Lab's Scope:

- **File Handling (Read/Write) – Part 1**

Problem 1:

From the e-Learning, download file demo.txt in the same folder of your project.
Write a program to read the text from the file line by line and print each line on the console.

Solution:

```cpp
#include <iostream>
#include <fstream>
#include <string>
using namespace std;

int main()
{
    ifstream demoFile;
    demoFile.open("demo.txt");
     string line;
    while (!demoFile.eof())
    {
        getline(demoFile, line);
        cout << line << endl;
    }
    demoFile.close();
    return 0;
}
```

Problem 2:

From the e-Learning, download file paragraph.txt in the same folder of your project.
Write a program that reads text paragraph from the file character by character, and convert all the whole paragraph to upper case then append the capitalized paragraph by the end of the same file.

Solution:

```cpp
#include <iostream>
#include <fstream>
#include <string>;
using namespace std;

int main()
{
    fstream paragraphFile;
```

```cpp
    paragraphFile.open("paragraph.txt", ios::in);
    char c, capital_c;
    string p="";
    while (!paragraphFile.eof())
    {
        paragraphFile >> c;
        cout << c;
        capital_c= toupper(c);
        p+= capital_c;
    }
    paragraphFile.close();

    paragraphFile.open("paragraph.txt", ios::app);
    paragraphFile<<p;
    paragraphFile.close();
    return 0;
}
```

Problem 3:

Write a program to create a new text file and write some text into it. Then open the file for reading, count the number of lines and the number of words in the text file, and prints them on the console.

Solution:

```cpp
#include <iostream>
#include <fstream>
#include <string>
using namespace std;

int main()
{
    fstream sampleFile;
    int count_words = 0;
    int count_sentences = 0;
    string line;

    sampleFile.open("sample.txt", ios::out);
    sampleFile << "Computer is a device" << endl;
    sampleFile << "Programming is interesting" << endl;
    sampleFile << "I am a good programmer" << endl;
    sampleFile.close();
    sampleFile.open("sample.txt", ios::in);

    while (getline(sampleFile, line))
    {
        count_sentences++;
    }
```

```cpp
    sampleFile.close();

    sampleFile.open("sample.txt", ios::in);

    while (sampleFile>>line)
    {
        count_words++;
    }

    sampleFile.close();
    cout << "The number of sentences is:" << count_sentences<<endl;
    cout << "The number of words is:" << count_words<<endl;

    return 0;
}
```

Problem 4:

Write a program that reads the following files available on e-learning:
- A file called "surnames.txt" containing the first name of the students in a file.
- A file called "fathernames.txt" containing the fathers' name of the students in a file.

The program should read the first name from the first file, and his father's name from the second file, and write the full name of the student in a third file.

Solution:

```cpp
#include <iostream>
#include <fstream>
using namespace std;

int main()
{
    ifstream firstFile, secondFile;
    ofstream thirdFile;
    string surname, fathername, fullname;
    firstFile.open("surnames.txt");
    secondFile.open("fathernames.txt");
    thirdFile.open("fullnames.txt");
    while (firstFile >> surname)
    {
        secondFile >> fathername;
        fullname = surname + " " + fathername;
        thirdFile << fullname<<endl;
    }

    firstFile.close();
    secondFile.close();
    thirdFile.close();

    return 0;
}
```

Problem 5:

Write a program that reads lines from a file, reverses each one, and writes the reversed lines into another file.

Solution:

```cpp
#include <iostream>
#include <fstream>
#include <string>;
using namespace std;

int main()
{
    fstream firstFile, secondFile;
    firstFile.open("normal.txt", ios::in);
    secondFile.open("reverse.txt", ios::out);
    string sentence,reverse;
    int j;

    while (getline(firstFile, sentence))
    {
        cout << sentence<<endl;
        reverse = sentence;
        j = 0;
        for (int i = sentence.length()-1; i>=0; i--)
        {

            reverse.at(j) = sentence.at(i);
            j++;

        }
        secondFile << reverse << endl;
    }
    firstFile.close();
    secondFile.close();
    return 0;
}
```

Problem 6:

Write a program that given a file with text, takes a character as input from the user. Use this character to search and get all words in the file that begin with this character. The program should save the extracted words in another file.

Solution:

```cpp
#include<iostream>
#include<fstream>
using namespace std;
int main() {
        char c;
        string word;
        fstream fin, fout;
        fin.open("sample1.txt", ios::in);
        fout.open("words.txt", ios::out);
        cout << "What are you looking for : ";
        cin >> c;
        while (fin >> word) {
                if (word.at(0) == c) {
                        fout << word << endl;
                }
        }
        fin.close();
        fout.close();
        return 0;
}
```

Problem 7:

Write a program that writes the below sentences in a file, then use seekg() to extract the words
"finish" and "North Coast." and print them on the console.
The sentences are:

I want to finish the semester.
I want the holiday to start.
I want to go to the North Coast.

Solution:

```cpp
#include<iostream>
#include<fstream>
using namespace std;
int main() {
        fstream fin;
        string word;
        fin.open("sample2.txt", ios::in);
        fin.seekp(10, ios::beg);
        fin >> word;
        cout << word << endl;
        fin.seekp(-12, ios::end);
        fin >> word;
        cout << word;
        fin.seekp(-7, ios::end);
        fin >> word;
        cout << " "<<word << endl;
        fin.close();
        return 0;
}
```