**Lab Manual 1**

**Program 1:**

#include<iostream>

using namespace std;

int main()

{

// Write a program in C++ that display the following output. See output screen

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"\*\*\*\*\*\t\t\t\*\*\*\*\*\n";

cout<<"#############################\n";

cout<<"#############################";

return 0;

}

**Program 2:**

#include<iostream>

#define PI 3.1416

using namespace std;

int main()

{

/\* Write a program in C++ which takes radius from the user and calculate the area of sphere i.e

Area=4PIrr\*/

float r, area;

cout<<"Enter radius of sphere:";

cin>>r;

area=4\*PI\*r\*r;

cout<<"Area of sphere is: "<<area;

return 0;

}

**Program 3:**

#include<iostream>

using namespace std;

int main()

{

// write a program to find the number of bytes occupied by various data types using the sizeof operator.

cout<<"The size of int a is:"<<sizeof(int)<<endl;

cout<<"The size of char b is:"<<sizeof(char)<<endl;

cout<<"The size of float c is:"<<sizeof(float)<<endl;

cout<<"The size of long int d is:"<<sizeof(long int)<<endl;

cout<<"The size of bool e is:"<<sizeof(bool)<<endl;

cout<<"The size of unsigned int j is:"<<sizeof(unsigned int)<<endl;

cout<<"The size of unsigned long k is:"<<sizeof(unsigned long)<<endl;

}

**Lab Manual 2**

**Program 1:**

#include<iostream>

using namespace std;

int main()

{

int a, b, c, max;

cout<<"Enter first number:";

cin>>a;

cout<<"Enter second number:";

cin>>b;

cout<<"Enter third number:";

cin>>c;

max = a;

if(b>max)

max = b;

if(c>max)

max = c;

cout<<"The maximum number is:"<<max;

return 0;

}

**Program 2:**

#include<iostream>

using namespace std;

int main()

{

int score;

cout<<"Enter your test score:";

cin>>score;

if(score>=90)

cout<<"Your Grade is A.";

else if(score>=80)

cout<<"Your Grade is B.";

else if (score>=70)

cout<<"Your Grade is C.";

else

cout<<"You Grade is D.";

return 0;

}

**Program 3:**

#include<iostream>

using namespace std;

int main()

{

char ch;

cout<<"Enter any character:";

cin>>ch;

if(ch=='A'||ch=='a'||ch=='E'||ch=='e'||ch=='I'||ch=='i'||ch=='O'||ch=='o'||ch=='U'||ch=='u')

cout<<"It is a vowel.";

else

cout<<"It is a consonant.";

return 0;

}

**Program 4:**

#include<iostream>

using namespace std;

int main()

{

int num;

cout<<"Enter a number:";

cin>>num;

if(num%2==0)

cout<<num <<"is even.";

else

cout<<num<<"is odd.";

return 0;

}

**Program 5:**

#include<iostream>

using namespace std;

int main()

{

char ch;

cout<<"Enter a single character:";

cin>>ch;

if(ch>='A'&&ch<='Z')

{

cout<<"It is a CAPITAL letter.";

}

if(ch>='a'&&ch<='z')

{

cout<<"It is a small letter.";

}

return 0;

}

Program 6:

#include<iostream>

using namespace std;

int main()

{

int tem;

cout<<"Enter temperature:";

cin>>tem;

if(tem<=0)

cout<<"ICE.";

else if(tem<=100)

cout<<"Water.";

else

cout<<"STEAM.";

return 0;

}

**Lab Manual 3**

**Program 1:**

#include<iostream>

using namespace std;

int main()

{

int choice, number, a, b, c, temp;

cout<<"1. To Find Largest Number Among Three Variables.\n";

cout<<"2. To Find ODD and Even.\n";

cout<<"3. To Find Condition of Water.\n";

cout<<"4. To Find Grade of Student.\n";

cout<<"Enter Your Choice:";

cin>>choice;

switch(choice)

{

case 1:

cout<<"Enter Three number:";

cin>>a>>b>>c;

if(a>b&&a>c)

cout<<"First Number is Largest.";

else if(b>a&&b>c)

cout<<"Second Number is Largest.";

else

cout<<"Third Number is Largest.";

break;

case 2:

cout<<"Enter a number:";

cin>>number;

if(number%2==0)

cout<<"Number is Even.";

else

cout<<"Number is ODD.";

break;

case 3:

cout<<"Enter Temperature:";

cin>>temp;

if(temp<0)

cout<<"ICE.";

else if(temp<100)

cout<<"Water,";

else

cout<<"STREAM.";

break;

case 4:

cout<<"Enter Your number in Test:";

cin>>number;

if(number>=90)

cout<<"Your Grade is A.";

else if(number>=80)

cout<<"Your Grade is B.";

else if(number>=70)

cout<<"Your Grade is C.";

else

cout<<"Your Grade is D.";

break;

default:

cout<<"Invalid Choice.";

}

return 0;

}

**Lab Manual 4**

**Program 1:**

#include<iostream>

using namespace std;

int main()

{

int sum;

sum=1+2+3+4+5+6+7+8+9+10;

cout<<sum;

}

**Program 2:**

#include<iostream>

using namespace std;

int main()

{

int sum, number;

sum=0;

number=1;

while(number<=1000)

{

sum=sum+number;

number=number+1;

}

cout<<"The sum of the first 1000 integer starting from 1 is"<<sum;

}

**Program 3:**

#include<iostream>

using namespace std;

int main()

{

int number;

int factorial;

factorial=1;

cout<<"Enter the number of factorial";

cin>>number;

while(number>=1)

{

factorial=factorial\*number;

number=number-1;

}

cout<<"Factorial is"<<factorial;

}

**Program 4:**

#include<iostream>

using namespace std;

int main()

{

int counter;

for(counter=0;counter<10;counter=counter+1)

cout<<"counter\t";

}

**Program 5:**

#include<iostream>

using namespace std;

int main()

{

int counter;

counter=1;

while(counter<=10)

{

cout<<2\*counter<<"\t";

counter=counter+1;

}

}

**Program 6:**

#include<iostream>

using namespace std;

int main()

{

int count;

count=1;

while(count<=10000)

{

cout<<count<<",";

count=count+1;

}

}

**Program 7:**

#include<iostream>

using namespace std;

int main()

{

int number;

while(number!=0)

{

cout<<"Enter a number:";

cin>>number;

cout<<"You entered "<<number<<endl;

}

cout<<"End of Program....";

}

**Program 8:**

#include<iostream>

using namespace std;

int main()

{

int number, counter, fact;

fact=1;

cout<<"Enter a number:";

cin>>number;

for(counter=1;counter<=number;counter=counter+1)

fact=fact\*counter;

cout<<"Factorial of "<< number<<" is "<<fact;

}

**Program 9:**

#include<iostream>

using namespace std;

int main()

{

int a, b, next, n, counter;

cout<<"How many Fibonacci terms required:";

cin>>n;

a=0;

b=1;

cout<<"Fibonacci terms are"<<endl;

cout<<a<<"\t"<<b;

counter=2;

while(counter<n)

{

next=a+b;

cout<<"\t"<<next;

counter++;

a=b;

b=next;

}

return 0;

}

**Program 10:**

#include<iostream>

using namespace std;

int main()

{

int num, n, r, sum;

cout<<"Enter a number:";

cin>>num;

n=num;

sum=0;

while(n!=0)

{

r=n%10;

sum=sum+(r\*r\*r);

n/=10;

}

if(sum==num)

cout<<num<<"is Armstrong number.";

else

cout<<num<<"is not an Armstrong number.";

return 0;

}

**Program 11:**

#include<iostream>

using namespace std;

int main()

{

int maximum, n, a, b, c;

cout<<"Enter a number:";

cin>>n;

while(n!=0)

{

cout<<"Enter three integer values:";

cin>>a>>b>>c;

maximum=a;

if (b>maximum)

maximum=b;

if(c>maximum)

maximum=c;

cout<<"The maximum number is: "<< maximum;

break;

}

return 0;

}

**Program 12:**

**Program 13.1:**

#include<iostream>

using namespace std;

int main()

{

int i,j;

i=1;

while(i<=4)

{

j=1;

while(j<=i)

{

cout<<j;

j++;

}

cout<<"\n";

i++;

}

return 0;

}

**Program 13.2:**

#include<iostream>

using namespace std;

int main()

{

int i,j;

i=1;

while(i<=4)

{

j=1;

while(j<=i)

{

cout<<i;

j++;

}

cout<<"\n";

i++;

}

return 0;

}

**Program 13.3:**

#include<iostream>

using namespace std;

int main()

{

int i,j,k=1;

i=1;

while(i<=4)

{

j=1;

while(j<=i)

{

cout<<k;

j++;

k++;

}

cout<<"\n";

i++;

}

return 0;

}

**Lab Manual 5**

**Program 1:**

#include<iostream>

using namespace std;

int main()

{

int n,c, sum;

cout<<"Enter a number:";

cin>>n;

sum=0;

c=0;

do

{

sum=sum+c;

c=c+1;

}

while(c<=n);

cout<<"Sum of number is:"<<sum;

return 0;

}

**Program 2:**

#include<iostream>

using namespace std;

int main()

{

int num, m, n;

long f;

cout<<"Enter the ending number:";

cin>>num;

cout<<"\nInteger \tFactorial \n";

m=1;

do

{

f=1;

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

{

f=f\*n;

}

cout<<m<<"\t\t"<<f<<endl;

m++;

}

while(m<=num);

return 0;

}

**Program 3:**

#include<iostream>

using namespace std;

int main()

{

float a, b;

char op;

cout<<"Enter First number, operator and Second number:";

cin>>a>>op>>b;

switch(op)

{

case '+':

cout<<a<<"+"<<b<<"="<<a+b;

break;

case '-':

cout<<a<<"-"<<b<<"="<<a-b;

break;

case '\*':

cout<<a<<"\*"<<b<<"="<<a\*b;

break;

case '/':

cout<<a<<"/"<<b<<"="<<a/b;

break;

default:

cout<<"Invalid operator!";

}

return 0;

}

**Lab Manual 6**

**Program 1:**

#include<iostream>

#include<cmath>

using namespace std;

int main()

{

for(int x=0;x<=9;x++)

cout<<"\t"<<x<<"\t"<<sqrt(x)<<endl;

}

**Program 2:**

#include<iostream>

using namespace std;

int square (int a)

{

int square=(a\*a);

return square;

}

int main()

{

int number, sq;

cout<<"Enter a number: ";

cin>>number;

sq=square(number);

cout<<"Square of the number you entered: "<<sq;

return 0;

}

**Program 3:**

#include<iostream>

using namespace std;

int add(int, int, int);

int main()

{

int a, b, c;

cout<<"Enter three integer:";

cin>>a>>b>>c;

add(a,b,c);

return 0;

}

int add(int x, int y, int z)

{

int sum=x+y+z;

float average=sum/3.00;

cout<<"The average of number is: "<<average;

return 0;

}

**Program 4:**

#include<iostream>

using namespace std;

float area (float, float);

int main()

{

float length, width, ar;

cout<<"Enter length of rectangle: ";

cin>>length;

cout<<"Enter width of rectangle: ";

cin>>width;

ar=area(length, width);

cout<<"Area of rectangle is: "<<ar;

return 0;

}

float area(float Vlength, float Vwidth)

{

float area=Vlength\*Vwidth;

return area;

}

**Program 5:**

#include<iostream>

using namespace std;

int printDate(int, int, int);

int main()

{

int month, day, year;

cout<<"Enter month: ";

cin>>month;

cout<<"Enter day: ";

cin>>day;

cout<<"Enter year: ";

cin>>year;

}

int printDate(int Vmonth, int Vday, int Vyear)

{

if(Vmonth<1||Vmonth>12||Vday<1||Vday>31||Vyear<0)

cout<<"Must Enter a Valid Data.";

}

Program 6:

#include<iostream>

using namespace std;

bool leap(int);

int main()

{

int Vyear;

cout<<"Enter a year:";

cin>>Vyear;

leap(Vyear);

return 0;

}

bool leap(int year)

{

if ((year % 4 == 0 && year % 100 != 0)||(year%400==0))

cout<<year<<" is a leap year";

else

cout<<year<<" is not a leap year";

return 0;

}

**Program 7:**

#include<iostream>

using namespace std;

int number(int, int);

int main()

{

int num1, num2;

cout<<"Enter two number:";

cin>>num1>>num2;

number(num1,num2);

return 0;

}

int number(int n1,int n2)

{

if(n1==n2)

cout<<n1<<" and "<<n2<<" are same.";

else if(n1<n2)

{

cout<<n1<<" and "<<n2<<" are not same.\n";

cout<<n1<<" less than "<<n2;

}

else

cout<<n1<<" Greater than "<<n2;

return 0;

}

**Program 8:**

#include<iostream>

using namespace std;

int TempOpinion(int);

int main()

{

int tem;

cout<<"Enter temperature: ";

cin>>tem;

TempOpinion(tem);

return 0;

}

int TempOpinion(int t)

{

if(t<10)

cout<<"Cold Day";

else if(t>=10&&t<30)

cout<<"Pleasant day";

else

cout<<"Hot Day";

return 0;

}

**Program 9:**

#include <iostream>

using namespace std;

float swap(float &x, float &y); // function declaration

int main ()

{

float a = 22.2;

float b = 44.4;

cout << "Before swap, value of a :" << a << endl;

cout << "Before swap, value of b :" << b << endl;

swap(a, b);

cout << "After swap, value of a :" << a << endl;

cout << "After swap, value of b :" << b << endl;

return 0;

}

float swap(float &x, float &y)

{

y = x + y;

x = y - x;

y = y - x;

return 0;

}

**Program 10:**

#include <iostream>

using namespace std;

int show(float);

int show(int);

int show(float, int);

int main() {

float a = 10.5;

int b = 10;

show(a);

show(b);

show(a, b);

return 0;

}

int show(float num)

{

cout << "Float number: " << num << endl;

return 0;

}

int show(int num)

{

cout << "Integer number: " << num << endl;

return 0;

}

int show(float num1, int num2)

{

cout << "Float number: " << num1;

cout << " and integer number:" << num2;

return 0;

}

**Program 11:**

#include<iostream>

using namespace std;

int fact(long);

int main()

{

int fa;

fact(fa);

return 0;

}

int fact(long f)

{

int m, n;

cout<<"\nInteger\tFactorial\n";

for(m=-1;m<=10;m++)

{

f=1;

for(n=-1;n<=m;n++)

f=f\*n;

cout<<m<<"\t\t"<<f<<endl;

}

return 0;

}