Question 1:

1. This code is saved in *q1.py*
2. - This program allows user to input flower's name, its number of petals, and its price.
   - This program prompts its user to input the flower's name value as string consisting only alphabet letters.
   - If the user fails to input the name value as required, an error message "Error: The input must be a string containing only alphabets" will show up and the program will ask the user to reinput the value.
   - This program prompts its user to input the number of flower's petal as integer.
   - If the user fails to input the number petals of flower as integer, an error message "Error: The input must be an integer number" will show up and the program will ask the user to reinput the value.
   - This program prompts its user to input the flower's price as a float number.
   - If the user fails to input the price of flower as a float number, an error message "Error: The input must be a float number" will show up and the program will ask the user to reinput the value.
   - This program proceeds the flower class which allows its user to set the value and retrieve the value of the name, number of petals, and price.
3. Execute as followings:

```
D:\py\CSC1001\Assignment 3>q1.py
Enter the name of the flower: Sakura
Enter its number of petals: 6
Enter its price: 20.5
Name: Sakura
Number of Petals: 6
Price: 20.5
```

Question 2:

1. This code is saved in *q2.py*
2. - This program allows user to input a polynomial (which later will be saved in a Polynomial Class) in any of the following formats: "a*x^b", "ax^b", "axb", or "a*xb". Each of the following terms will be separated by a sign "+" or "-".
   - This program prompts its user to input the polynomial string.
   - If the inputted value is empty, an error message "Error: Input not found" will show up and the program will ask the user to reinput the value.
   - If the inputted value consist of a variable with more than 1 character, an error message "Error: The inputted variable should only consist of one letter" will show up and the program will ask the user to reinput the value.
   - If the inputted value is not valid (given the polynomial can't be derivated), an error message "Error: Invalid syntax" will show up and the program will ask the user to reinput the value.

- This program outputs the derivated of the inputted polynomial in the format “a*x^b” for each terms that are separated with “+” or “-“ sign.

3. Execute as followings:

```
D:\py\CSC1001\Assignment 3>q2.py
Input the polynomial: 3*x^6 - 4x^5 + 5x4 - 6*x3 + 1
The derivated the polynomial is: 18*x^5-20*x^4+20*x^3-18*x^2
```

Question 3:

1. This code is saved in *q3.py*
2. - This program allows its user to input the value of: length of river, number of bears, number of fishes, and number of steps as the initial value of river in Ecosystem Class.
   - This program prompts the user to input all of the values in integer variable types.
   - If the user fails to input those values as required, an error message “Error: The input must be an integer number” will show up and the program will ask the user to reinput the value.
   - This program simulates and outputs the condition of the ecosystem given by the adapted states using the random.
3. Execute as followings:

```
D:\py\CSC1001\Assignment 3>q3.py
Enter the length of river: 5
Enter the number of fishes: 2
Enter the number of bears: 1
Enter the number of steps: 3
The initial state of river is: FNFNB
The state of river after 1 step is: NFNFB
The state of river after 2 steps is: NFNFB
The state of river after 3 steps is: NNFBN
```