

INSTRUCTIONS:

Goal of the Project:

In Class 28, you learnt how to make an elastic constraint called a slingshot for the Angry Bird.

In this project, you will have to practice and apply what you have learnt in the class and create a mango plucking game in which you have to add a launcher for the stone, which can be moved with a mouse.

Story:

For this summer season Juno is visiting his granny's home. There he saw a mango tree in granny's garden and wanted to eat them. Help him pluck some mangoes by throwing a stone.

See a video of this in action [here](#).



***This is just for your reference. We expect you to apply your own creativity in the project.**

Getting Started:

1. Use the template on github, available for download [here](#).
2. **Unzip** this folder.
3. Rename the unzipped folder as **Project 28**.
4. **Import** this folder **into VS Code**.
5. Start editing your code in **sketch.js**.

Specific Tasks to complete the Project:

1. Download images from [here](#) and add them in your project.
2. Create a blueprint for the **tree**, on which the mangoes will hang.
3. Create a blueprint for the **Ground**, on which the tree stands.
4. Create a blueprint for the **stone class**.
 - Create a **stone object** from the blueprint.

```
var options={
  isStatic:false,
  restitution:0,
  friction:1,
  density:1.2
}
```

5. Add a **boy** image in the **sketch.js**.
6. Adjust the position of the stone in the boy's hand.
7. Create a **Mango class**.
 - This class should have a **circular body** and a **Mango image sprite**.
 - The Mango Body can have the following options:

```
var options={
  isStatic:true,
  restitution :0,
  friction :1,
}
```

8. Create **multiple Mango objects** (mango1, mango2, mango3, etc.) at different positions on the tree.

9. Add an elastic constraint between the hand of the boy and the stone body.
10. Add the **mouseDragged** and **mouseReleased** events in the **sketch.js** to launch the stone towards the mangoes on the tree.
11. Update the **fly()** method to set the **BodyA** to **null**.
12. Create a **detectCollision** function in **sketch.js** and write conditions **set mangoes isStatic as false**, whenever stone collides with them. (See Hints)
13. Call this **detectCollision** function in **draw()**.

```
detectollision(stoneObj,mango1);  
detectollision(stoneObj,mango2);  
detectollision(stoneObj,mango3);  
detectollision(stoneObj,mango4);  
detectollision(stoneObj,mango5);
```

14. Add a condition to **setPosition** of stone again at the start position when **SPACE** key is pressed.

```
function keyPressed() {  
  if (keyCode === 32) {  
    Matter.Body.setPosition(stoneObj.body, {x:235, y:420})  
    launcherObject.attach(stoneObj.body);  
  }  
}
```

15. Create an **attach()** function in **launcher.js** to set the **BodyA** to **body**.
16. Make sure the project works before you submit it.

*Refer to the images given above for reference.

Submitting the Project:

1. Upload your completed project to your own github account.
2. Create a new repository named "**Project 28**"
3. **Upload** working code to this github repository.
4. Enable Github pages for the repository.
5. Copy the link to the github pages link in the Student Dashboard.

Hints:

1. Create **detectCollision** function using below block of code:

```
function detectCollision(lstone,lmango){  
  mangoBodyPosition=lmango.body.position  
  stoneBodyPosition=lstone.body.position  
  
  var distance=dist(stoneBodyPosition.x, stoneBodyPosition.y, mangoBodyPosition.x, mangoBodyPosition.y)  
  if(distance<=lmango.r+lstone.r)  
  {  
    Matter.Body.setStatic(lmango.body,false);  
  }  
}
```

2. After creating multiple mango objects, call **display()** for each mango object separately in draw().

```
mango1.display();  
mango2.display();  
mango3.display();  
mango4.display();  
mango5.display();
```

3. Experiment with the stiffness of the constraint which gives a good response and launch.
 - There is a fair chance that values less than 0.01 (e.g. 0.004) are good choices.

REMEMBER... Try your best, that's more important than being correct.

After submitting your project your teacher will send you feedback on your work.

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