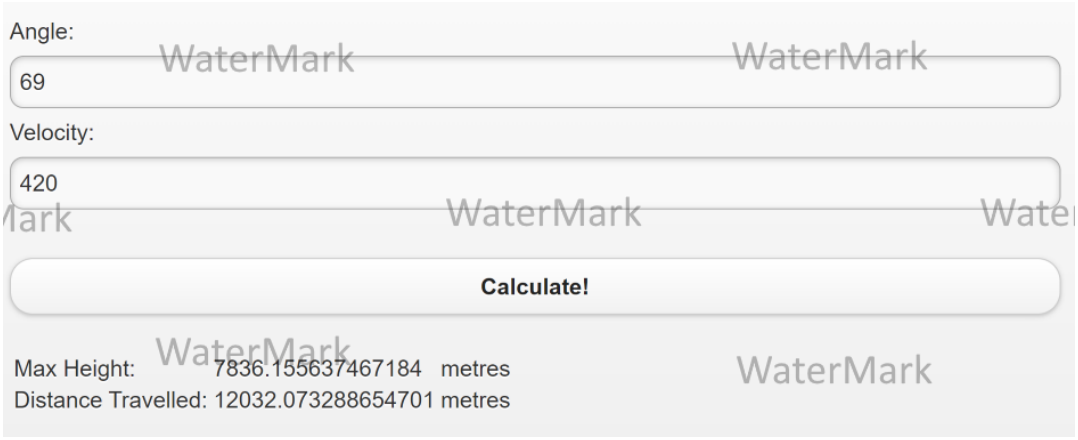
CSE4500 – Platform Computing

Project3 - Physics Projectile App 3

(Accompanying Lecture Video: https://www.youtube.com/watch?v=w1t79bEkUOk)

Introduction

In this project, we will expand our knowledge of JavaScript by modifying our Physics Projectile App. We will discuss the physics behind firing a projectile as well as use the corresponding mathematical formulas to create JavaScript functions that we can use in our app.



Instructions

1. Inside your folder *CSE4500Projects*, create a new folder called *Project3*.
2. Open the folder *Project3* using Visual Studio Code.
3. Add this starting code:

```
<!DOCTYPE html>
<html>

<head>
  <title>Physics Simulator App</title>
  <script type='text/javascript' src='scripts/projectileCalculations.js'>
  </script>
  <link rel="stylesheet" href="css/jquery.mobile-1.3.1.min.css">
  <script src="scripts/jquery-1.8.3.min.js">
  </script>
  <script src="scripts/chromeFileProtocolFix.js"></script>
  <script src="scripts/jquery.mobile-1.3.1.min.js">
  </script>
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>

<body onload='initialize()'>
  <div data-role="page">
    <div data-role="content">
      <label>Angle:</label>
      <input type='number' name='angle' id='angle' min='0'
      max='90' placeholder='In degrees'>
      <label>Velocity:</label>
      <input type='number' name='velocity' id='velocity'
      min='0' max='299792458' placeholder='In metres/second'>
      <br>
      <button onclick='update();'>
        Calculate!
      </button>
      <br>
      <table id="data">
        <tr>
          <td>Max Height:</td>
          <td id='height'>0</td>
          <td>metres</td>
        </tr>
        <tr>
          <td>Distance Travelled:</td>
          <td id='distance'>0</td>
```

```
          <td>metres</td>
        </tr>
      </table>
    </div>
  </div>
</body>

</html>
```

4. Follow the steps in the accompanying lecture video in order to finish Project3 (https://www.youtube.com/watch?v=w1t79bEkUOk). You will modify the code to complete the following:
    a. Add the jQueryMobile script from Canvas.
    b. Add the jQueryMobile Cascading Style Sheet Canvas.
    c. Add the ChromeProtocolFix file from Canvas.
    ~~d.~~ Add a file called *'projectileCalculations.js'* and add the code that you see in the video.

Lab Report

Use the 'Lab Report Template' found on Blackboard/Canvas. Your lab report must contain the following:

- Report:
  - Describe in one paragraph how we derived the math formulas for the distance and height of a projectile fired at an angle Θ and velocity v. Then describe how we turned these formulas to JavaScript functions.
- Source Code:
  - Project3.html
  - *projectileCalculations.js*.
- Screenshot:
  - Project3.html; do one test run where you set the angle to 45 degrees and velocity to 1000m/s.