Question 1

1. This code is saved in 1_1.py
2. This program allows the user to input the final account value, annual interest rate in percent and the number of years. The output would be the initial account value of money that has to be saved to obtain the final account value.
3. These input numbers should be positive real numbers.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1> c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '64450' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_1.py'
Please enter the final account value:5000
Please enter the annual interest rate in percent:4.25
Please enter the number of years:3
The initial value is: 4413.080132309107
```

Question 2

1. This code is saved in 1_2.py
2. This program allows the user to input a positive integer and displays each of its digits one by one (one digit per line).
3. The input number should be a positive integer.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1> c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '64634' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_2.py'
Please enter a positive number:98954
9
8
9
5
4
```

Question 3

1. This code is saved in 1_3.py
2. This program allows the user to input a positive number. The output is the smallest integer n such that n**2 is greater than m.
3. The input number should be a positive number.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1> c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '64827' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_3.py'
Please enter a number:50
8
```

Question 4

1. This code is saved in 1_4.py
2. This program allows the user to input anything. But the table will only be printed if the input is a positive integer. The table with N rows and 3 columns. In the mth row, the program will output three numbers: m, m+1, and m**(m+1).
3. The input can be anything. If it is not a positive integer, the program will remind you and make you input again.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1> c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '52720' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_4.py'
Please enter a positive integer:9wqwe
Please enter a positive integer!
Please enter a positive integer:-98
Please enter a positive integer!
Please enter a positive integer:4
       m       m+1     m**(m+1)
       1       2       1
       2       3       8
       3       4       81
       4       5       1024
```

Question 5

1. This code is saved in 1_5.py
2. This program allows the user to input anything. But only numbers>2 will be given primes smaller than itself. The output is all the prime numbers which are smaller than the input. And the output at most 8 prime numbers in each line.
3. The input can be anything. If it is a string or numbers<=0, the program will remind you to input a positive integer and make you input again. If it is 1 or 2, it will tell you that 1 or 2 has no prime smaller than itself and make you input again.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1>  c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '56274' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_5.py'
Please enter a positive integer:asdasda
You must enter a positive integer!
Please enter a positive integer:-9
You must enter a positive integer!
Please enter a positive integer:2
No primes smaller than 2.
Please enter a positive integer:1
No primes smaller than 1.
Please enter a positive integer:50
2 3 5 7 11 13 17 19
23 29 31 37 41 43 47
```

Question 6

1. This code is saved in 1_6.py
2. This program allows the user to input anything. But only function==sin or cos or tan, initial point and end point==number, n==a positive integer, only in this case, the result will be printed. The output is the result of the equation:

$$\int_a^b f(x)dx \approx \sum_{i=1}^{n} \frac{b-a}{n} f\left(a + \frac{(b-a)}{n} \times (i - 1/2)\right) \qquad (1)$$

3. The input can be anything. But only correct format will be calculated, if you enter the wrong format, the program will remind you and make you enter again.
4. Execute as followings:

```
PS C:\Users\24984\Desktop\CSC1001\Assignments\1>  c:; cd 'c:\Users\24984\Desktop\CSC1001\Assignments\1'; & 'C:\Users\24984\AppData\Local\Programs\Python\Python39\python.exe' 'c:
\Users\24984\.vscode\extensions\ms-python.python-2021.2.582707922\pythonFiles\lib\python\debugpy\launcher' '61786' '--' 'c:\Users\24984\Desktop\CSC1001\Assignments\1\1_6.py'
Please enter a trigonometric function(sin,cos,tan):jefebf
The input should be one of"sin", "cos", "tan"!
Please enter a trigonometric function(sin,cos,tan):sin
Please enter the interval initial point:asdas
"a" should be a number!
Please enter the interval initial point:1
Please enter the interval end point:asdasd
"b" should be a number!
Please enter the interval end point:2
Please enter a positive integer:dasda
"n" should be a positive integer!
Please enter a positive integer:-1231
"n" should be a positive integer!
Please enter a positive integer:12.21214
"n" should be a positive integer!
Please enter a positive integer:10
The result of that equation is 0.9568477791570755.
```