ISE224 Python for Engineers
Homework 1

1. Each person submits one .py file named as **[HW1_CaneID].py**
2. Follow the format specified in the **hw_template.py**
3. Due: February 9th 11:59 PM (ET)

1. Write a program to print your name, major and your favorite food in three lines on screen.

   Output example
   ```
   Yujie
   Industrial Engineering
   Orange chicken
   ```

2. Write a program to print your name, major and your favorite food in three line on screen with input() function.
   Input example
   ```
   What is your name? Yujie
   What is your major? Industrial Engineering
   What is your favorite food? Orange chicken
   ```

   Output example
   ```
   Yujie
   Industrial Engineering
   Orange chicken
   ```

3. Write a program that asks for the user's name, birthplace, and favorite hobby, and then prints a sentence combining these inputs.
   Input example
   ```
   Name: Alice
   Birthplace: New York
   Favorite Hobby: Reading
   ```

   Output example
   ```
   I am Alice, I was born in New York, and my favorite hobby is
   Reading.
   ```

4. Write a program that prompts the user to enter 3 inputs, <input1> <input2> <input3>, and then prints out the inputs as the following results using end and sep parameters in the print function: <input1>@_@<input2>>@_@<input3>^_^

Input example
```
Your first input: 12
Your second input: 8
Your third input: 9
```

Output example
```
12@_@8@_@9^_^
```

5. Write a program that prompts the user to enter two numbers and then prints the sum of the numbers.

Input example
```
Your first number: 12
Your second number: 8
```

Output example
```
20
```

6. Write a program that prompts the user to enter a number and print this number in 4 decimals.

Input example
```
Your number: 2
```

Output example
```
2.0000
```

7. Write a program that prompts the user to enter their age and then prints "You are [age] years old." (Hint: integer)

Input example
```
Your age: 20
```

Output example
```
You are 20 years old.
```

8. Write a program to *input* a Fahrenheit temperature, and then convert it to Celsius. Finally, print the temperature to the screen at 1 decimal place.

Hint: $C = \frac{5}{9} \times (F - 32)$

Input example
```
Fahrenheit: 53.6
```

Output example
```
Celsius: 12.0
```

9. Write a program to calculate the perimeter and the area of the circle with input the radius from keyboard.

   1. Input a radius (r) from keyboard.
   2. Print the perimeter and the area of the circle
   3. Required format of the output:
      a. 4 decimals
      b. minimum field width = 10
      c. right alignment

```
Hint 1. π = 3.14159
Hint 2. perimeter (circumference) of a circle: C = 2 * π * r
Hint 3. Area of a circle: A = π * r^2
```

Input example
```
Enter the radius of the circle: 10
```

Output example
```
Perimeter:    62.8318
Area:    314.1593
```

10. Stock Transaction Program (Q2.12 from textbook)
Last month, Joe purchased some stock in Acme Software, Inc. Here are the details of the purchase:
- The number of shares that Joe purchased was 2,000.
- When Joe purchased the stock, he paid $40.00 per share.
- Joe paid his stockbroker a commission that amounted to 3 percent of the amount he paid for the stock.

Two weeks later, Joe sold the stock. Here are the details of the sale:
- The number of shares that Joe sold was 2,000.
- He sold the stock for $42.75 per share.
- He paid his stockbroker another commission that amounted to 3 percent of the amount he received for the stock.

Write a program do the following processes.
- Input how many shares he bought.
- Input the price per share he bought.
- Input commission rate.
- Input how many shares he sold.
- Input the price per share he sold.
- Input the commission rate of sale.
- Display the amount of money joe paid for the stock.
- Display the amount of commission Joe paid his broker when he bought the stock.

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- Display the amount for which Joe sold the stock.
- Display the amount of commission Joe paid his broker when he sold the stock.
- Display the amount of money that Joe had left when he sold the stock and paid his broker (both times). It this amount is positive, then Joe made a profit. It the amount is negative, then Joe lost money.

Input example

```
How many shares he bought: 2000
Price per share he bought: 40
Commission rate of purchase: 0.03
How many shares he sold: 2000
Price per share he sold: 42.75
Commission rate of sale: 0.03
```

Output example

```
He paid 80000.0 for the stock.
He paid 2400.0 to his broker when he bought this stock.
He received 85500.0 for the stock.
He paid 2565.0 to his broker when he sold this stock.
He left 535.0
```