**ASSIGNMENT NO:** 4

**PROBLEM STATEMENT:**

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 OF ASSIGNMENT:**

C++ Program to implement and understand the concepts of Class Template and Function Template. Using these, sorting the array of integer and float elements by selection sort.

**DESCRIPTION:**

In this program, we have created a class template to declare two variables in private access specifier and three functions in public access specifier. We have created a function template and defined the three functions. Using the template facility, the user can input array elements of integer or float type. The input elements will then be sorted using the selection sort and displayed accordingly. To access the class template variables, there are two objects created (one for integer, the other for float).

**OOP CONCEPT USED:**

* Template Class
* Template Function
* do while loop
* Menu driven statements

**SOURCE CODE:**

#include<iostream>

using namespace std;

template <class T>

void selection\_sort(T a[],int n)

{

int i,j;

T temp;

for(i=0;i<n-1;i++)

{

for(j=i+1;j<n;j++)

{

if(a[i]>a[j])

{

temp=a[i];

a[i]=a[j];

a[j]=temp;

}

}

}

}

void input()

{

int n,i,ch;

int a[n];

float b[n];

cout<<"\nEnter type of Array\n~press 1 for INTEGER\n~press 2 for FLOAT\n";

cin>>ch;

switch(ch)

{

case 1: cout<<"\nEnter no. of elements\n";

cin>>n;

cout<<"\nEnter array elements : ";

for(i=0;i<n;i++)

{

cin>>a[i];

}

selection\_sort(a,n);

cout<<"\nAfter sort:";

for(i=0;i<n;i++)

{

cout<<a[i]<<" ";

}

break;

case 2: cout<<"\nEnter no. of elements\n";

cin>>n;

cout<<"\nEnter array elements : ";

for(i=0;i<n;i++)

{

cin>>b[i];

}

selection\_sort(b,n);

cout<<"\nAfter sort:";

for(i=0;i<n;i++)

{

cout<<b[i]<<" ";

}

break;

default: cout<<"\nERROR! enter correct choice.";

break;

}

char ch1;

cout<<"\ndo you want to continue(press Y/N)\n";

cin>>ch1;

if(ch1=='y'||ch1=='Y')

input();

}

int main()

{

input();

return 0;

}

**CONCLUSION:**

Hence, we learnt the concept of class template and function template. We also learnt the selection sort technique.