

GE 211

C++ Programming

Lab 5

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Objectives

- Objectives of this lab: Learn about I/O streams.
- File name as Input.
- End of file (eof) and appending to file (app).

Exercise 1

From Lab 1 we will recall this problem:

Write a program that converts degrees Celsius (TC) to degree Fahrenheit (TF)

(Recall that $TF = (9/5) TC + 32$)

*Choose the suitable variables type.

* The program reads TC from input file “input_temp.dat” and writes TF to the file “out_temp.dat” (Open a notepad file and store the Celsius temperature then save your input file with “input_temp.dat”)

```
#include <iostream>
#include <fstream>

using namespace std;
int main()
{
    double TC,TF;
    ifstream fin;
    ofstream fout;
    fin.open("input_temp.dat");
    fin>> TC;
    TF = (9.0/5)*TC +32;
    fout.open("out_temp.dat");
    fout<<TC << " " <<TF;
    fin.close();
    fout.close();
    return 0; }
```

```
#include <iostream>
#include <fstream>

using namespace std;
int main()
{
    double TC,TF;
    ifstream fin;
    ofstream fout;
    fin.open("input_temp.dat");
    if(fin.is_open())
    {
fin>> TC;

TF = (9.0/5)*TC +32;
    fout.open("out_temp.dat");
fout<<TC << " " <<TF;
    }
    else cout<<"Error file not found\n";

    fin.close();
    fout.close();
return 0; }
```

Exercise 2

If the file circuit.dat contains the following data

3.0	2.1
1.5	1.1
2.6	4.1

The first column is voltage and the second column is the electric current.

Write program that reads the voltages and currents then calculates the electric power (P) based on the equation:

$$P = v * i$$

Write your output to the file results.dat with voltage in the first, current in the second and power on the third column. Your output file should look like

Voltage	Current	Power
3.0	2.1	(result)
1.5	1.1	(result)
2.6	4.1	(result)

```
#include <iostream>
#include <fstream>
using namespace std;
int main()
{
    ifstream fin;
    ofstream fout;
    fin.open("circuit.dat");
    fout.open("result.dat");
    int i;
    double a,b,p;
    fout<<"Voltage"<<"\tCurrent"<<"\tPower"<<endl;
    for(i=0;i<3;i++)
    {
        fin>>a>>b;
        p=b*a;
        fout<< a<<"\t"<<b<<"\t"<< p<<endl;
    }
    fin.close();
    fout.close();
    return 0; }
```



```
#include <iostream>
#include <fstream>
using namespace std;
int main()
{
    ifstream fin;
    ofstream fout;
    fin.open("circuit.dat");
    fout.open("result.dat");
    int i;
    double a,b,p;
    fout<<"Voltage"<<"\tCurrent"<<"\tPower"<<endl;
    if(fin.is_open())
    {
        for(i=1;i<=3;i++)
        {
            fin>>a>>b;
            p=b*a;
            fout<< a<<"\t"<<b<<"\t"<< p<<endl;
        }
        fin.close();
        fout.close();
    }
    else cout<<"Error file not found\n";
    return 0; }
```

PostLab 5

Q1. Run your code in EX.1 again but use the file name as input using the following statements:

```
char file[15];  
cin>> file;  
xxx.open(file)
```

Q2. If the circuit.dat file in EX.2 has header line that is look, like

v	i
3.0	2.1
1.5	1.1
2.6	4.1

Modify your program to read the new circuit.dat file and run your program twice with keeping the previous results (use append function) **Hint** `fout.open("result.dat",fstream::app);`

Q3. If you do not know the number of lines in the circuit.dat file in EX.2, modify your program to read the input file by using eof function. **Hint:** `while (fin.eof()!=0 ())`