Introduction Document for Week4 Hand-in Assignment

This project contains three classes:

1. Projectile
   1. This class serves as the blueprint for the Projectile object.
   2. Contains the following instance variables:
      1. initialVelocity, launchAngle, which store the initial velocity and launch angle of the projectile.
   3. Contains the constant 10, which is the gravitation constant in meters/sec^2
   4. Contains set and get methods for the instance variables.
   5. Contains get methods for:
      1. getVerticalComponent()
         1. initialVelocity \* sin launchAngle
      2. getHorizontalComponent()
         1. initialVelocity \* cos launchAngle
      3. getTravelTime()
         1. (2 \* verticalComponent) / gravitational constant
      4. getDistanceTraveled()
         1. horizontalComponent \* travelTime
      5. toString()
         1. Returns a string representation of all of the above.
2. Assignment4JFrame
   1. This class is the application class for the project, and is used to create an instance of the Projectile class.
   2. Extends the JFrame class
   3. Imports:
      1. javax.swing components so that JButtons, JFrames, JOptionPane dialog boxes, and JTextFields can be created.
      2. java.awt components so that:
         1. Event listeners and handlers can be created
         2. GridLayout can be used, which specified the arrangement of the components.
   4. Contains instance variables:
      1. initialVelocityJTextField, which is of type JTextField, and is used for the space that the user will enter the initial velocity.
      2. launchAngleJTextField, which is of type JTextField, and is used for the space that the user will enter the launch angle.
      3. velocityJLabel, which is of type JLabel, and is used to label initialVelocityJTextField.
      4. angleJLabel, which is of type JLabel, and is used to label launchAngleJTextField.
      5. calculateJButton, which is of type JButton, and is used to create the button that is pressed to initiate the events that calculate.
      6. cancelJButton, which of type JButton, and is used to create the button that is pressed to initiate the events that ends the program.
   5. Contains the private class ButtonHandler, which implements the ActionListener interface.
      1. This private class is used for event handling (what to do when buttons are pressed).
   6. Contains the private methods:
      1. isInputValid(), which returns true if the input received from the user is valid.
      2. displayInvalidInputMsg, which informs the user that an invalid input was received if:
         1. The input fails isInputValid() or
         2. The string could not be converted to the double data type.
   7. Assignment4Driver
      1. This class is used to create an instance of the Assignment4JFrame class
      2. The size of the JFrame created is specified.
      3. When the JFrame is closed, the program exits.

Screen shots:



