

**PROGRAMMING IN C
LAB MANUAL
FOR
DIPLOMA IN ECE/EEE**

1. Write a C program to perform addition , subtraction , multiplication and division of two numbers .

```
# include <stdio.h>
# include <conio.h>
void main ( )
{
    int a , b ,sum , sub , mul , div ;
    clrscr ( ) ;
    printf(“ Enter two numbers =”);
    scanf ( “ %d %d “ , &a, &b);
    sum = a + b;
    sub= a – b ;
    mul = a * b ;
    div = a / b ;
    printf( “addition is = %d \n“ , sum);
    printf( “subtraction is = %d\n “ , sub);
    printf( “multiplication is = %d \n“ , mul);
    printf( “division is = %d “ , div);
    getch ( );
}
```

OUTPUT :

```
Enter two numbers = 12  2
addition is = 14
subtraction is = 10
multiplication is = 24
division is = 6
```

2. To interchange the numeric values of two variables using third variable.

```
# include <stdio.h>
# include <conio.h>
void main ( )
{
    int a , b , t ;
    clrscr ( ) ;
    printf(“ Enter two numbers =”);
    scanf ( “ %d %d “ , &a, &b);

    t = a ;
    a= b ;
    b= t ;
    printf( “After interchange value is a = %d b=%d “ , a , b);
    getch ( );

}
```

OUTPUT :

```
Enter two numbers = 12  34

After interchange value is a = 34
b = 12
```

3. To interchange the numeric values of two variables without using third variable.

```
# include <stdio.h>
# include <conio.h>
void main ( )
{
    int a , b , t ;
```

```

clrscr ( ) ;
printf(“ Enter two numbers =”);
scanf ( “ %d %d “ , &a, &b);

a = a + b;
b = a - b ;
a = a - b ;
printf( “After interchange value is a = %d b=%d “, a , b);
getch ( );

}

```

OUTPUT :

Enter two numbers = 12
34

After interchange value is
a = 34 b = 12

4. To calculate area of a rectangle .

```

#include <stdio.h>
#include <conio.h>
void main ( )
{
int a , b , area ;
clrscr ( ) ;
printf(“ Enter length of the rectangle =”);

scanf ( “ %d “ , &a);
printf(“ Enter width of the rectangle =”);
scanf ( “ %d “ , &b);
area = a * b ;
printf( “Area is = %d”, area);
getch ( );

}

```

OUTPUT :

Enter length of the rectangle = 15
Enter width of the rectangle =10
Area is = 150

5. Identify greater number between two numbers using C program.

```

#include <stdio.h>
#include <conio.h>
void main ( )

{
int a , b ;
clrscr ( ) ;
printf(“ Enter two numbers =”);

scanf ( “ %d %d “ , &a, &b);
if ( a > b)
printf ( “greater is = %d “ , a);
else
printf( “greater is = %d “ , b);
getch ( );
}

```

OUTPUT :

Enter two numbers= 40 60

greater is = 60

6. To check a given number is Even or Odd .

```
#include <stdio.h>
#include <conio.h>
void main ( )
{
    int n ;
    clrscr ( ) ;
    printf(" Enter the number =");

    scanf ( " %d" ,&n);

    if ( n % 2 == 0)
        printf("even number ");
    else
        printf("odd number ");

    getch ( ) ;

}
```

OUTPUT :

Enter the number = 6

Even number

7. Take three sides of a triangle as input and check whether the triangle can be drawn or not. If possible, classify the triangle as equilateral, isosceles, or scalene.

```
#include<stdio.h>
#include<conio.h>
void main ( )
{
    int a,b,c;
    clrscr ( ) ;
    printf("Enter the value of three sides=");

    scanf("%d %d %d", &a, &b, &c);
    if( a + b > c || a + c > b || b + c > a)
    {
        printf("triangle is possible \n");
        if(a==b && b==c)
        {
            printf("Equilateral triangle");
        }

    }

    else
    {
        if(a==b || b==c || a==c)
            printf(" Isoceles triangle ");
        else
            printf(" Scalene triangle ");
    }
}
```

OUTPUT :

Enter the value of three sides = 5 8 5
triangle is possible
Isoceles triangle

```

else
printf(" Triangle is not possible ");
getch ( ) ;
}

```

8. To find the roots of a quadratic equation.

```

#include<stdio.h>
#include<conio.h>
#include<math.h>
void main ( )
{
float a,b,c,r1,r2,d;
clrscr ( );
printf("Enter the value of a,b,c");
scanf("%f %f %f", &a, &b, &c);

d=sqrt(b*b-4*a*c);
if(d==0)
{
printf("Both roots are Equal\n");
r1=r2=-b/(2*a);
printf("r1=%f r2=%f",r1,r2);
}
else
{
if(d>0)
{
printf(" Roots are real and Unequal \n");
r1 = (-b+d) / (2*a) ;
r2 = (-b-d) / (2*a) ;
printf("r1=%f r2=%f",r1,r2);
}
else
printf("roots are imaginary");
}
getch( ) ;
}

```

OUTPUT :

Enter the value of a , b, c =
1 -3 -4

Roots are real and unequal
r1=4.000000 r2 = -1.000000

Enter the value of a , b, c =
1 0 -4

Roots are real and unequal
r1= -2.000000 r2 = 2.000000

9. Find the factorial of given number.

```

# include <stdio.h>
# include <conio .h>
void main ( )
{
int i, n, fact = 1 ;
clrscr ( ) ;
printf("Enter a number to calculate it's factorial = ");
scanf("%d", &n);

```

```

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

printf("Factorial of %d = %d\n", n, fact);

getch ( );
}

```

OUTPUT :

Enter a number to calculate it's factorial
= 5
Factorial of 5 is = 120

10. To find the sum of n natural numbers.

```

#include <stdio.h>
#include<conio .h >
void main ( )
{
int n, i, sum=0 ;
clrscr ( ) ;
printf("Enter an integer = ");

scanf("%d",&n);
for(i=1; i <=n ; i++)
{
sum = sum + i ;
}
printf("Sum is = %d",sum);
getch ( ) ;
}

```

OUTPUT :

Enter an integer = 7
Sum is = 28

11. Print the sum of $1 + 3 + 5 + 7 + \dots + n$

```

#include <stdio.h>
#include<conio .h >
void main ( )
{
int n, i, sum=0 ;
clrscr ( ) ;
printf("Enter the range = ");

scanf("%d",&n);
for(i=1; i <=n ; i = i + 2)
{
sum = sum + i ;
}
printf("Sum is = %d",sum);
getch ( ) ;
}

```

OUTPUT :

Enter the range =9
Sum is = 25

12. Print the pattern .

```
 *
 * *
 * * *
 * * * *
 * * * * *
```

```
#include <stdio.h>
#include<conio .h >
void main ( )
{
    int i, j, rows;
    clrscr ( ) ;
    printf("Enter the number of rows: ");
    scanf("%d",&rows);

    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf (" * ");
        }
        printf("\n");
    }
    getch ( ) ;
}
```

13. Print the pattern

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

```
#include <stdio.h>
#include<conio .h >
void main ( )
{
    int i, j, rows;
    clrscr ( ) ;
    printf("Enter the number of rows: ");
    scanf("%d",&rows);

    for(i=1 ; i<=rows ; i++)
```

```

{
    for(j=1; j<= i ; j++)
    {
        printf (" %d" , j );
    }
    printf("\n");
}
getch ( );
}

```

14. Print the pattern

```

A
A B
A B C
A B C D
A B C D E
#include <stdio.h>
#include<conio .h >
void main()
{
    int i, j;
    for(i=1; i<=5; i++)
    {
        for(j=1 ; j<=i ; j++)
        {
            printf("%c" , 'A' + j-1);
        }
        printf("\n");
    }

    getch ( );
}

```

15. Print the pattern

```

* * * * *
* * * *
* * *
* *
*

```

```

#include <stdio.h>
#include<conio .h >
void main ( )
{
    int i, j, rows;
    clrscr ( ) ;
    printf("Enter the number of rows: ");
    scanf("%d",&rows);
}

```



```

for( i= rows ; i >= 1 ; i - -)
{
    for ( j=1; j<= i ; j++)
    {
        printf ( " * " );
    }
    printf("\n");
}
getch ( ) ;
}

```

16. Check whether an input number is palindrome or not.

```

#include <stdio.h>
#include < conio . h >
void main( )
{
    int n, reverse = 0, temp ,r;
    clrscr ( ) ;
    printf ("Enter a number to check if it is a palindrome or not=");
    scanf ("%d", &n);
    temp = n;

    while( temp != 0 )
    {
        r = temp % 10
        reverse = reverse * 10 + r ;
        temp = temp/10;
    }

    if ( n == reverse )
    printf("%d is a palindrome number.\n", n);
    else
    printf("%d is not a palindrome number.\n", n);
    getch ( ) ;
}

```

OUTPUT :

Enter a number to check if it is a
palindrome or not= 151

151 is a palindrome number

17. To find Sum of digits of an integer.

```

# include < stdio . h>
# include < conio . h>
void main( )
{
    int n, sum = 0, r ;
    printf(" Enter an integer=" ) ;

```

```

scanf("%d", &n);

while (n != 0)
{
    r = n % 10;
    sum    = sum + r ;
    n     = n / 10 ;
}
printf("Sum of digits =%d ", sum);
getch ( ) ;
}

```

OUTPUT :

Enter a number to check if it is a
palindrome or not= 151

151 is a palindrome number

18. Find the G.C.D and L.C.M of two numbers.

```

#include <stdio.h>
#include <conio. h>
void main ( )
{
    int a, b, x, y, t, gcd, lcm ;
    clrscr ( ) ;
    printf("Enter two integers=") ;

    scanf("%d%d", &x, &y) ;

    a = x;
    b = y;

    while (b != 0)
    {
        t = b;
        b = a % b;
        a = t;
    }

    gcd = a;
    lcm = (x*y) / gcd;

    printf("Greatest common divisor of %d and %d = %d\n", x, y, gcd);
    printf("Least common multiple of %d and %d = %d\n", x, y, lcm);

    getch ( ) ;
}

```

OUTPUT :

Enter two integers = 15 18
Greatest common divisor of 15 and 18 = 3
Least common divisor of 15 and 18 = 90

19. Print the sum of $2 + 4 + 6 + 8 + \dots + n$

```

#include <stdio.h>
#include <conio. h >
void main ( )

```

```

{
  int n, i = 2, sum=0 ;
  clrscr ( ) ;
  printf("Enter the range = ");

  scanf("%d",&n);
  do
  {
    sum = sum + i ;
    i = i + 2 ;
  }while ( i <= n) ;
  printf("Sum is = %d", sum) ;
  getch ( ) ;
}

```

OUTPUT :

Enter the range = 10
Sum is = 30

20. Print the sum of $(1*1) + (2*2) + (3*3) + (4*4) + (5*5) + \dots + (n*n)$

```

#include <stdio.h>
#include<conio .h >
void main ( )
{
  int n , i=1, sum = 0 ;
  clrscr ( ) ;
  printf("Enter the range = ");

  scanf("%d",&n);
  do
  {
    sum = sum + i * i ;
    i ++ ;
  }while ( i <= n) ;
  printf("Sum is = %d", sum) ;
  getch ( ) ;
}

```

OUTPUT :

Enter the range = 5
Sum is = 55

21. To check a given number is prime or not.

```

#include<stdio.h>
#include<conio .h >
void main ( )
{
  int n , c = 2;
  clrscr ( ) ;
  printf("Enter a number to check if it is prime\n");
}

```

```

scanf("%d",&n);

for ( c = 2 ; c <= n - 1 ; c++ )
{
    if ( n%c == 0 )
    {
        printf("%d is not prime.\n", n);
        break;
    }
}
if ( c == n )
    printf("%d is prime.\n", n);

getch ( ) ;
}

```

OUTPUT :

Enter a number to check if it is
prime Sum is = 17
17 is prime

22. Use of “continue “ statement .

```

#include<stdio.h>
#include<conio .h >
void main ( )
{
    int j ;
    clrscr ( ) ;
    for ( j=0; j<=8; j++)

    {
        if (j==4)
        {
            continue ;
        }

        printf("%d ", j);
    }
    getch ( ) ;
}

```

OUTPUT :

0 1 2 3 5 6 7 8

23. To test whether the given character is Vowel or not. (using switch case)

```

#include<stdio.h>
#include<conio.h>
void main()
{
    char ch;
    clrscr ( ) ;

    printf("Enter a character=") ;

```

```

scanf("%c", &ch);
switch ( ch )
{
case 'a' :
case 'A' :
case 'e' :
case 'E' :
case 'i' :
case 'I' :
case 'o' :
case 'O' :
case 'U' :
case 'u' :
printf(" %c is vowel ", ch);
break;
default:
printf(" %c is not vowel ",ch);
}
getch ( );
}

```

OUTPUT :

Enter a character= E
E is vowel

24 . Write a C program to print day of week name using switch case.

```

#include<stdio.h>
#include<conio.h>
void main()
{
int week;
clrscr();
printf("Enter week number(1-7): ");
scanf("%d", &week);

switch(week)
{
case 1: printf("MONDAY");
break;
case 2: printf("TUESDAY");
break;
case 3: printf("WEDNESDAY");
break;
case 4: printf("THURSDAY");
break;
case 5: printf("FRIDAY");
break;
case 6: printf("SATURDAY");
break;
case 7: printf("SUNDAY");
break;
default: printf("Invalid input! Please enter week number between 1-7");
}
}

```

OUTPUT:

Enter Week number(1-7): 7
SUNDAY

```
    getch();
}
```

25. C program to print number of days in a month using switch case?

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

```
void main()
```

```
{
```

```
    int month;
    clrscr();
```

```
    printf("Enter month number(1-12): ");
    scanf("%d", &month);
```

```
    switch(month)
```

```
    {
```

```
    case 1:
```

```
    case 3:
```

```
    case 5:
```

```
    case 7:
```

```
    case 8:
```

```
    case 10:
```

```
    case 12: printf("31 days");
```

```
        break;
```

```
    case 4:
```

```
    case 6:
```

```
    case 9:
```

```
    case 11: printf("30 days");
```

```
        break;
```

```
    case 2: printf("28/29 days");
```

```
        break;
```

```
    default: printf("Invalid input! Please enter month number between 1-12");
```

```
    }
```

```
    getch();
```

```
}
```

OUTPUT:

Enter month number(1-12): 2

28/29 days

26. To accept 10 numbers and make the average of the numbers using one dimensional array.

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

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

```
void main ( )
```

```
{
```

```
float a[15], sum =0 , avg , i ;
```

```
clrscr ( ) ;
```

```
printf("Enter values of 10 numbers = ");
```

```
for(i=0 ; i< 10 ; i ++)
```

```
{
```

```
scanf("%f ",& a [ i ] );
```

OUTPUT:

Enter values of 10 numbers = 8 2

6 3 9 7 11 21 30 22

Average is = 11 . 900000

```

sum = sum + a[ i ] ;
}

avg = sum / 10 ;
printf("Average is = %f ",avg);
getch ( ) ;
}

```

27. To accept 10 elements and sort them in descending order using one dimensional array.

```

#include<stdio.h>
#include<conio.h>
void main ( )
{
int i, j,temp,a[10];
clrscr ( );
printf("Enter 10 integer numbers: \n");
for(i=0;i<10;i++);
scanf("%d",&a[i]);
for (i=0;i<10;i++)
{
for(j=i+1;j<10;j++)
{
if ( a[i] < a[j] )
{
temp=a[j];
a[ j]=a[i];
a [ i]=temp;
}
}
}
printf("\n\nThe 10 numbers sorted in descending order are: \n");
for(i=0;i<10;i++)
printf("%d\t",a[i]);
getch ( ) ;
}

```

OUTPUT:

Enter 10 integer numbers: 5 2 10 7 6
1 4 3 8 9

The 10 numbers sorted in descending order
are:

10 9 8 7 6 5 4 3 2 1

28. Find out length of a string .

```

#include <stdio.h>
#include<conio.h>
void main()
{
char s[90] , i;
printf("Enter a string: ");
scanf("%s",s);
for(i=0; s[i]!='\0'; i++);
printf("Length of string: %d",i);
getch ( ) ;
}

```

OUTPUT :

Enter a string: programming

Length of string : 11

29. Find out addition of two matrices .

```
#include <stdio.h>
#include<conio.h>
void main()
{
    int m, n, c, d, first[10][10], second[10][10], sum[10][10];

    printf("Enter the number of rows and columns of matrix\n");
    scanf("%d%d", &m, &n);
    printf("Enter the elements of first matrix\n");

    for (c = 0; c < m; c++)
        for (d = 0; d < n; d++)
            scanf("%d", &first[c][d]);

    printf("Enter the elements of second matrix\n");

    for (c = 0; c < m; c++)
        for (d = 0 ; d < n; d++)
            scanf("%d", &second[c][d]) ;

    printf("Sum of entered matrices:-\n");

    for (c = 0 ; c < m; c++) {
        for (d = 0 ; d < n; d++) {
            sum[c][d] = first[c][d] + second[c][d];
            printf("%d\t", sum[c][d]);
        }
        printf("\n");
    }

    getch ( ) ;
}
```

OUTPUT :

Enter the number of rows and columns of matrix

3 2

Enter the elements of first matrix

5 8

4 1

5 2

Enter the elements of second matrix

2 6

4 7

1 2

Sum of entered
matrices 7 14

8 8

6 4

30. To find the summation of three numbers using function.

```
#include <stdio.h>
#include<conio .h >
int add ( int x , int y, int z);
void main ( )
{
    int a ,b ,c, r ;
    clrscr ( ) ;
    printf("Enter three numbers = ");
    scanf("%d %d %d ", &a, &b, &c );
    r = add (a, b, c);
    printf (" summation is = %d ", r);
    getch ( ) ;

}
int add ( int x, int y , int z)
{
    int s;
    s = x + y + z ;
    return s;
}
}
```

OUTPUT :

```
Enter three numbers = 10 20 30
Summation is = 60
```

31. To find the maximum between two numbers using function .

```
#include <stdio.h>
#include<conio .h >
int max ( int x , int y, );
void main ( )
{
    int a ,b , r ;
    clrscr ( ) ;
    printf("Enter two numbers = ");

    scanf("%d %d %d ", &a, &b );
    r = max (a, b);
    printf (" maximum is = %d ", r);
    getch ( ) ;

}
int max ( int x, int y )
{
    int s;
    if (x > y)
        s=x;
    else
        s=y;
    return s ;
}
}
```

OUTPUT :

```
Enter two numbers = 10 20
maximum is = 20
```

32. Find out square of a number using function .

```
#include <stdio.h>
#include <conio .h >
int square( int x );
void main ( )
{
    int n , r ;
    clrscr ( ) ;
    printf("Enter the number = ");

    scanf("%d ", &n);
    r = square ( n ) ;
    printf (" Square value is = %d ", r);
    getch ( ) ;

}
int square ( int x )
{
    int s ;
    s = x * x ;
    return s ;
}
```

OUTPUT :

```
Enter the number = 10
Square value is = 100
```