Practice exercises: Week 4 (Loops : while and for loops)

1. Write code that accepts a sentence as input and print number of alphabets in uppercase, lowercase, and numbers in the given input . Sample run here:

```
Enter the sentence that with alphabets and numbers:LUT University Lahti has 2 campuses
Number of alphabets in uppercase: 5
Number of alphabets in lowercase: 24
Number of digits: 1
```

2. Write a program that accepts any positive integer number as input (n) and print the sum of odd and even numbers are in between 1 and n. Sample run is here. [Try both for and while loops]

```
Enter n value (>=1 atleast):6
The running result of for loop:
Sum of odd numbers: 9
Sum of even numbers: 12
The running result of while loop:
Sum of odd numbers: 9
Sum of even numbers: 12
```

The above results were obtained based on numbers in between 1 and 6 (n). That is, sum of odd numbers: 1+3+5 =9 and even numbers: 2+4+6 = 12. one more here

```
Enter an integer(>=1):1
The running result of for loop:
Sum of all odd: 1
Sum of all odd: 0
The running result of while loop:
Sum of all odd: 1
Sum of all odd: 0
```

3. Write code that accepts n number of of positive numbers as input and that should be continued until the user enters -1 (termination user input). Then it should print the smallest, biggest and average of those values at the end.

Example run is here:

```
>>> %Run ex3_p.py

Enter a non-negative integer.Enter -1 to terminate input process.
Enter a value:4
Enter a value:2
Enter a value:-3
Enter a value:8
Enter a value:5
Enter a value:-1
Smallest number : -3
Biggest number: 8
average of all numbers: 3.2
```

one more sample run is here:

```
Enter a non-negative integer.If you enter -1, input ends.
Input data:-1
No valid input.
```

4. Write a program that accpets any integer as input and print whether it is a prime number or not. Prime number is a natural which is greater than one. Notably, it can be divided by 1 and itself. That is, the number which can not be divided by other integers. Example 7→ it can be divided by 1 and itself.

5. Use for loop to print the pattern as shown here:

```
★
★★
★★★
★★★★
★★★★★
★★★★★
★★★★
★★★
★★
★
```

6. A positive integer is called a perfect number if it is equal to the sum of all of its positive divisors, excluding itself. For example, 6 is the first perfect number because $6 = 3 + 2 + 1$. The next is $28 = 14 + 7 + 4 + 2 + 1$. There are four perfect numbers less than 10000. Write a program to find all these four numbers.