

## Week 15 MATLAB App Designer Activities

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Time required: 90 minutes

### Reading

Matlab A Practical Introduction to Programming and Problem Solving (Stormy Attaway)

Sections 13.3

### Assignment 1: Calypso's Cylinder Calculator

Create a GUI app named CylinderCalculator with App Designer that uses two text boxes for the user to enter the radius and height of a cylinder. Calculate and display the cylinder's surface area and volume.

- Volume of a cylinder:  $v = \pi r^2 h$
- Surface area of the cylinder:  $a = 2\pi r h + 2\pi r^2$

Example run:



## Assignment 2: Distance of Object Free Fall

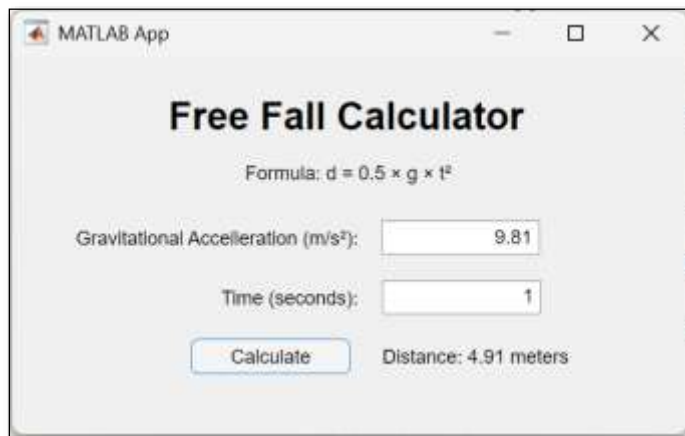
The following equation can be used to calculate the distance that an object will free fall over some amount of time. Assuming that the object starts at zero velocity and has no air resistance, create a code that can calculate the total distance traveled by an item in free fall for a given gravitational acceleration,

$g$  ( $\frac{\text{meters}}{\text{second}^2}$ ) and time,  $t(\text{seconds})$ .

$$d = \frac{1}{2}gt^2$$

1. Use  $g = 9.81 \text{ m/s}^2$  (standard acceleration due to gravity on Earth).
2. Create a function which takes in the time and gravity, and returns the total distance.

Example run:



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## **Challenge**

1. Add other planets gravitational acceleration as a choice to calculate.

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## **Assignment Submission**

1. Submit properly named and commented script files.
2. Attach a screenshot of showing the successful execution of each script.
3. Attach all to the assignment in Blackboard.