CS 115 - Introduction to Programming in Python

Lab 01

Lab Objectives: Input/output, data, expressions, selection statements.

1. Assume a ball is thrown straight up in the air with an initial velocity (m/s) and an initial height (m). Write a program, `Lab01_Q1.py` to calculate and display how high the ball will be after n seconds, where the initial velocity, height and number of seconds, n, are input by the user.

   The height after t seconds is calculated with the expression:
   $h = -16t^2 + v_0t + h_0$ where v_0 is the initial velocity and h_0 is the initial height.

   Sample Run: (User inputs are red)

   ```
   Enter initial velocity (m/s): 50
   Enter initial height (m): 5
   Enter number of seconds: 3

   The height after 3.0 seconds is 11.0 meters
   ```

2. A clothing store has a sale, where if you buy 2 suits you will get a 50% discount on the second. The 50% discount will be applied to the lower priced suit. If the total purchase cost is over 1000TL, an additional 10% discount will be applied. Write a program, `Lab01_Q2.py` that inputs the cost of 2 suits, and outputs the total purchase cost.

   Sample Run 1: (User inputs are red)

   ```
   Enter the cost of the first suit: 500
   Enter the cost of the second suit: 800
   Over 1000TL discount applied!
   The total cost of your purchase is 945.00TL
   ```

   Sample Run 2:
   ```
   Enter the cost of the first suit: 300
   Enter the cost of the second suit: 500
   The total cost of your purchase is 650.00TL
   ```

3. Write a Python script, `Lab01_Q3.py` that initializes p1 and p2 to 0 and display their value after the below conditions are checked.

Conditions	Operations
sets1 = 3 sets2 < 2	increase p1 by 3
sets1 = 3 sets2 = 2	increase p1 by 2, increase p2 by 1
sets1 = 2 sets2 = 3	increase p1 by 1, increase p2 by 2
sets1 < 2 sets2 = 3	increase p2 by 3
otherwise	print "Wrong score"

Sample Runs: (User inputs are shown in red.)

```
Enter sets1 :3
Enter sets2 :2
p1 = 2 p2= 1
```

```
Enter sets1 :1
Enter sets2 :4
Wrong score
p1 = 0 p2= 0
```

```
Enter sets1 :1
Enter sets2 :3
p1 = 0 p2= 3
```