PRO-C28

WhiteHat Jr
Live Online Coding for Kids

SLINGSHOT

What is our GOAL for this MODULE?

We used our knowledge about constraint bodies to create a slingshot effect.

What did we ACHIEVE in the class TODAY?

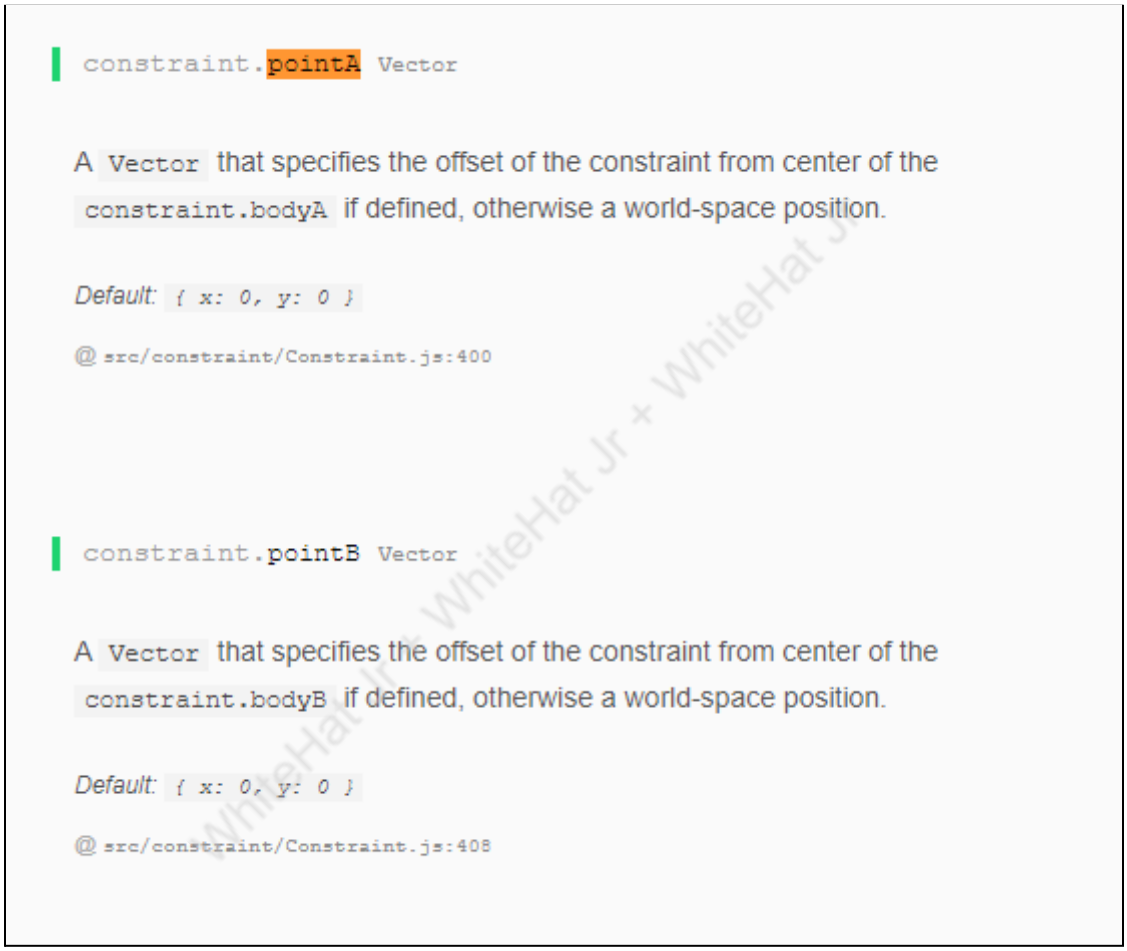
- Learned about creating a slingshot effect in the Angry Bird.
- Learned about **mouseDragged** and **mouseReleased** using mouse events.
- Understood the usage of constraint.pointB.

Which CONCEPTS/ CODING BLOCKS did we cover today?

- Mouse Drag event.
- Mouse Release event.

How did we DO the activities?

1. Change bodyB to pointB to make the Angry Bird constrained to the pointB.



`constraint.pointA` `Vector`

A `Vector` that specifies the offset of the constraint from center of the `constraint.bodyA` if defined, otherwise a world-space position.

Default: `{ x: 0, y: 0 }`

@ src/constraint/Constraint.js:400

`constraint.pointB` `Vector`

A `Vector` that specifies the offset of the constraint from center of the `constraint.bodyB` if defined, otherwise a world-space position.

Default: `{ x: 0, y: 0 }`

@ src/constraint/Constraint.js:408

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


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

}
```

2. Pass the coordinates of a point as one of the parameters to the **Slingshot()** constructor.

```
    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();
```

3. Comment the mouse movement and log line.

```
  // 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();
```

Bird.js > ...

```
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  }
```

4. Create the **mouseDragged** function using **setposition**.

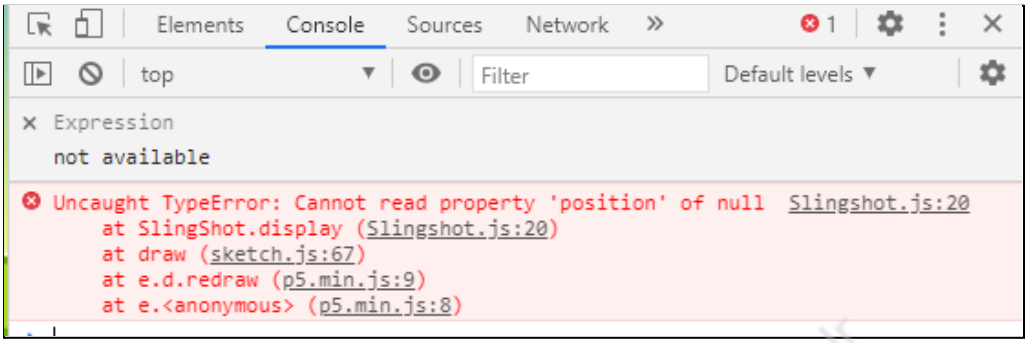
```
    log1.display();

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

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

    bird.display();
    platform.display();
    //log6.display();
    Chain.display();
}
function mouseDragged(){
    Matter.Body.setPosition(bird.body,{x:mouseX,y:mouseY});

}
```

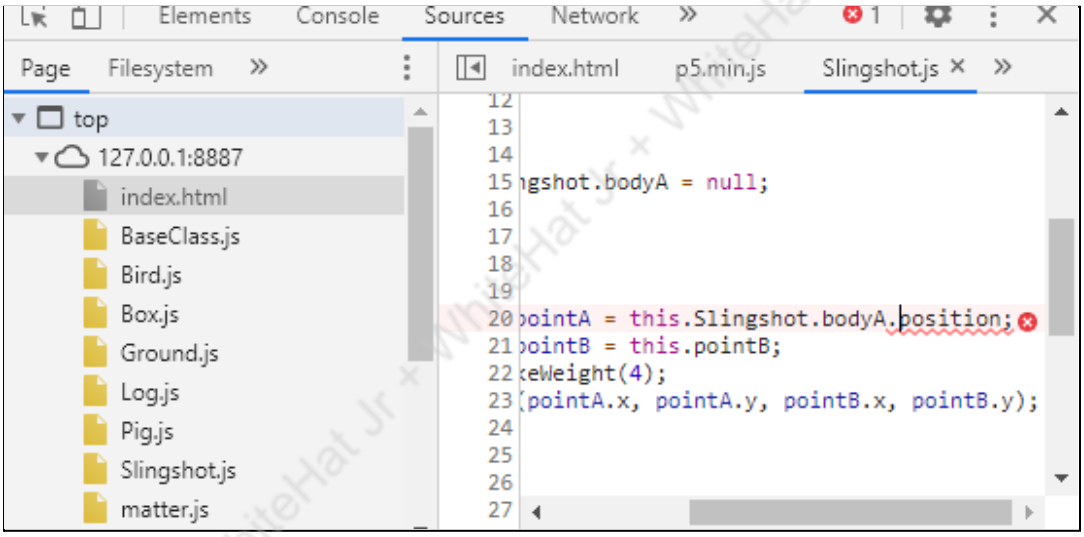
5. Create the **mouseReleased** function to make the Angry Bird fly.

```
JS sketch.js > ...
62        log5.display();
63
64        bird.display();
65        platform.display();
66      // log6.display();
67        Slingshot.display();
68    }
69
70    function mouseDragged(){
71        Matter.Body.setPosition(bird.body, {x: mouseX , y: mouseY});
72    }
73
74
75    function mouseReleased(){
76        Slingshot.fly();
77    }
```

```
Slingshot.js > ...
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.pointB = pointB
0           this.Slingshot = Constraint.create(options);
1           World.add(world, this.Slingshot);
2       }
3
4       fly(){
5           this.Slingshot.bodyA = null;
6       }
7
8       display(){
9
0               var pointA = this.Slingshot.bodyA.position;
1               var pointB = this.pointB;
2               strokeWeight(4);
3               line(pointA.x, pointA.y, pointB.x, pointB.y);
4
5       }
6
7   }
```

6. Check the error by pressing Ctrl + Shift + J in your chrome browser. It seems that even when the bodyA has become null, we are trying to access its position inside the display.





7. Add if condition in order to avoid the error.

```
JS Slingshot.js ●   # style.css   JS sketch.js ●
JS Slingshot.js > ...
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.pointB = pointB
10         this.Slingshot = Constraint.create(options);
11         World.add(world, this.Slingshot);
12     }
13
14     fly(){
15         this.Slingshot.bodyA = null;
16     }
17
18     display(){
19         if(this.Slingshot.bodyA){
20             var pointA = this.Slingshot.bodyA.position;
21             var pointB = this.pointB;
22             strokeWeight(4);
23             line(pointA.x, pointA.y, pointB.x, pointB.y);
24         }
25     }
```

What's NEXT?

In the next class, you will be learning about adding a Catapult and the rubber band to the Angry Birds game.

EXTEND YOUR KNOWLEDGE

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