1. Write a program that accepts a sentence and shows number of words, the first word, and the last word in the sentence.

   Sample Program Output 1:

   ```
   Enter a sentence: My Python is not a snake
   Number of words: 6
   First word: My
   Last word: snake
   ```

   Sample Program Output 2:

   ```
   Enter a sentence: I am inevitable. And I am Ironman
   Number of words: 7
   First word: I
   Last word: Ironman
   ```

2. Write a program that continuously accepts students' final exam marks until a negative number is entered. After that, the program will display the average of the exam marks and the number of students who pass and the number of students who fail. Passing mark is 50.

   Sample Program Output:

   ```
   Enter final exam mark: 50
   Enter final exam mark: 32
   Enter final exam mark: 68
   Enter final exam mark: 72
   Enter final exam mark: 100
   Enter final exam mark: 15
   Enter final exam mark: 48
   Enter final exam mark: 85
   Enter final exam mark: -1
   Average = 58.75
   No. of students who passed: 5
   No. of students who failed: 3
   ```

3. Consider a program that maintains a list. The list supports the following commands:
   a. add e: insert an integer e at the end of the list.
   b. remove i: remove the element at index i from the list.
   c. print: print the content of the list.

   Write a program that accepts a positive integer N, followed by N commands. The program then performs each command in order.

Sample Program Output 1:

```
Enter N: 4
Enter command: add 123
Enter command: add 4
Enter command: add 56
Enter command: print
[123, 4, 56]
```

Sample Program Output 2:

```
Enter N: 8
Enter command: add 123
Enter command: add 4
Enter command: remove 0
Enter command: print
[4]
Enter command: add 56
Enter command: add 789
Enter command: remove 1
Enter command: print
[4, 789]
```

4. Consider a game played by N players, in which each player's score represents the number of mistakes made (i.e. winner is the one with the least score). We are interested to find the second smallest score. Write a program that accepts N scores, each separated by a space. Then, the program prints the second smallest score.

Sample Program Output 1:

```
Enter scores: 6 2 5 2 3
Second smallest score = 3
```

Sample Program Output 2:

```
Enter scores: 2 2 5 2 3 1 3 1 5 1 1
Second smallest score = 2
```

5. Create a text file named data.txt. Type some lines of words inside and save the file. Then, write a program that reads the text file, and show the number of lines in the file, the first line, and the last line in the file. Ensure that your program is saved in the same folder that contains data.txt.
    If the content of data.txt is:

```
My Python
is
not
a snake
```

Then the output should be:

```
Line count: 4
First line: My Python
Last line : a snake
```

6. A text file named vehicles.txt is provided. Write a program to open vehicles.txt and count the number of the word "car" found in the file. The expected output should be 5.

7. A text file named numbers.txt is provided. It contains a list of integers with one integer per line. Write a program to find out the total number of integers, the largest, the smallest, the sum, and the average of the integers. Ensure that the output formatting is similar to the Expected Program Output below. You program should still produce correct result even if the content of numbers.txt is changed.

    Expected Program Output:

    ```
    Count =   16
    Largest =   9048 in line 9
    Smallest =   885 in line 4
    Sum =   82721
    Average =   5170.0625
    ```

8. A text file named months.txt is provided. It has 12 lines with each line containing one of the months of the year. Write a program that ask the user for a letter, and then displays the months containing that letter.

Sample Program Output 1:

```
Enter character to search: r
January, February, March, April, September, October, November,
December
```

Sample Program Output 2:

```
Enter character to search: k
No answer.
```

9. The keyboard in use on nearly all computers is known as the Qwerty keyboard since the letters in the top letter line read QWERTYUIOP. A word is called a Qwerty word if all its letters appear on the top letter line of the keyboard. Some examples are typewriter, repertoire, and treetop. Write a program that requests a word as input and then determines whether or not it is a Qwerty word. Use a Boolean-valued function named isQwerty that evaluates the word.

Sample Program Output 1:

```
Enter a word: TRY
TRY is a Qwerty word.
```

Sample Program Output 2:

```
Enter a word: Poly
Poly is not a Qwerty word.
```

10. An integer is said to be a perfect number if the sum of its divisors, including 1 (but not the number itself), is equal to the number. For example, 6 is a perfect number, because 6 = 1 + 2 + 3. Write a function is_perfect that determines whether parameter number is a perfect

number. Use this function in a program that determines and prints all the perfect numbers between 1 and 1000. Print the divisors of each perfect number to confirm that the number is indeed perfect.

Expected Program Output:

```
6 is perfect. Divisors: [1, 2, 3]
28 is perfect. Divisors: [1, 2, 4, 7, 14]
496 is perfect. Divisors: [1, 2, 4, 8, 16, 31, 62, 124, 248]
8128 is perfect. Divisors: [1, 2, 4, 8, 16, 32, 64, 127, 254,
508, 1016, 2032, 4064]
```