Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Information Technology

Practical- 13

1. **Title**: Write a simple program of template.

2. **Outcome:** Must be able to print about template

3. **Objectives: -** Understand the concept of basic c++ with classes, objects and template.

4. **Nomenclature, theory with self-assessment questionnaire: -**

4.1 Nomenclature:

a	Variable for class data_type1
b	Variable for class data_type2
x	Variable for storing a
y	Variable for storing b

4.2 Solution:

Templates in c++ is defined as a blueprint or formula for creating a generic class or a function. Generic Programming is an approach to programming where generic types are used as parameters in algorithms to work for a variety of data types.In C++, a template is a straightforward yet effective tool.

4.3 Assumptions:

4.3.1 None

4.4 Dependencies:

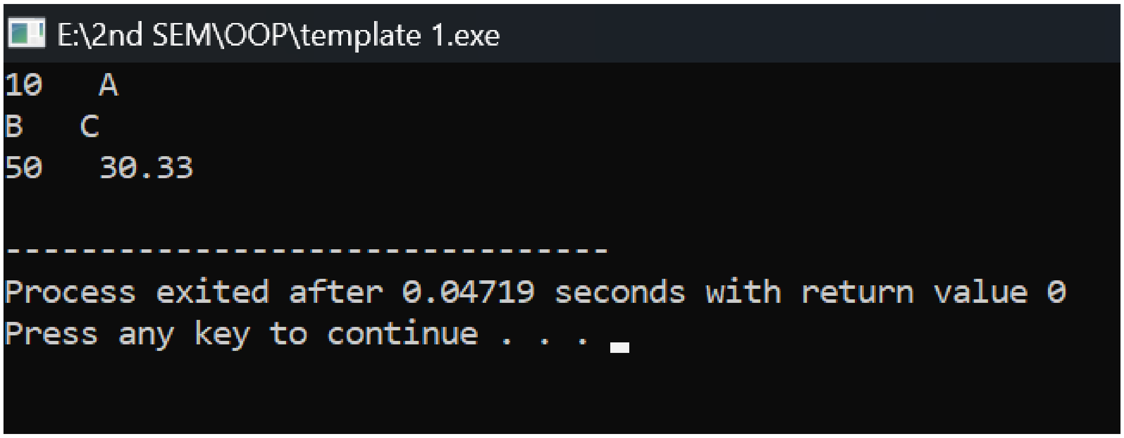
4.4.1 None

4.5 Code/ Pseudo Code

```
#include<iostream>
using namespace std;
template<class data_type1,class data_type2>
class display
{
 public:
data_type1 a;
data_type2 b;
display(data_type1 x,data_type2 y)
{
a=x;
b=y;
}
void show()
{
cout<<a<<" "<<b<<endl;
}
};
int main()
{
display<int,char>d1(10,'A');
display<char,char>d2('B','C');
display<int,float>d3(50,30.33);
d1.show();
d2.show();
d3.show();
return 0;
}
```

4.6 Results

4.6.1 Test Case



```
10   A
B   C
50   30.33

--------------------------------
Process exited after 0.04719 seconds with return value 0
Press any key to continue . . .
```

4.6.2 Result Analysis

4.6.2.1 Advantages: - Understand the concept of classes objects and templates.

4.6.2.2 Issues: - N.A**.**

4.7 Viva questions:

4.7.1 What is template?
4.7.2 How many types of templates?
4.7.3 Why we use template?
4.7.4 What is the advantage of template?

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Practical- 14

1. Title: Write a simple program of file handling.

2. Outcome: Must be able to print about template

3. Objectives: - Understand the concept of basic c++ with classes, objects and file handling.

4. Nomenclature, theory with self-assessment questionnaire: -

4.1 Nomenclature:

std	Standard format
fclose	Function for closing the file

4.2 Solution:

Files are used to store data in a storage device permanently. File handling provides a mechanism to store the output of a program in a file and to perform various operations on it.
In C++, files are mainly dealt by using three classes fstream, ifstream, ofstream.
• ofstream: This Stream class signifies the output file stream and is applied to create files for
writing information to files
• ifstream: This Stream class signifies the input file stream and is applied for reading information from files
• fstream: This Stream class can be used for both read and write from/to files.**4.3**

4.3 Assumptions:

4.3.1 None

4.4 Dependencies:

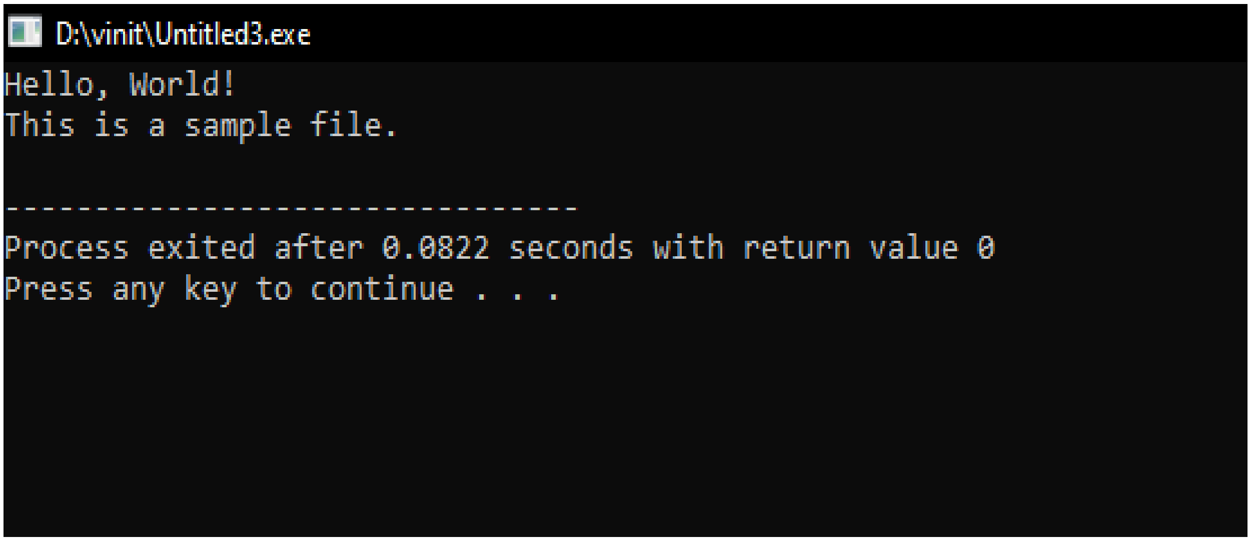
4.4.1 None

4.5 Code/ Pseudo Code

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

int main() {
    // Open a file for writing
    std::ofstream outputFile("data.txt");

    if (!outputFile) {
        std::cerr << "Error opening file for writing!" << std::endl;
        return 1;
    }

    // Write data to the file
    outputFile << "Hello, World!" << std::endl;
    outputFile << "This is a sample file." << std::endl;

    // Close the file
    outputFile.close();

    // Open the file for reading
    std::ifstream inputFile("data.txt");

    if (!inputFile) {
        std::cerr << "Error opening file for reading!" << std::endl;
        return 1;
    }

    // Read and display the contents of the file
    std::string line;
    while (std::getline(inputFile, line)) {
        std::cout << line << std::endl;
    }

    // Close the file
    inputFile.close();

    return 0;
}
```

4.6 Results

4.6.1 Test Case



```
Hello, World!
This is a sample file.

--------------------------------
Process exited after 0.0822 seconds with return value 0
Press any key to continue . . .
```

4.6.2 Result Analysis

4.6.2.1 Advantages: - Understand the concept of classes objects and file handling.

4.6.2.2 Issues: - N.A**.**

4.7 Viva questions:

4.7.1 What is file handling?
4.7.2 What are the advantage and disadvantage of the file handling?
4.7.3 Why we use file handling?