Question 1

1.This code is saved in q1.py

2.This program allows the user to input the final account value, annual interest rate (the unit is %) and the number of years.

These numbers should be positive real numbers.

The output would be the initial value of money that has to be saved to obtain the final account value.

3.Execute as followings:

```
PS C:\Users\lonla\OneDrive - CUHK-Shenzhen\桌面\program> & C:/Users/lonl
a/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/lonla/OneD
rive - CUHK-Shenzhen/桌面/program/Assignment/CSC1001/q1.py"
Enter the final accont value:1000
Enter the annual interest rate:4.25
Enter the number of years:5
The initial value is: 812.119020
```

Question 2

1.This code is saved in q2.py

2.This program allows the user to input a positive integer, and will output each of its digits one by one.

3.Execute as followings:

```
PS C:\Users\lonla\OneDrive - CUHK-Shenzhen\桌面\program> & C:/Users/lonl
a/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/lonla/OneD
rive - CUHK-Shenzhen/桌面/program/Assignment/CSC1001/q2.py"
Enter an integer: 3125
3
1
2
5
```

Question 3

1.This code is saved in q3.py

2.This program allows the user to input a number m and will output a number n which is the smallest integer that n**2 is greater than m.

3.Execute as followings:

```
PS C:\Users\lonla\OneDrive - CUHK-Shenzhen\桌面\program> & C:/Users/lonl
a/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/lonla/OneD
rive - CUHK-Shenzhen/桌面/program/Assignment/CSC1001/q3.py"
Enter a number: 16
5
```

Question 4

1.This code is saved in q4.py

2.This program allows the user to input a positive integer and will output a table which shows every positive integer m that is smaller or equal to the number and the values of m+1 and m**(m+1).

If the user fails to input a qualified number, the user will receive a reminder and be asked to input again until the qualified number appears.

3.Execute as followings:

```
PS C:\Users\lonla\OneDrive - CUHK-Shenzhen\桌面\program> & C:/Users/lonl
a/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/lonla/OneD
rive - CUHK-Shenzhen/桌面/program/Assignment/CSC1001/q4.py"
Please enter a number: 10
m       m+1     m**(m+1)
1       2       1
2       3       8
3       4       81
4       5       1024
5       6       15625
6       7       279936
7       8       5764801
8       9       134217728
9       10      3486784401
10      11      100000000000
```

Question 5

1.This code is saved in q5.py

2.This program allows the user to input an integer and will print all the prime numbers which are smaller than this number, in each line there are less than 9 numbers.

If the user fails to input a qualified number, the user will receive a reminder and be asked to input again until the qualified number appears.

3. Execute as followings:

```
PS C:\Users\lonla\OneDrive - CUHK-Shenzhen\桌面\program> & C:/Users/lonl
a/AppData/Local/Programs/Python/Python39/python.exe "c:/Users/lonla/OneD
rive - CUHK-Shenzhen/桌面/program/Assignment/CSC1001/q5.py"
Please enter a number: -1
invalid input
Please enter a number: adf
invalid input
Please enter a number: 97
The prime numbers smaller than 97 include:
2 3 5 7 11 13 17 19
23 29 31 37 41 43 47 53
59 61 67 71 73 79 83 89
```

Question 6

1.This code is saved in q6.py

2.This program allows the user to input a function, the interval end points a, b and number of sub-intervals n. The program will output the numerical integration of f over [a, b] using equation (1).

If the user fails to input a qualified number, the user will receive a reminder and be asked to input again until the qualified number appears.

3.Execute as followings: