

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 D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments> python q1.py
Enter the final account value:5000
Enter the annual interest rate:2.3
Enter the number of years:3
The initial value is: 4670.28198238828
```

Question 2

- 1.This code is saved in q2.py.
- 2.This program allows the user to input a number.
The number should be a positive integer.
The output would be each of its digits one by one.

- 3.Execute as followings:

```
PS D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments\CUHKSZ-CSC1001\Assignment1> python q2.py
Enter an integer:114514
1
1
4
5
1
4
```

Question 3

- 1.This code is saved in q3.py.
- 2.This program allows the user to input a number.
The number should be a real number.
The output would be the smallest integer n such that n^2 is greater than m .

- 3.Execute as followings:

```
PS D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments\CUHKSZ-CSC1001\Assignment1> py q3.py
Enter a number:39
n = 7
```

Question 4

- 1.This code is saved in q4.py.
- 2.This program allows the user to input a number.
The number should be a positive integer.
The output would be a table with N rows and 3 columns. In the m^{th} row, the output would respectively be m , $m+1$, m^{m+1} .
- 3.If the user fails to input a positive integer, the user will receive a reminder and be asked to input again until the qualified number appears.
- 4.Execute as followings:

```
PS D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments\CUHKSZ-CSC1001\Assignment1> python q4.py
Enter a positive integer:aaa
Please enter a positive integer
Enter a positive integer:-10
Please enter a positive integer
Enter a positive integer: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 a number.
The number should be a positive integer.
The output would be all the prime numbers that are smaller than the input. There are no more than 8 numbers in a row.
- 3.If the user fails to input a positive integer, the user will receive a reminder and be asked to input again until the qualified number appears.
- 4.Execute as followings:

```
PS D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments\CUHKSZ-CSC1001\Assignment1> py q5.py
Enter a positive integer:adswe'feqq
Please enter a positive integer
Enter a positive integer:asdjw
Please enter a positive integer
Enter a positive integer:100.0
Please enter a positive integer
Enter a positive integer:-5482
Please enter a positive integer
Enter a positive integer:100
The prime numbers smaller than 100 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
97
```

Question 6:

- 1.This code is saved in q6.py.
- 2.This program allows the user to input three numbers and one function name (sin, cos or tan)
The first and second number (a and b) should be a real number, the third one should be a positive integer.
The output would be the numerical function of the function over the interval [a, b].
- 3.If the user fails to input the correct types, the user will receive a reminder and be asked to input again until the qualified number or function appears.
- 4.Execute as followings:

```
PS D:\Users\David\OneDrive - CUHK-Shenzhen\Course\Term 2\CSC1001\Assignments\CUHKSZ-CSC1001\Assignment1> py q6.py
Enter the left end point of the interval:qweqw
Please Enter a real number!
Enter the left end point of the interval:1
Enter the right end point of the interval:10
Enter the number of sub-intervals you want to divide:asd
Please enter a positive integer!
Enter the number of sub-intervals you want to divide:-10
Please enter a positive integer!
Enter the number of sub-intervals you want to divide:10
Please enter the function name(sin, cos, or tan):123
Please enter the correct function name!
Please enter the function name(sin, cos, or tan):xzc
Please enter the correct function name!
Please enter the function name(sin, cos, or tan):tan
The numerical integration of tan(x) over interval [ 1 , 10 ] is 13.58293984644723
```