Lab 12   File IO

Please test the correctness of your programs using **PASS**.

Note:
(1) In this lab, we will use a simple file name, which assumes that the file is in the same directory (folder) as the one in which your program is running.

e.g.,   If you use **Visual Studio 2015**, you can open the "**Solution Explorer**" → *right-click your project* → *select* "***Open Folder in File Explorer***" ->*go into either Debug or Release directory*, depending upon the *build settings*. Put the input file(s) in this directory. You can also find output file(s) here after your program is run. Build your solution if you cannot find such a directory.

(2) When testing your code on **PASS**, you don't need to upload the input files. Just *upload/copy-paste your code* to **PASS** as usual.

Q-1.

Write a program in C++ to read the integers from a file named **Q1input.txt**, calculate sum of them and then write the expected output to both screen *(standard output/console)* and the file named **Q1output.txt**.

Sample Input:

Q1input.txt   *(Not changed by program):*

```
 1 2 3 4 5 6 8 9 10 23
```

Sample Output:

Screen Output:

```
 Sum of 1 2 3 4 5 6 8 9 10 23 is 71
```

Q1output.txt   *(After program is run):*

```
 Sum of 1 2 3 4 5 6 8 9 10 23 is 71
```

Q-2.

Write a program that opens the file named **Q2input.txt** and counts the number of characters ('a' - 'z' and 'A' - 'Z'), digits ('0'-'9'), and other characters in that file. Print out the expected output on the screen.

Sample Input:

Q2input.txt

```
 a s w d 1 2 3 ^ 2 * 2 d ) j # k > w ? | S I M - ! B W
```

Sample Output:

Screen Output:

```
 The number of characters is 13
 The number of integer numbers is 5
 The number of other characters is 9
```

Q-3.

Write a program that reads a file name as a **cstring** (maximum of 15 characters, including the filename extension) and _counts the occurrence of letters_ that occur in the file (count uppercase and lowercase versions of a letter as the same letter, and ignore all other characters). _Output the letters in alphabetical order_ and _list only those letters that occur in the input file_. Write letters that occur in the input file to the file named **Q3output.txt**.

Sample Input:

Q3input.txt

```
The quick brown fox jumps over the lazy dog 1234567890
```

Sample Output:

Screen Output:

```
Enter file name (maximum of 15 characters):
Q3input.txt
The occurrence of 'a' is 1
The occurrence of 'b' is 1
The occurrence of 'c' is 1
The occurrence of 'd' is 1
The occurrence of 'e' is 3
The occurrence of 'f' is 1
The occurrence of 'g' is 2
The occurrence of 'h' is 2
The occurrence of 'i' is 1
The occurrence of 'j' is 1
The occurrence of 'k' is 1
The occurrence of 'l' is 1
The occurrence of 'm' is 1
The occurrence of 'n' is 1
The occurrence of 'o' is 4
The occurrence of 'p' is 1
The occurrence of 'q' is 1
The occurrence of 'r' is 2
The occurrence of 's' is 1
The occurrence of 't' is 2
The occurrence of 'u' is 2
The occurrence of 'v' is 1
The occurrence of 'w' is 1
The occurrence of 'x' is 1
The occurrence of 'y' is 1
The occurrence of 'z' is 1
```

Q3output.txt   _(After program is run):_

```
a b c d e f g h i j k l m n o p q r s t u v w x y z
```