***//Assignment-11 Data Structures Lab***

***//WAP to calculate factorial and to compute the factors of a given no. (i)using recursion, (ii) using iteration***

#include<iostream>

#include<conio.h>

using namespace std;

void factorial(int n)

{

int i;

double fact=1;

if(n==0)

cout<<"Factorial of "<<n<<" is : 1";

else

{

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

fact\*=i;

cout<<"Factorial of "<<n<<" is : "<<fact<<"\n";

}

}

double fact\_Recursion(int m)

{

if(m==0)

return 1;

else

return m\*fact\_Recursion(m-1);

}

void factors(int n)

{

int i;

cout<<"Factors of "<<n<<" are :";

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

if(n%i==0)

cout<<i<<" ";

}

void factors\_Recursion(long n,long count=1)

{

if(n%count==0)

cout<<count<<" ";

if(n==count)

return;

factors\_Recursion(n,count+1);

}

int main()

{

int choice,num;

double cal;

cout<<"Menu\nFind factorial and factors of a number\n1.Using recursion\n2.Using iteration\nEnter any choice : ";

cin>>choice;

cout<<"\nEnter any number number : ";

cin>>num;

switch(choice)

{

case 1: cout<<"Factorial of "<<num<<" is : "<<fact\_Recursion(num)<<"\n";

cout<<"Factors of "<<num<<" are :";

factors\_Recursion(num);

break;

case 2: factorial(num);

factors(num);

break;

default: cout<<"You entered wrong choice";

}

getch();

return 0;

}

**OUTPUT:**

**Sample: 1**

Menu

Find factorial and factors of a number

1.Using recursion

2.Using iteration

Enter any choice : 1

Enter any number number : 4

Factorial of 4 is : 24

Factors of 4 are :1 2 4

**Sample: 2**

Menu

Find factorial and factors of a number

1.Using recursion

2.Using iteration

Enter any choice : 2

Enter any number number : 5

Factorial of 5 is : 120

Factors of 5 are :1 5