**Deparment of Computer Applications**

**18MX26 Object Oriented Programming Laboratory**

Home Work Problems : Topic : Functions in C++ Issue Date: 30.01.2020

1. **Test Your Knowledge:**

Determine the output or error thrown by the following code. First try to answer manually without using compiler.

#include<iostream>

using namespace std;

void swapp(char \*x, char \*y, int size=20)

{ cout<<”\nI am a normal function”;

char a; for (int i=0;i<size;i++)

{ a=x[i];

x[i]=y[i];y[i]=a; } cout<<size;

template <typename T>

void swapp(T &x,T &y)

{ cout<<”\nI am a template function”;

T temp; temp=x; x=y; y=temp; }

int main() {

char a[20],b[20]; cin>>a>>b;

swapp(a,b); cout<<a<<” “<<b;

int x=10,y=20; char p='a',m='i';

swapp(x,y); cout<<”\n”<<x<<y; swapp(p,m); cout<<”\n”<<p<<m; }

1. **Programming Exercises**
2. Write a C++ recursive function power(base, exponent=2) that, when invoked , returns baseexponent  after checking whether the exponent is an integer greater than or equal to 1. The terminating condition for the function would be when exponent is equal to 1, because base 1= base.

Test your power function on different data.

1. Write the following overloaded functions to output all subsets of n elements. For example the subsets of three-element set {a,b,c} are

{ } , {a}, {b}, {c}, {a,b}, {a,c} , {b,c} and {a,b,c }

Write a proper C++ program to test your function on integer/float/character arrays.

1. Write a template function to determine whether the elements in the array a are in sorted order (I.e., a[i]<=a[i+1] , 0<= i<n-1). Your function should return false If a is not sorted and true if it is. Write a proper C++ program to test your function on integer/float/character arrays.
2. Write a recursive template function to determine whether the element X is one of the element in the array a[0:n-1]. Write a proper C++ program to test your function on integer/float/character arrays.
3. Write a template function to sort the array in a specified order. Write a proper C++ program to test your function on integer/float/character arrays.

**Passing structure to functions:**

1. Write a C++ structure to store the name, account number and balance of customers (more than 10) and write proper C++ code to store ‘n’ number of customer details.   
    a) Write a C++ function printless200(customer[]) that prints the names of all the customers having balance less than $200.   
    b) Write a C++ function addInterest(customer [] , amount) that adds the amount in the balance of all the customers having more than $1000 in their balance and then print the incremented value of their balance.

**Test your functions with all possible data.**