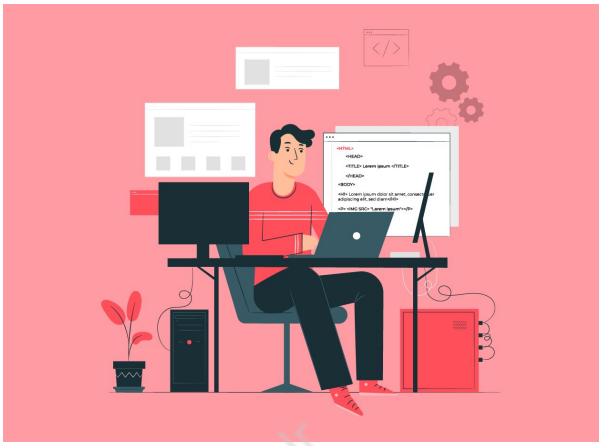
PRO-C27

WhiteHat Jr
Live Online Coding for Kids

Constrained Bodies



What is our GOAL for this MODULE?

The goal of this module is to learn to create the constraint bodies and experiment with different properties of constraints used.

What did we ACHIEVE in the class TODAY?

- We learned about constrained bodies and created constrained bodies using matter.js.
- We also created two constrained bodies using Matter.Constraint.
- While solving the class activity, we experimented with the different properties of constraint and used it in our class.

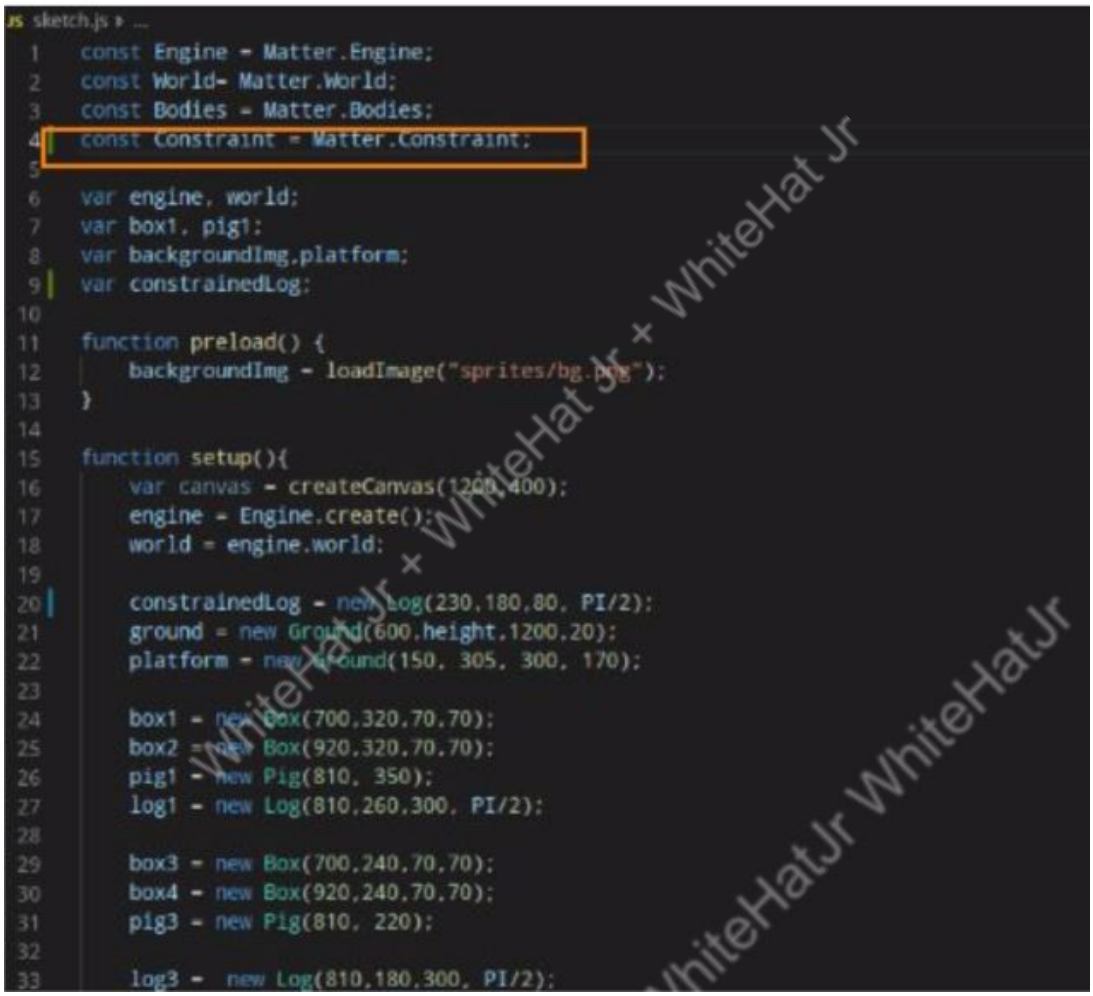
Which CONCEPTS/ CODING BLOCKS did we cover today?

- Creating constraint bodies using Matter.Constraints

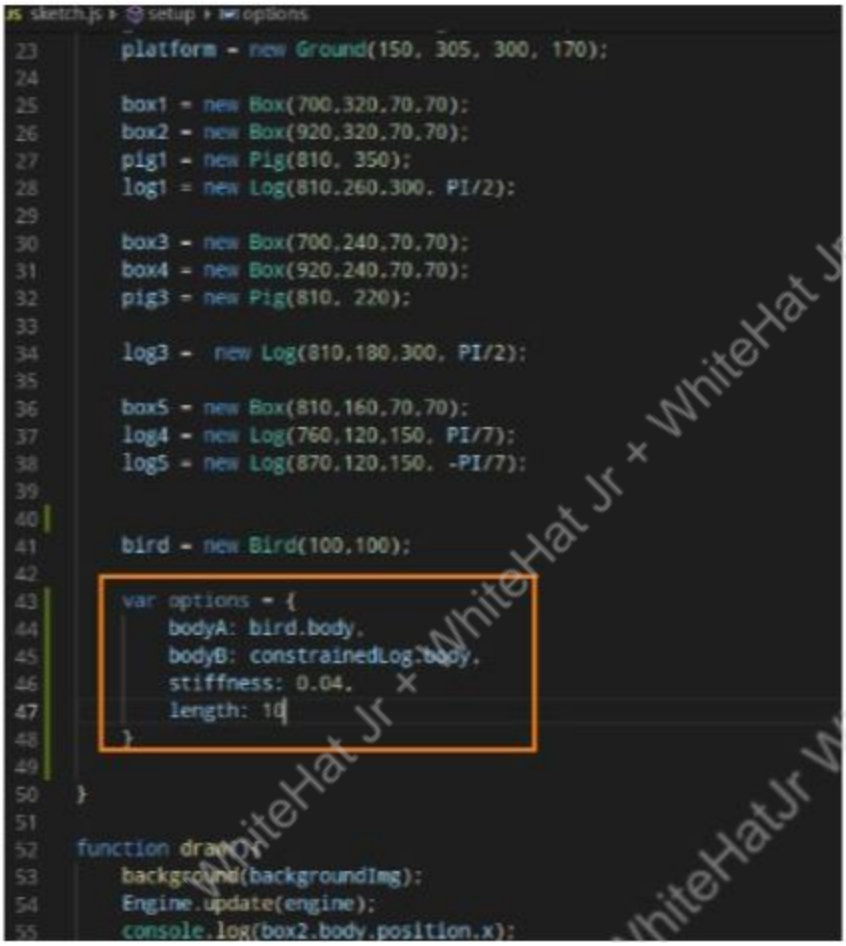
How did we DO the activities?

When one body is constrained or restricted in its movement by the position and movement of another body is called a constrained body.

1. We created a constraint using Matter.Constraint.create(). We also needed to pass some options to this function. The options were properties like length, stiffness etc. that described the type of constraint.



2. The two bodies between which we needed to create the constraint were the bird and the log that we created earlier. To add some length and stiffness to it, refer to the below screenshot.



3. We used this option to create the constraint - a chain.

```
    platform = new Ground(150, 305, 300, 170);

    box1 = new Box(700,320,70,70);
    box2 = new Box(920,320,70,70);
    pig1 = new Pig(810, 350);
    log1 = new Log(810,260,300, PI/2);

    box3 = new Box(700,240,70,70);
    box4 = new Box(920,240,70,70);
    pig3 = new Pig(810, 220);

    log3 =  new Log(810,180,300, PI/2);

    box5 = new Box(810,160,70,70);
    log4 = new Log(760,120,150, PI/7);
    log5 = new Log(870,120,150, -PI/7);


    bird = new Bird(100,100);

    var options = {
        bodyA: bird.body,
        bodyB: constrainedLog.body,
        stiffness: 0.04,
        length: 10
    }

    var chain = Constraint.create(options);

}

function draw(){
```

4. We added this constraint to the physics world in the game:

5. We needed to display the constrainedLog. Since constrainedLog is created from the Log class, it already has the display() function defined. We called it inside the draw() function.

6. We coded to draw a line between the centre of the two bodies.

```
Engine.update(engine);
console.log(box2.body.position.x);
console.log(box2.body.position.y);
console.log(box2.body.angle);
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();
constrainedLog.display();

strokeWeight(3);
line(bird.body.position.x, bird.body.position.y, constrainedLog.body.position.x, constrainedLog.body.position.y);
```

What's NEXT?

In the next class, you will be learning about the slingshot effect in the Angry Bird game.

EXTEND YOUR KNOWLEDGE:

Learn about the methods and properties of matter.constraints here:
https://brm.io/matter-js/docs/classes/Constraint.html#methods