Lab Assignment No 4 :Write a function template and class template selection Sort. Write a program that inputs, sorts and outputs an integer array and a float array.

Aim: Use template class and template function to perform selection sort on integer and float array.

Description: Template class and template functions are used in the program. Using function template I sorted array using selection sort algorithm. Function class is used to create array of given type and other variables.

Oop Concepts Used:

1)Templates in C++:

Function Template

- Generic functions use the concept of a function template. Generic functions define a set of operations that can be applied to the various types of data.
- The type of the data that the function will operate on depends on the type of the data passed as a parameter.
- For example, Quick sorting algorithm is implemented using a generic function, it can be implemented to an array of integers or array of floats.
- A Generic function is created by using the keyword template. The template defines what function will do.

Syntax of Function Template

1. template <class Ttype> ret_type func_name(parameter_list)
2. {
3. //body of function.
4. }

Function Templates with Multiple Parameters

We can use more than one generic type in the template function by using the comma to separate the list.

Syntax:

1. template<class T1, class T2,.....>
2. return_type function_name (arguments of type T1, T2....)
3. {
4. // body of function.
5. }

CLASS TEMPLATE

Class Template can also be defined similarly to the Function Template. When a class uses the concept of Template, then the class is known as generic class.

Syntax

```
1. template<class Ttype>
2. class class_name
3. {
4.   .
5.   .
6. }
```

Ttype is a placeholder name which will be determined when the class is instantiated. We can define more than one generic data type using a comma-separated list. The Ttype can be used inside the class body.

Now, we create an instance of a class

```
1. class_name<type>ob;
```

where class_name: It is the name of the class.

type: It is the type of the data that the class is operating on.

ob: It is the name of the object.

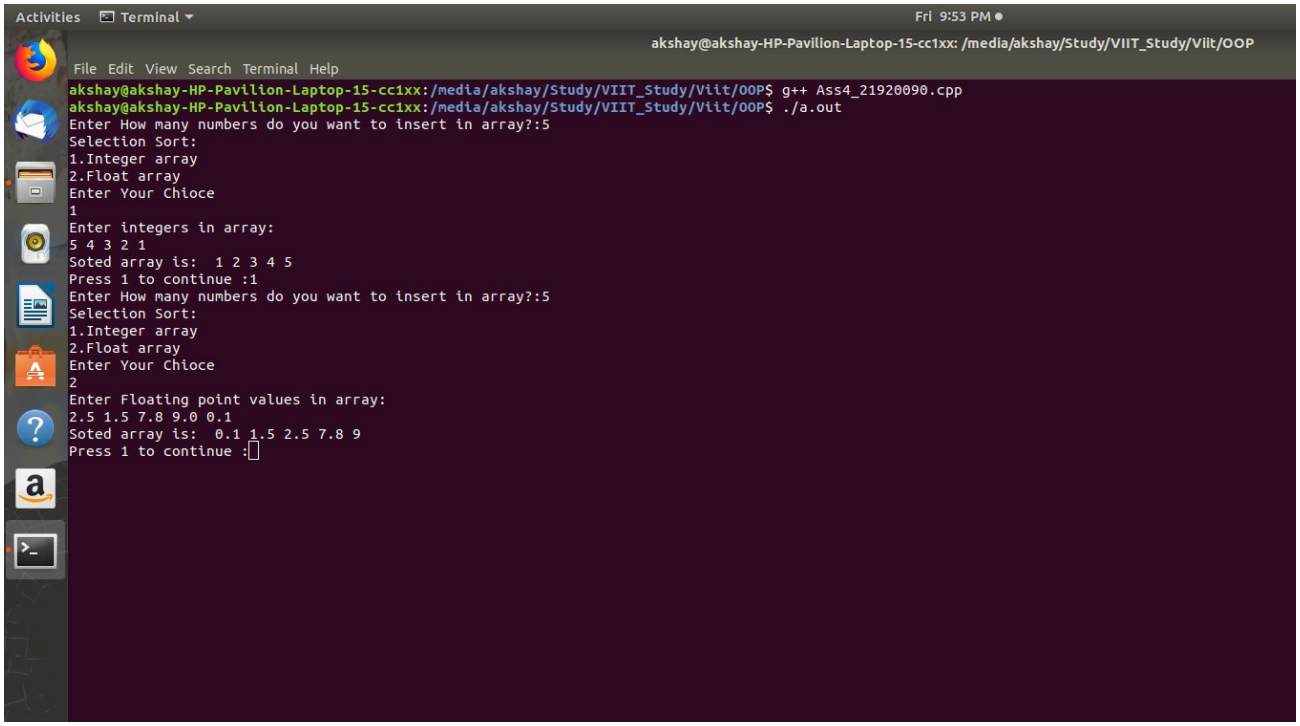
CLASS TEMPLATE WITH MULTIPLE PARAMETERS

We can use more than one generic data type in a class template, and each generic data type is separated by the comma.

Syntax

```
1. template<class T1, class T2, .....>
2. class class_name
3. {
4.    // Body of the class.
5. }
```

Output:



Conclusion:

Thus we have successfully implemented template class and template functions.