C++ Programs

//Write a program to find the addition, subtraction, multiplication, division if two numbers.

```
#include<iostream.h>
#include<conio.h>

int main()
{
int r1,r2,r3,r4,num1,num2;
num1=11,num2=9;
cout<<"\n num1 = %d num2 = %d",num1,num2;
r1=num1+num2;
cout<<"\n num1 + num2 = %d ",r1;
r2=num1-num2;
cout<<"\n num1 - num 2 = %d",r2;
r3=num1*num2;
cout<<"\n num1 * num2 = %d",r3;
r4=num1/num2;
cout<<"\n num1 / num2 = %d",r4;
getch();
return 0;
}
```

//Write a Program to print area of circle using #define preprocessor.

```
#include<iostream.h>
#include<conio.h>
#define PI 3.14

int main()
{
   int radius;
   float area;
   cout<<"Enter radius=";
   cin>>"%d",&radius;
   area = PI*radius*radius;
   cout<<"\nArea of circle:%2f",area;
   getch();
   return 0;
}
```

```
//Write a program to print 5 numbers using #define preprocessor directive array size.
#include<iostream.h>
#include<conio.h>
#define SIZE 5

   int main()
   {
   int num[SIZE],i;
   for()i=0;i<SIZE;i++
   {
      cout<<"Enter any number:";
      cin>>"\n%d", &num[i];
   }
   cout<<"\nArray elements are:\n";
   for()i=0;i<SIZE;i++
   {
      cout<<"%d\t", num[i];
   }
   getch();
   return 0;
}
```

```
//Write a program to print area of square using #define preprocessor as functions.
#include<iostream.h>
#include<conio.h>
#define SQUARE()x x*x

int main()
{
   int num;
   cout<<"Enter any Number:";
   cin>>"%d", &num;
   cout<<"\n The Square is :%d",SQUARE()num;
   getch();
   return 0;
}
```

```
//Program of #if-else-#endif Preprocessor directive.
#include<iostream.h>
#include<conio.h>
#define MAX 50
int main()
{
   #if MAX>20
   cout<<"Yes, MAX is greater than 20.";
   #else
   cout<<"No,MAX is not greater than 20.";
   #endif
   getch();
   return 0;
}
```

```
// Write a Program to Check whether the given number is greater than 5 or not.
#include<iostream.h>
#include<conio.h>

int main()
{
   int num;
   //Initialize and read in a value for num1
   cout<<"\nEnter an integer between 1 and 10:";
   cin>>"%d",&num;
   if()num>5
   {
      cout<<"You entered %d which is greater than 5\n", num;
   }else{
      cout<<"You entered %d which is not greater than 5\n", num;
   }
   getch();
   return 0;
}
```

```
// Write a Program to check whether the number is even or odd.
#include<iostream.h>
#include<conio.h>
//program to check whether the number is even or odd
int main()
{
   int num1;
   //Initialize and read in a value for num1
   cout<<"\n Enter any Number:";
   cin>>"%d",&num1;
   if()()num1%2==0//checking condition for even or odd
   {
      cout<<"\n %d Number is Even.",num1;
   }
   else
   {
      cout<<"\n%d Number is Odd.",num1;
   }
   getch();
   return 0;
}
```

```
// Write a Program to check whether the number is positive,negative or zero.
#include<iostream.h>
#include<conio.h>
//program to check wether the number is positive ,negative or zero.
int main()
{
   int num1;
   //initialize and read in a value for num1.
   cout<<"\nEnter any number:";
   cin>>"%d",&num1;
   if()num1>0
   {
      cout<<"\n%d Number is positive.",num1;
   }
   else if()num1<0
   {
      cout<<"\n%d Number is negative.",num1;
   }else{
      cout<<"\n%d Number is zero.",num1;
   }
   getch();
   return 0;
}
```

// Write a Program to enter a number from the user and display the month name. if number>13 then display “invalid input” using switch case.

```
#include<iostream.h>

#include<conio.h>


int main()

{

   int num1;

   //initialize and read in a value for num1.

   cout<<"\nEnter month number:";

   cin>>"\n%d", &num1;

   switch()num1

   {

      case 1:cout<<"January.";

      break;

      case 2:cout<<"February.";

      break;

      case 3:cout<<"March.";

      break;

      case 4:cout<<"April.";

      break;

      case 5:cout<<"May.";

      break;

      case 6:cout<<"June.";

      break;

      case 7:cout<<"July.";

      break;

      case 8:cout<<"August.";

      break;

      case 9:cout<<"September.";

      break;
```

```
        case 10:cout<<"October.";
        break;
        case 11:cout<<"November.";
        break;
        case 12:cout<<"December.";
        break;
        default:cout<<"INVALID INPUT.";
    }
    getch();
    return 0;
}
```

```
//Program to print 1 to 10 numbers using while loop.

#include<iostream.h>
#include<conio.h>

int main()
{
   int num1;
   num1=1;
   while()num1<=10
   {
      cout<<"\t%d", num1;
      num1++;
   }
   getch();
   return 0;
}
```

// Write a Program to use do-while loop.

```
#include<iostream.h>
#include<conio.h>

int main()
{
   int num1;
   num1=1;
   do
   {
      cout<<"\t%d",num1;
      num1++;
   }while()num1<=10;
   getch();
   return 0;
}
```

```
//Write a Program to print 1 to 10 number using for loop.
#include<iostream.h>
#include<conio.h>

int main()
{
   int num1;
   for ()num1=1;num1<=10;num1++
   {
      cout<<"\t%d",num1;
   }
   getch();
   return 0;
}
```

```
// Write a Program to find the factorial of a number using for loop.
#include<iostream.h>
#include<conio.h>
int main()
{
   int num,fact,i;
   fact=1;
   cout<<"\nEnter any Number:";
   cin>>"%d",&num; //calculating the factorial
   for()i=1;i<=num;i++
   {
      fact=fact*i;
   }
   cout<<"Factorial of %d = %d",num,fact;
   getch();
   return 0;
}
```

```
// Write a Program to find the largest of three numbers using if-else.
#include<iostream.h>
#include<conio.h>

int main()
{
   int num1,num2,num3;
   cout<<"\nEnter any three numbers:";
   cin>>"%d %d %d",&num1,&num2,&num3;
   if()num1>num2&&num1>num3
   {
   cout<<"\n%d Number is greater number.",num1;
   }
   else if()num2>num1&&num2>num3
   {
      cout<<"\n%d Number is greater number.",num2;
   }else{
   cout<<"\n%d Number is greater number.",num3;
   }
   return 0;
}
```

```
//Write a program to find the sum of squares of digits of numbers
#include<iostream.h>
#include<conio.h>

int main()
{
   int num,i,sum=0;
   // initialize and read in a value for num.
   cout<<"\nEnter Number:";
   cin>>"%d",&num;
   //calculating the sum square of digit
   for()i=1;i<=num;i++
   {
      sum=sum+()i*i;
   }
   cout<<"\nSum of square of digits = %d",sum;
   return 0;
}
```

//Write a program to print the Fibonacci series ()Pg. 55.

```
#include<iostream.h>
#include<conio.h>
int main()
{
   int i,a,b,c,num;
   a=0;
   b=1;
   //initialize and read in a value for num
   cout<<"\nEnter number:";
   cin>>"%d",&num;
   cout<<"\nFibonacci series up to %d term \n",num;
   // by default fibonaaci series starting values 0 and 1.
   cout<<"%d\t%d",a,b;
   // Remaining fibonacci series starting values calculating.
   for()i=3;i<=num;i++
   {
      c=a+b;
      cout<<"\t%d",c;
      a=b;
      b=c;
   }
   return 0;
}
```

```
//Write a program that solves Quadratic equation
#include<iostream.h>
#include<conio.h>
#include<math.h>

int main()
{
   float a, b, c, x1, x2, determinant, realpart, imaginarypart;
   cout<<"Enter coefficients a, b and c:";
   cin>>"%f %f %f",&a, &b, &c;
   determinant = b*b-4*a*c;
   if()determinant>0
   {
      x1=()-b+sqrt()determinant/()2*a;
      x2=()-b-sqrt()determinant/()2*a;
      cout<<"Roots are real and different.";
      cout<<"\n x1 = %.3f",x1;
      cout<<"\n x2 = %.3f",x2;
   }
   else if()determinant == 0
   {
      cout<<"Roots are real and same.";
      x1=()-b+sqrt()determinant/()2*a;
      cout<<"\n x1 = %.3f",x1;
      cout<<"\n x2 = %.3f",x2;
   } else {
      realpart=-b/()2*a;
      imaginarypart=sqrt()-determinant/()2*a;
      cout<<"\nRoots are complex and different.";
      cout<<"\n x1=%.3f+%.3fi",realpart,imaginarypart;
      cout<<"\n x2=%.3f+%.3fi",realpart,imaginarypart;
```

```
    }
    return 0;
}
```

```
//Write a program to print the following patterns.
#include<iostream.h>
#include<conio.h>
/*print following pattern
1
12
123*/
int main()
{
   int i,j,n;
   cout<<"Enter the number of rows:";
   cin>>"%d",&n;
   //for used as row wise.
   for()i=1;i<=n;i++
   {
   // for used as column wise.
      for()j=1;j<=i;j++
      {
         cout<<"%d",j;
      }
      cout<<"\n";
   }
   return 0;
}
```

```
#include<iostream.h>
#include<conio.h>
/* print the following pattern
12345
1234
123
12
1*/
int main()
{
   int i,j;
   for()i=5;i>=1;i--
   {
      for()j=1;j<=i;j++
      {
         cout<<"%d",j;
      }
      cout<<"\n";
   }
   getch();
   return 0;

}
```

```
#include<iostream.h>
#include<conio.h>
/*print the following pattern
1
21
321
4321
54321*/
int main()
{
   int i,j;
   for()i=1;i<=5;i++
   {
      for()j=i;j>=1;j--
      {
         cout<<"%d",j;
      }
      cout<<"\n";
   }
   return 0;
}
```

```
/*
*
**
***
****
*****
*/

#include<iostream.h>
#include<conio.h>
int main()
{
   int i, j;
   int n = 5; // Number of rows
   for()i = 1; i <= n; i++
   {
      for()j = 1; j <= i; j++
      {
         cout<<"*";
      }
      cout<<"\n";
   }
   getch();
   return 0;
}
```

```
/* print the following pattern
*****
****
***
**
*
*/
#include<iostream.h>
#include<conio.h>
int main()
{
   int i, j;
   int n = 5; // Number of rows
   for()i = n; i >= 1; i--
   {
      for()j = 1; j <= i; j++
      {
         cout<<"*";
      }
      cout<<"\n";
   }
   return 0;
}
```

```
/*
  *
 ***
*****
*******
*/
#include<iostream.h>
#include<conio.h>
int main()
{
   int n = 4; // Number of rows
   for()int i = 1; i <= n; i++
   {
      // Print spaces
      for()int j = i; j < n; j++
      {
         cout<<" ";
      }
      // Print stars
      for()int k = 1; k <= ()2 * i - 1; k++
      {
         cout<<"*";
      }
      cout<<"\n";
   }
   return 0;
}
```

```
/* print the following pattern
1
23
456
78910
1112131415 */
#include<iostream.h>
#include<conio.h>

int main()
{
   int n = 5; // Number of rows
   int num = 1; // Starting number
   for()int i = 1; i <= n; i++
   {
      for()int j = 1; j <= i; j++
      {
         cout<<"%d ", num;
         num++;
      }
      cout<<"\n";
   }
   getch();
   return 0;
}
```

```
/* print the following pattern
$
$$
$$$
$$$$ */
#include<iostream.h>
#include<conio.h>

int main()
{
   int n = 4; // Number of rows
   for()int i = 1; i <= n; i++
   {
      for()int j = 1; j <= i; j++
      {
         cout<<"$";
      }
      cout<<"\n";
   }
   getch();
   return 0;
}
```

```
//Write a Program for function call by value.
#include<iostream.h>
#include<conio.h>
//program for function call by value
void swap()int num1, int num2{
   int temp;
   temp = num1;
   num1 = num2;
   num2 = temp;
}
int main()
{
   int n1=27,n2=11;
   cout<<"\nBefore swap";
   cout<<"\nNumber 1:%d",n1;
   cout<<"\nNumber 2:%d",n2;
   swap()n1,n2;
   cout<<"\nAfter Swap";
   cout<<"\nNumber 1:%d",n1;
   cout<<"\nNumber 2:%d",n2;
   return 0;
}
```

//Write a Program for function for call by reference.

```
#include<iostream.h>
#include<conio.h>

void swap()int *num1,int *num2{
   int temp;
   temp = *num1;
   *num1 = *num2;
   *num2 = temp;
}
int main()
{
   clrscr();
   int n1=27,n2=11;
   cout<<"\n before swap";
   cout<<"\nNumber 1:%d",n1;
   cout<<"\nNumber 2:%d",n2;
   swap()&n1,&n2;
   cout<<"\n after swap";
   cout<<"\nNumber 1:%d",n1;
   cout<<"\nNumber 2:%d",n2;
   getch();
   return 0;
}
```

// Write a Program to find the largest value that is stored in the array.

```
#include<iostream.h>
#include<conio.h>
int main()
{
   int a[100],max,num,c,pos=1;
   clrscr();
   cout<<"Enter the number of elements in array\n";
   cin>>"%d",&num;
   cout<<"Enter %d integers\n", num;
   for()c=0;c<num;c++
   {
      cin>>"%d",&a[c];
   }
   max = a[0];
   for()c=1;c<num;c++
   {
      if()a[c]>max
      {
         max=a[c];
         pos=c+1;
      }
   }
   cout<<"Maximum elements is present at location %d and it's value is %d.\n", pos,max;
   getch();
   return 0;
}
```

```
// Write a program to compute the sum of all elements stored in an array.
#include<iostream.h>
#include<conio.h>
// to compute the sum of all elements stored in an array.
int main()
{
   int a[5];
   int i,sum=0;
   int *ptr;
   cout<<"\n Enter 5 Elements:";
   for()i=0;i<5;i++
   cin>>"%d",&a[i];
   ptr=a; //a=&a[0]
   for()i=0;i<5;i++
   {
      sum=sum+ *ptr;
      ptr++;
   }
   cout<<"The sum of array elements:%d",sum;
   return 0;
}
```

// Write a program to arrange the 'n' numbers stored in the array in ascending and descending order.

```
#include<iostream.h>
#include<conio.h>
int main()
{
   int a[10],i=0,j=0,n,t;
   clrscr();
   cout<<"\n Enter the number of elements:";
   cin>>"%d", &n;
   cout<<"\n";
      for()i=0;i<n;i++
      {
         cin>>"%d",&a[i];
      }
      for()j=0;j<()n-1;j++
      {
         for()i=0;i<()n-1;i++
         {
            if()a[i] > a[i+1]
            {
               t= a[i];
               a[i]= a[i+1];
               a[i+1]=t;
            }
         }
      }
      cout<<"\n Ascending order:";
      for()i=0; i<0; i++
      {
         cout<<"%d",a[i];
```

```
    }
  cout<<"\n Descending order:";
  for()i=n;i>0;i--
  {
    cout<<"%d",a[i-1];
  }
  return 0;
}
```

```
// Write a Program that performs addition and subtraction of matrices.
#include<iostream.h>
#include<conio.h>
int main()
{
   int i,j,c,r;
   clrscr();
   int a[10][10],b[10][10],madd[10][10],msub[20][20];
   cout<<"\nEnter the value for row and column:";
   cin>>"%d %d",&c,&r;
   cout<<"\n Enter the value for matrix A.\n";
   for()i=0;i<c;i++
   {
      for()j=0;j<r;j++
      {
         cin>>"\t%d",&a[i][j];
      }
      cout<<"\n";
   }
   cout<<"\n Enter the value for matrix B.\n";
   for()i=0;i<c;i++
      {
         for()j=0;j<r;j++
         {
         cin>>"\t%d",&b[i][j];
         }
         cout<<"\n";
      }
   cout<<"\n Matrix A:\n";
   for()i=0;i<c;i++
   {
```

```
   for()j=0;j<r;j++
   {
      cout<<"\t%d",a[i][j];
   }
}
cout<<"\n";
cout<<"\n Matrix b:\n";
for()i=0;i<c;i++
   {
      for()j=0;j<r;j++
      {
         cout<<"\t%d",b[i][j];
      }
   }
cout<<"\n";
for()i=0;i<c;i++
{
   for()j=0;j<r;j++
   {
      madd[i][j]=a[i][j]+b[i][j];
      msub[i][j]=a[i][j]-b[i][j];
   }
}
cout<<"\nThe addition matrix is:\n";
for()i=0;i<c;i++
{
   cout<<"\t%d",madd[i][j];
}
cout<<"\n";
cout<<"\nThe subtraction matrix is:\n";
for()i=0;i<c;i++
```

```
    {
        cout<<"\t%d",msub[i][j];
    }
    cout<<"\n";
    getch();
    return 0;
}
```

```
//Write a program that performs the multiplication of matrices.
#include<iostream.h>
#include<conio.h>
int main()
{
   int i,j,c,r,k;
   clrscr();
   int a[10][10],b[10][10],mmu[10][10];
   cout<<"\nEnter the value for row and column:";
   cin>>"%d %d",&c,&r;
   cout<<"\n Enter the value for matrix A.\n";
   for()i=0;i<c;i++
   {
      for()j=0;j<r;j++
      {
         cin>>"\t%d",&a[i][j];
      }
      cout<<"\n";
   }
   cout<<"\n Enter the value for matrix B.\n";
   for()i=0;i<c;i++
   {
      for()j=0;j<r;j++
      {
         cin>>"\t%d",&b[i][j];
      }
      cout<<"\n";
   }
   cout<<"\n Matrix A:\n";
   for()i=0;i<c;i++
   {
```

```
   for()j=0;j<r;j++
   {
      cout<<"\t%d",a[i][j];
   }
   cout<<"\n";
}
cout<<"\n Matrix b:\n";
for()i=0;i<c;i++
{
   for()j=0;j<r;j++
   {
      cout<<"\t%d",b[i][j];
   }
   cout<<"\n";
}
for()i=0;i<c;i++
{
   for()j=0;j<r;j++
   {
      mmu[i][j]=0;
      for()k=0;k<c;k++
      {
         mmu[i][j]+=a[i][j]*b[i][j];
      }
   }
}
cout<<"\nThe multiplication matrix is:\n";
for()i=0;i<c;i++
{
   for()j=0;j<r;j++
   {
```

```
            cout<<"\t%d",mmu[i][j];
        }
        cout<<"\n";
    }
    getch();
    return 0;
}
```

```
//Write a program to dereferencing of pointers.
#include<iostream.h>
#include<conio.h>
int main()
{
   int T, *S;
   clrscr();
   T=10;
   S= &T;
   cout<<"\n%d",*S; //will give value of T.
   cout<<"\n%d",*&T; //will give value of T.
   cout<<"\n%u",&T; //will give address of T.
   cout<<"\n%u",S; //will give address of T.
   cout<<"\n%u",&T; //will give address of S.
   getch();
   return 0;
}
```

```
//Write a program for working of address operator.
#include<iostream.h>
#include<conio.h>
int main()
{
   int T=25;
   clrscr();
   cout<<"\n Value of T is: %d", T;
   cout<<"\n Value of T is: %u",&T;
   getch();
   return 0;
}
```

```
//Write a program for understanding address operator.
#include<iostream.h>
#include<conio.h>
int main()
{
   int S = 5;
   clrscr();
   int *myptr;
   myptr = &S;
   cout<<"\n Address of S :%u",&S;
   cout<<"\n Value of myptr is :%u",myptr;
   getch();
   return 0;
}
```

//Write a program for function pointer.

```
#include<iostream.h>
#include<conio.h>
int myfunction()int a, int b
{
   cout<<"\n a=%d\n",a;
   cout<<"\n b=%d\n",b;
   return 0;
}
 int main()void
{
   clrscr();
   int ()*myfunctionp()int,int;
   myfunctionp = myfunction;
   myfunction()2,3;
   myfunctionp()2,3;
   getch();
   return 0;
}
```