Arithmetic Statement

```
#include<stdio.h>
int main()
{
int a=6,b=2,c;
c=a+b;
printf("Sum=%d\n",c);
c=a-b;
printf("Difference=%d\n",c);
c=a*b;
printf("Product=%d\n",c);
c=a/b;
printf("Division=%d\n",c);
c=a%b;
printf("Modulus=%d\n",c);
return 0;
}
```

Output:

```
Sum=8
Difference=4
Product=12
Division=3
Modulus=0
```

Simple If

```
#include<stdio.h>
int main()
{
int num1,num2;
printf("Enter the first integer\n");
scanf("%d",&num1);
printf("Enter the second integer\n");
scanf("%d",&num2);
if(num1==num2)
printf("%d is equal to %d\n",num1,num2);
return 0;
}
```

Output:

```
Enter the first integer
5
Enter the second integer
5
5 is equal to 5
```

ifelse

```
#include<stdio.h>
int main()
{
int n;
printf("Please enter an integer\n");
scanf("%d",&n);
if(n%2!=0)
printf("%d is odd\n",n);
else
printf("%d is even\n",n);
return 0;
}
```

Output:

Please enter an integer

3

3 is odd

Nested if-else

```
#include<stdio.h>
```

```
int main()
{
int a,b,c;
printf("Enter the three numbers:\n");
scanf("%d%d%d",&a,&b,&c);
if(a>=b && a>=c)
printf("%d is the largest number",a);
else if(b>=a && b>=c)
printf("%d is the largest number",b);
else printf("%d is the largest number",c);
return 0;
}
```

Output:

```
Enter the three numbers:
5
67
90
90 is the largest number
```

While Loop

```
#include<stdio.h>
int main()
{
int num,original,factorial=1;
printf("Type a positive integer:\n");
scanf("%d",&num);
original=num;
while(num>1)
{
factorial*=num;
num--;
}
printf("Factorial of %d = %d\n",original,factorial);
return 0;
}
```

Output:

```
Type a positive integer:
6
Factorial of 6 = 720
```

Dowhile Loop

```
#include<stdio.h>
int main()
{
int num,rev;
printf("Enter the number to be reversed:\n");
scanf("%d",&num);
printf("Reverse number is:\n");
do
{
rev=num%10;
printf("%d",rev);
num=num/10;
}
while(num!=0);
return 0;
}
```

Output:

```
Enter the number to be reversed:
12345
Reverse number is:
54321
```

For Loop

```
#include<stdio.h>
int main()
{
int low,i,high,sum=0;
printf("Please type the lower bound:\n");
scanf("%d",&low);
printf("Please type the higher bound:\n");
scanf("%d",&high);
for(i=low;i<=high;i++)
sum+=i;
printf("The sum of the integer from %d to %d is %d\n",low,high,sum);
return 0;
}
```

Output:

```
Please type the lower bound:
5
Please type the higher bound:
9
The sum of the integer from 5 to 9 is 35
```

Case Control

```
#include<stdio.h>
int main()
{
float value1,value2;
char oper;
printf("Type an expression:");
scanf("%f%c%f",&value1,&oper,&value2);
switch(oper)
{
case'+':
printf("%2f\n",value1+value2);
break;
case'-':
printf("%2f\n",value1-value2);
break;
case'*':
printf("%2f\n",value1*value2);
break;
case'/':
if(value2==0)
printf("Divisible by 2==0\n");
else
printf("%2f\n",value1/value2);
break;
default:
printf("Unknown operator\n");
}
return 0;
}
```

Output: Type an expression:2+3 : 5.000000

Array-one dimensional array

```
#include<stdio.h>
void main()
{
int  arr[10];
int i,n,sum=0;
printf("Enter the size of the array:");
scanf("%d",&n);
printf("Enter the %d elements in the array:",n);
for(i=0;i<n;i++)
{
scanf("%d",&arr[i]);
}
for(i=0;i<n;i++)
{
sum=sum+arr[i];
}
printf("Sum of all elements of array=%d",sum);
}
```

Output:

```
Enter the size of the array:3
Enter the 3 elements in the array:5
6
7
Sum of all elements of array=18
```

Array-two dimensional array

```
include<stdio.h>
void main()
{
int a[2][2],b[2][2],c[2][2];
int row,col;
printf("Enter elements in matrix A of size2*2;\n");
for(row=0;row<2;row++)
{
for(col=0;col<2;col++)
{
scanf("%d",&a[row][col]);
}
}
printf("\nEnter elements in matrix B of size2*2;\n");
for(row=0;row<2;row++)
{
for(col=0;col<2;col++)
{
scanf("%d",&b[row][col]);
}
}
for(row=0;row<2;row++)
{
for(col=0;col<2;col++)
{
c[row][col]=a[row][col]+b[row][col];
}
}
printf("\nSum of matrices A+B=\n");
for(row=0;row<2;row++)
```

```
{
for(col=0;col<2;col++)
{
printf("%d",c[row][col]);
}
printf("\n");
}
}
```

Output:

```
Enter elements in matrix A of size2*2;
3
4
5
6

Enter elements in matrix B of size2*2;
7
8
9
3

Sum of matrices A+B=
1012
149
```

Call By Value

```
#include<stdio.h>
void no_swap(int x,int y);
int main()
{
int a=1,b=999;
printf("a=%d\n,b=%d\n",a,b);
no_swap(a,b);
printf("a=%d\n,b=%d\n",a,b);
return 0;
}
void no_swap(int x,int y)
{
int temp;
temp=x;
x=y;
y=temp;
}
```

Output:

```
a=1
,b=999
a=1
,b=999
```

Call By Reference

```
#include<stdio.h>
void swap(int*p1,int*p2);
int main()
{
int a=1,b=999;
printf("a=%d\n,b=%d\n",a,b);
swap(&a,&b);
printf("a=%d\n,b=%d\n",a,b);
return 0;
}
void swap(int*px,int*py)
{
int temp;
temp=*px;
*px=*py;
*py=temp;
}
```

Output:

```
a=1
,b=999
a=999
,b=1
```

Class and Object

```
#include<iostream>
using namespace std;
class Room
{
public:
double length;
double breadth;
double height;
double calculateArea()
{
return length*breadth;
}
double calculatevolume()
{
return length*breadth*height;
}
};
int main()
{
Room room1;
room1.length=42.5;
room1.breadth=30.8;
room1.height=19.2;
cout<<"Area of Room="<<room1.calculateArea()<<endl;
cout<<"Volume of Room="<<room1.calculatevolume()<<endl;
return 0;
}
```

Output:

```
Area of Room=1309
Volume of Room=25132.8
```

Inline Function

```
#include<iostream>
using namespace std;
inline int add(int a,int b)
{
return(a+b);
}
inline int mul(int a,int b)
{
return(a*b);
}
int main()
{
cout<<"Addition of a and b is:"<<add(2,3)<<endl;
cout<<"Product of a and b is:"<<mul(2,3)<<endl;
return 0;
}
```

Output:

```
Addition of a and b is:5
Product of a and b is:6
```

Friend Function

```
#include<iostream>
using namespace std;
class math
{
private:
int x,y;
public:
friend int sum(math z);
void setdata(int a,int b);
};
void math::setdata(int a,int b)
{
x=a;
y=b;
}
int sum(math z)
{
return(z.x+z.y);
}
int main()
{
math a;
a.setdata(10,10);
cout<<"Sum of x and y is:"<<sum(a);
return 0;
}
```

Output:

Sum of x and y is:20

Function Overloading

```
#include<iostream>
using namespace std;
int area(int a)
{
return(a*a);
}
int area(int a,int b)
{
return(a*b);
}
int main()
{
int a,w,l;
cout<<"Enter the values:";
cin>>a>>w>>l;
cout<<"Area of square:"<<area(a)<<"\n";
cout<<"Area of rectangle:"<<area(w,l)<<"\n";
return 0;
}
```

Output:

```
Enter the values:5
6
8
Area of square:25
Area of rectangle:48
```

Array Of Objects

```
#include<iostream>
using namespace std;
class employee
{
char name[30];
float age;
public:
void getdata(void);
void putdata(void);
};
void employee::getdata(void)
{
cout<<"Enter name:";
cin>>name;
cout<<"Enter age:";
cin>>age;
}
void employee::putdata(void)
{
cout<<"name:"<<name<<"\n";
cout<<"age:"<<age<<"\n";
}
const int size=3;
int main()
{
employee manager[size];
for(int i=0;i<size;i++)
{
cout<<"\nDetail of manager"<<i+1<<"\n";
manager[i].getdata();
```

```
}
cout<<"\n";
for(int i=0;i<size;i++)
{
cout<<"\nmanager"<<i+1<<"\n";
manager[i].putdata();
}
return 0;
}
```

Output:

```
Detail of manager1
Enter name:Raja
Enter  age:23
Detail of manager2
Enter name:Ramu
Enter  age:34
Detail of manager3
Enter name:Kani
Enter age:26
```

Unary Operator Overloading

```
#include<iostream>
using namespace std;
class unaryoverload
{
  int hr,min;
public:
void in()
{
cout<<"\nEnter the hour:";
cin>>hr;
cout<<"\nEnter the minute:";
cin>>min;
}
void operator++(int)
{
hr++;
min++;
}
void out()
{
cout<<"\nTime is\t"<<hr<<"hr"<<min<<"min";
}
};
int main()
{
  unaryoverload ob;
  ob.in();
  ob++;
  cout<<"\n\nAfter incrementing:\n";
```

```
  ob.out();
  return 0;
}
```

Output:

Enter the hour:5

Enter the minute:30

After incrementing:

Time is 6hr31min

Single Inheritance

```
#include<iostream>
using namespace std;
class base
{
public:
int x;
void getdata()
{
cout<<"Enter the value of x=";
cin>>x;
}
};
class derive : public base
{
private:
int y;
public:
void readdata()
{
cout<<"Enter the value of y=";
cin>>y;
}
void product()
{
cout<<"Product="<<x*y;
}
};
int main()
{
```

```
derive a;
a.getdata();
a.readdata();
a.product();
return 0;
}
```

Output:

```
Enter the value of x=5
Enter the value of y=6
Product=30
```

File

```
#include<iostream>
#include<fstream>
using namespace std;
int main()
{
int rno,fee;
char name[50];
cout<<"Enter the Roll Number:";
cin>>rno;
cout<<"\nEnter the Name:";
cin>>name;
cout<<"\nEnter the Fee:";
cin>>fee;
ofstream fout("/home/studentg/I B.Sc(CS)-D/a.txt");
fout<<rno<<"\t"<<name<<"\t"<<fee;
fout.close();
ifstream fin("/home/studentg/I B.Sc(CS)-D/a.txt");
fin>>rno>>name>>fee;
fin.close();
cout<<endl<<rno<<"\t"<<name<<"\t"<<fee;
return 0;
}
```

Output:

```
Enter the Roll Number:35
Enter the Name:Vijay
Enter the Fee:16000

35      Vijay   16000
36      Vijay   16000
```

Constructor

```
#include<iostream>
using namespace std;
class MyClass
{
public:
int myValue;
MyClass(int value)
{
myValue = value;
cout<<"Constructor called with value:"<<myValue<<std::endl;
}
};
int main()
{
int n;
cout<<"Enter the value for n:";
cin>>n;
MyClass obj(n);
return 0;
}
```

Output:

```
Enter the value for n:5
Constructor called with value:5
```

Pointers

```
#include<bits/stdc++.h>
using namespace std;
void point()
{
int var = 20;
int*ptr;
ptr = &var;
cout<<"Value at ptr="<<ptr<<"\n";
cout<<"Value at var="<<var<<"\n";
cout<<"Value at *ptr="<<*ptr<<"\n";
}
int main()
{
point();
return 0;
}
```

Output:

```
Value at ptr=0x7ffc89fbc70c
Value at var=20
Value at *ptr=20
```