General Instructions:

- **Lab is due online by 11:59 pm of the due date.** The assignment must be typed, not handwritten or scanned.

- Label your Python programs `q<num>.py`, where `num` is the question number. For example, your solution to the first question, will be stored in the file `q1.py`.

- Make sure you understand everything in this lab before getting started. Also, make sure your programs match the output exactly as given for each question. This is important as one of the keys to being a good programmer is attention to details.

- If you forgot to bring a computer, you can check out a temporary laptop from ZACH 383 for a few hours (depending on the availability).

- Before you leave the lab room make sure to checkout with the TA by showing your student ID.

- Grading will be based on correctness and clarity. **Copying work from another source and submitting it as your own is plagiarism.** The minimum penalty for plagiarism is a zero on this lab.
Lab Instructions

In this lab you will work with the print function, input function and basic math operations and get familiarized with the concept of variables. You can consult the following links to see examples: Print function and Input Function.

Lab Questions

1. Write a Python program (called q1.py) that asks the user for their name and age. Then the program greets them using howdy and tells how old they will be in the next year. Below are examples of output when the program is executed.

   Note: To print an empty line, use `print()`.

   Example #1. At the prompt “Enter your name”, the user enters John (line 1). The user then enters 20 at the age prompt (line 2). The greeting is printed on line 4.

```
Enter your name: John
Enter your age: 20
Howdy, John! Next year, you will be 21 years old.
```

Example #2. Similar to Example #1 but with different input.

```
Enter your name: Sarah
Enter your age: 24
Howdy, Sarah! Next year, you will be 25 years old.
```

2. Write a program (called q2.py) that takes area of a circle as input and prints its radius as output. Area of a circle is $A = \pi r^2$, where $r$ is the radius. Therefore, radius can be calculated as $r = \sqrt{\frac{A}{\pi}}$. Use the value $\pi = 3.1416$ for the calculation. Below are examples of output when the program is executed.

   Note: You can use $a ** 0.5$ to compute $\sqrt{a}$.

   Example #1. At the prompt “Enter area of a circle”, the user enters 12 (line 1). Then the radius is printed on line 3.

```
Enter area of a circle: 12
Radius of a circle with area 12.0 is 1.9544077624852607.
```
Example #2. Similar to Example #1 but with different input.

Enter area of a circle: 37.69
Radius of a circle with area 37.69 is 3.4636789048488725.

3. Write a program (called q3.py) that asks for the number of seconds as input. Your program needs to convert them into corresponding hours, minutes and seconds. Relation between these metrics are 60 seconds = 1 minute and 60 minutes = 1 hour.

Example #1. At the prompt “Enter number of seconds”, the user enters 137 (line 1). The output is printed on line 3.

Enter number of seconds: 137
137 seconds = 0 hours, 2 minutes and 17 seconds

Example #2. Similar to Example #1 but with different input.

Enter number of seconds: 4861
4861 seconds = 1 hours, 21 minutes and 1 seconds

Example #3. Similar to Example #1 but with different input.

Enter number of seconds: 32
4861 seconds = 0 hours, 0 minutes and 32 seconds

4. You are in a store to buy 2 items. You can check the price of the items from the label. There is a store-wide 25% discount offer running on the total price before tax. Sales tax is 8.25% of the price after discount. Write a program (called q4.py) that takes the price of the 2 items as input and prints the amount to pay after discount and tax.

Note: Discount is applied on the price given in the label. Tax is applied on the price after discount.

Example #1. Here, the user buys 2 items with price $8.75 and $25.99. Lines 1 and 2 ask the user to enter the price of these items. The total amount to pay is shown on line 4.
Price of 1st item: 8.75
Price of 2nd item: 25.99
You pay $28.204537499999997

**Example #2.** Similar to Example #1 but with different input.

<table>
<thead>
<tr>
<th>Price of 1st item: 5</th>
<th>Price of 2nd item: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>You pay $6.495</td>
<td></td>
</tr>
</tbody>
</table>

5. In a right-angled triangle, the length of hypotenuse, $c$ can be calculated from the length of other 2 sides, $a$ and $b$, using Pythagoras theorem, $c = \sqrt{a^2 + b^2}$. Write a program (called q5.py) that takes $a$ and $b$ as input and prints $c$ as output.

*Note:* You can use $a ** 0.5$ to compute $\sqrt{a}$.

**Example #1.** Here, the user enters $a$ and $b$ in line 1 and 2. Calculated value of $c$ is shown on line 4.

<table>
<thead>
<tr>
<th>Enter length of side a: 12</th>
<th>Enter length of side b: 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the hypotenuse of the right-angled triangle is 13.0</td>
<td></td>
</tr>
</tbody>
</table>

**Example #2.** Similar to Example #1 but with different input.

<table>
<thead>
<tr>
<th>Enter length of side a: 4.87</th>
<th>Enter length of side b: 2.53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the hypotenuse of the right-angled triangle is 5.487968658802636</td>
<td></td>
</tr>
</tbody>
</table>
Submitting Your Assignment

Once you have completed your programs, submit each of them (q1.py, q2.py, q3.py, q4.py and q5.py) electronically. You may resubmit your files as many times as necessary until the due date. Only the most recent submission will be graded.

You are required to include the following lines in the header of all your files:

```python
# File: filename.py
# Author: Student name
# Date: xx/xx/2019
# Section: Student section number
# E-mail: student_email@tamu.edu
# Description:
# e.g. This program asks for the coordinates of two points and computes the distance
# between the two points.
```

Submit your files on: gradescope.com