**Functions in C++**

**Assignment – 24**

1. Define a function to check whether a given number is a Prime number or not.

#include <iostream>

using namespace std;

int prime(int);

int main() {

int n;

cout << "Enter a positive integer: ";

cin >> n;

prime(n);

return 0;

}

int prime(int n)

{

int i;

bool is\_prime = true;

if (n == 0 || n == 1)

{

is\_prime = false;

}

for (i = 2; i <= n/2; ++i) {

if (n % i == 0) {

is\_prime = false;

break;

}

}

if (is\_prime)

cout << n << " is a prime number";

else

cout << n << " is not a prime number";

}

1. Define a function to find the highest value digit in a given number.

#include <iostream>

using namespace std;

void max(int [],int);

int main()

{

int n;

cout<<"ENTER SIZE OF ARRAY=";

cin>>n;

int a[n];

cout<<"ENTER ARRAY ELEMENTS UPTO SIZE=";

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

cin>>a[i];

max(a,n);

}

void max(int a[],int n)

{

int high,i;

high=a[0];

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

{

if(a[i]>high)

high=a[i];

}

cout<<"MAX NO="<<high;

}

1. Define a function to calculate x raised to the power y.

#include<iostream>

using namespace std;

int p(int,int);

int main()

{

int a,b;

cout<<"ENTER Base No=";

cin>>a;

cout<<"ENTER Power No=";

cin>>b;

cout<<p(a,b);

return 0;

}

int p(int a,int b)

{

int result=1;

for(int i=0;i<b;i++)

{

result=result\*a;

}

return result;

}

1. Define a function to print Pascal Triangle up to N lines.

#include<iostream>

using namespace std;

long factorial(int);

int main()

{

int i,n,c;

cout<<"How many rows you want to show in pascal triangle?\n";

cin>>n;

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

{

for (c = 0 ;c <=(n-i-2);c++)

cout<<" ";

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

cout<<factorial(i)/(factorial(c)\*factorial(i-c));

cout<<endl;

}

return 0;

}

long factorial(int n)

{

int c;

long result = 1;

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

result=result\*c;

return (result );

}

5. Define a function to check whether a given number is a term in a Fibonacci series or

not.

#include<iostream>

#include <bits/stdc++.h>

using namespace std;

bool isPerfectSquare(int i)

{

int s = sqrt(i);

return (s \* s == i);

}

bool isFibonacci(int n)

{

return isPerfectSquare(5 \* n \* n + 4) || isPerfectSquare(5 \* n \* n - 4);

}

int main()

{

int i;

cout<<"enter a no=";

cin>>i;

isFibonacci(i)? cout << i << " is a Fibonacci Number \n": cout << i << " is a not Fibonacci Number \n";

return 0;

}

1. Define a function to swap data of two int variables using call by reference

#include<iostream>

using namespace std;

int sw(int &,int &);

int main()

{

int a,b;

cout<<"ENTER TWO No=";

cin>>a>>b;

sw(a,b);

return 0;

}

int sw(int &a,int &b)

{

int c,d;

c=\*&b;

d=\*&a;

cout<<"NO AFTER SWAP="<<c<<","<<d;

}

1. Write a function using the default argument that is able to add 2 or 3 numbers

#include<iostream>

using namespace std;

int sum(int,int ,int=0);

int main()

{

int a,b,c;

cout<<"ENTER TWO No=";

cin>>a>>b;

cout<<"sum of A+B="<<sum(a,b);

cout<<endl;

cout<<"ENTER THIRD NO=";

cin>>c;

cout<<"SUM OF a+b+c="<<sum(a,b,c);

}

int sum(int a,int b,int c)

{

return a+b+c;

}

8. Define overloaded functions to calculate area of circle, area of rectangle and area of

Triangle

#include<iostream>

using namespace std;

float area(int);

int area(int,int);

int area(float,float);

float area(int r)

{

return 3.14\*r\*r;

}

int area(int l,int b)

{

return l\*b;

}

int area(float br,float h)

{

return 0.5\*br\*h;

}

int main()

{

int r,l,b,h,br;

cout<<"ENTER RADIUS OF CIRCLE=";

cin>>r;

cout<<"RADIUS OF CIRCLE="<<area(r)<<endl;

cout<<"ENTER LENGTH BREADTH FOR RECTANGLE=";

cin>>l>>b;

cout<<"AREA OF RECTANGLR="<<area(l,b)<<endl;

cout<<"ENTER BASE AND HEIGHT OF TRIANGLR=";

cin>>br>>h;

cout<<"AREA OF TRIANGLE="<<area(br,h);

return 0;

}

9. Write functions using function overloading to find a maximum of two numbers and

both the numbers can be integer or real.

#include<iostream>

using namespace std;

void high(int,float);

int main()

{

int a,b;

cout<<"ENTER FIRST AND SECOND NO=";

cin>>a>>b;

high(a,b);

return 0;

}

void high(int a,float b)

{

if(a>b)

{

cout<<"Highest no="<<a;

}

else

{

cout<<"Highest no="<<b;

}

}

10. Write functions using function overloading to add two numbers having different data

types.

#include <iostream>

using namespace std;

void add(int a,int b)

{

cout << "sum = "<<(a+b);

}

void add(double a,double b)

{

cout << endl << "sum = "<<(a+b);

}

int main()

{

add(10, 2);

add(5.3, 6.2);

return 0;

}