PROFESSIONAL

PLUCKING MANGOES

WhiteHat Jr
Live Online Coding for Kids

INSTRUCTIONS:

Goal of the Project:

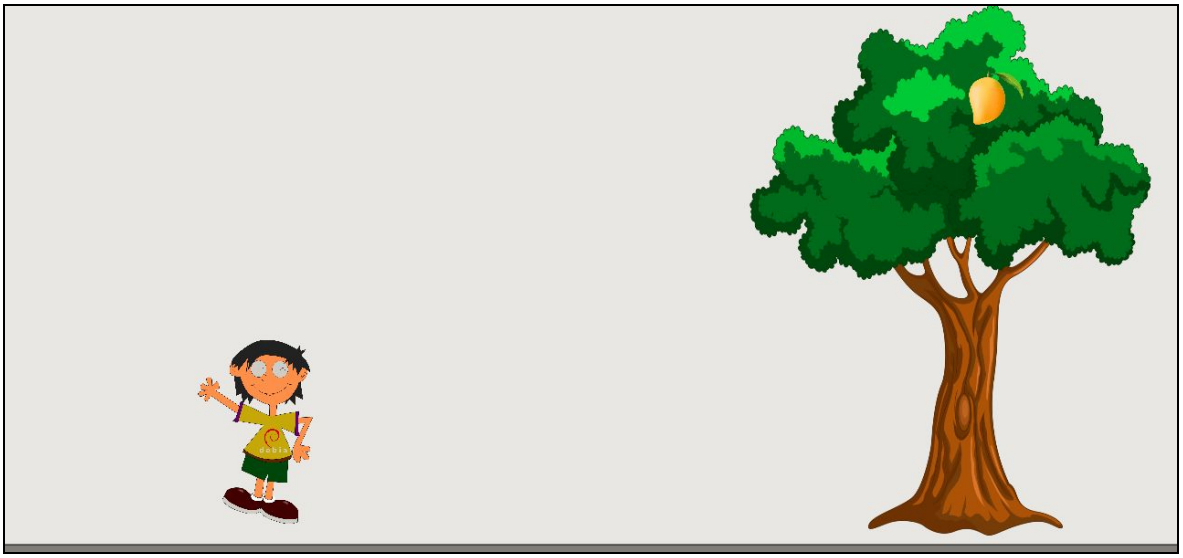
In Class 28, you learned how to make an elastic constraint called a slingshot for the Angry Bird.

In this project, you will apply what you have learned in the class to achieve the following goals.

Main Goal	• Create multiple mangoes. • Keep the stone in the boy's hand. • Write code to throw the stone.
Additional Goal 1	• Write the code such that the mangoes fall down when stone is thrown. • Create a slingshot to throw the stone. • Write code to reset the stone position and an instruction text.

Story:

For this summer season Juno is visiting his granny's home. In granny's garden he saw a mango tree and wanted to eat the mangoes. Help him pluck some mangoes by throwing a stone. See a video of this in action here.



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***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. Download images from here and add them in your project.
6. Start editing your code in sketch.js.

Specific Tasks to Achieve the Main Goal:

1. 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
    }
```

2. Adjust the position of the stone in the boy's hand.
3. Create **multiple Mango objects** (mango2, mango3, mango3, etc.) at different positions on the tree. (One mango object is already created for you.)
4. Add an elastic constraint between the hand of the boy and the stone body.

5. Add the **mouseDragged** and **mouseReleased** events in the **sketch.js** to launch the stone towards the mangoes on the tree.
6. Update the **fly()** method to set the **BodyA** to **null**.
7. 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 for the Main Goal:

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

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

2. 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.

Additional Goal 1:

Now help Juno to make manoges fall down from the tree when stone touches any mango on the tree.

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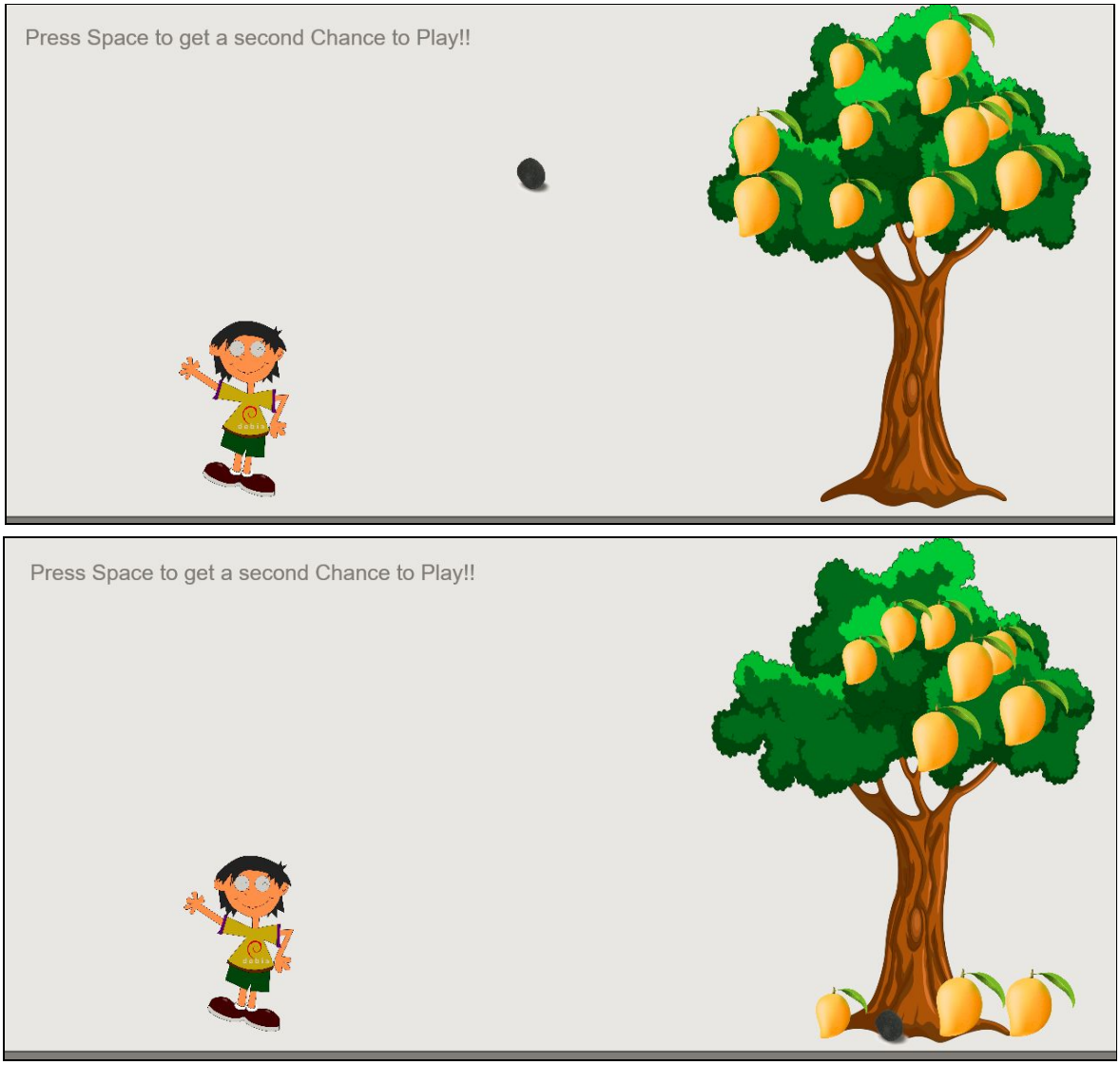

Specific Tasks to Achieve Additional Goal 1:

1. Create a **detectCollision** function in sketch.js and write the condition: **set mangoes isStatic as false**, whenever stone collides with them. (See Hints)

2. Call this **detectCollision** function in draw( ).

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

3. 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);
  }
}
```

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

***SAVE** all the changes made to the project and **SUBMIT** the shareable link in the Student Dashboard Projects panel against the correct class number.

Hints for the Additional Goal 1:

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

```
function detectollision(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);
  }
}
```

REMEMBER... Try your best, that's more important than being correct.
After submitting your project your teacher will send you feedback on your work.

———— XXX ———— XXX ———— XXX ———— XXX ———— XXX ————