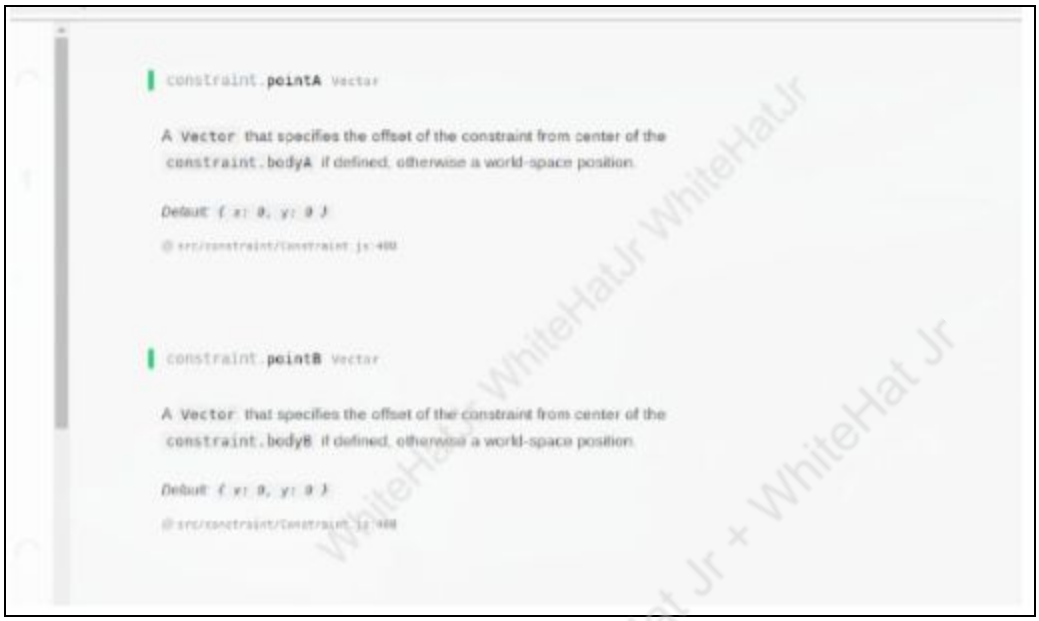
How did we DO the activities?

Modified the index.html file to include 'Slingshot.js':

```
class SlingShot{
    constructor(bodyA, bodyB){
        var options = {
            bodyA: bodyA,
            bodyB: bodyB,
            stiffness: 0.04,
            length: 10
        }
        this.sling = Constraint.create(options);
        World.add(world, this.sling);
    }

    display(){
        var pointA = this.sling.bodyA.position;
        var pointB = this.sling.bodyB.position;
        strokeWeight(4);
        line(pointA.x, pointA.y, pointB.x, pointB.y);
    }

}
```

```
<!DOCTYPE html>
<html>
<head>
    <script src="p5.min.js"></script>
    <script src="p5.dom.min.js"></script>
    <script src="p5.sound.min.js"></script>
    <script src="matter.js"></script>
    <script src="BaseClass.js"></script>
    <script src="Ground.js"></script>
    <script src="Box.js"></script>
    <script src="Pig.js"></script>
    <script src="Log.js"></script>
    <script src="Bird.js"></script>
    <script src="Slingshot.js"></script>
    <link rel="stylesheet" Slingshot.js
    <meta charset="utf-8">
</head>
<body>
    <script src="sketch.js"></script>
</body>
</html>
```

Used two bodies - bodyA and bodyB.



Modified the Slingshot class to include pointB everywhere in the code. We changed the script.js file to turn Chain to Slingshot.

Note: Pass the coordinates of a point as one of the parameters to the Slingshot() constructor.

```
class SlingShot{
    constructor(bodyA, pointB){
        var options = {
            bodyA: bodyA,
            pointB: pointB,
            stiffness: 0.04,
            length: 10
        }
        this.pointB = pointB
        this.sling = Constraint.create(options);
        World.add(world, this.sling);
    }

    display(){
        var pointA = this.sling.bodyA.position;
        var pointB = this.pointB;
        strokeWeight(4);
        line(pointA.x, pointA.y, pointB.x, pointB.y);
    }

}
```

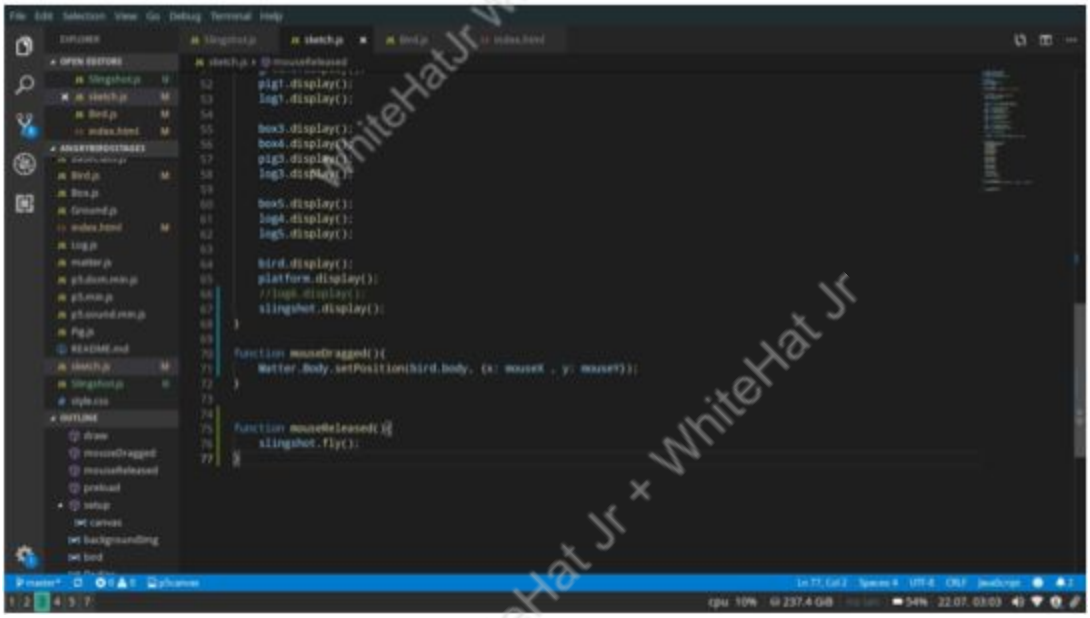
```
    bird = new Bird(100,100);

    //log6 = new Log(230,180,80, PI/2);
    slingshot = new SlingShot(bird.body,{x:200, y:100});
}

function draw(){
    background(backgroundImg);
    Engine.update(engine);
    strokeWeight(4);
    box1.display();
    box2.display();
    ground.display();
    pig1.display();
    log1.display();

    box3.display();
    box4.display();
    pig3.display();
    log3.display();

    box5.display();
    log4.display();
    log5.display();

    bird.display();
    platform.display();
    //log6.display();
    slingshot.display();
}
```

Refer to the screenshot in order to make the bird move only when the user dragged the mouse.

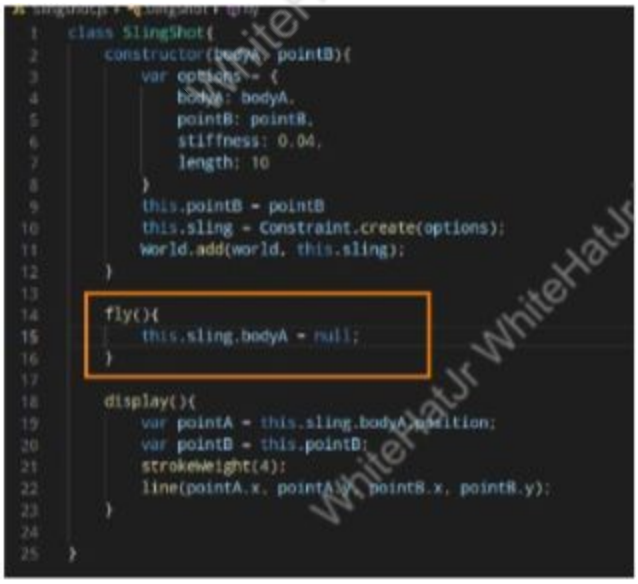
```
Bird.js › Bird › display
1   class Bird extends BaseClass {
2     constructor(x,y){
3       super(x,y,50,50);
4       this.image = loadImage("sprites/bird.png");
5     }
6
7     display() {
8       //this.body.position.x = mouseX;
9       //this.body.position.y = mouseY;
10      super.display();
11    }
12  }
13
```

To do this, we used a function called mouseDragged. This function mouseDragged got invoked whenever you dragged the mouse and it set the position of the bird to be equal to mouseX and mouseY.

When we released the mouse it moved to and fro but still remained connected to the point. We wanted to make the bird fly and detach it from the constraint when the mouse is released. To do this, we gave instructions inside another function called mouseReleased(). This function is also called when the mouse is released.



We defined slingshot.fly inside the Slingshot class and changed the bodyA to null. 'null' implied nothing in javascript. Earlier the bodyA was the bird. Attaching nothing to bodyA will free the bird from the constraint.



However, even when the bodyA became null, we were trying to access its position inside the display. We only wanted to use the display() function in slingshot if the bodyA was not null. We used if() condition here. 'null' evaluated to false.

```
class SlingShot{
    constructor(bodyA, pointB){
        var options = {
            bodyA: bodyA,
            pointB: pointB,
            stiffness: 0.04,
            length: 10
        }
        this.pointB = pointB
        this.sling = Constraint.create(options);
        World.add(world, this.sling);
    }

    fly(){
        this.sling.bodyA = null;
    }

    display(){
        if(this.sling.bodyA){
            var pointA = this.sling.bodyA.position;
            var pointB = this.pointB;
            strokeWeight(4);
            line(pointA.x, pointA.y, pointB.x, pointB.y);
        }
    }
}
```

Thus, we had bird sling ready in an angry bird game.

What's NEXT?

In the next class, you will be learning about adding Catapult and the rubber band to the angry birds game.

EXTEND YOUR KNOWLEDGE

Learn more about mouse functions from the following link:
https://p5js.org/examples/input-mouse-functions.html