

Practical No: 1

Aim:- Program to understand basic datatypes and input and output.

Program 1:- Area of rectangle

Algorithm

Step 1:- Specify 2 header files namely stdio & conio
Step 2:- Define 3 variables of datatypes float
namely l-length , b-breadth and other.

Step 3:- Use clrscr().

Step 4:- Accept the length and breadth from the user and store it in a variable t.

Step 5:- Accept the breadth and from the user and store it in a variable b.

Step 6:- Calculate the area of rectangle by multiplying the width and height i.e. length.

Step 7:- Print the area of the rectangle.

Source code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int l, b, area;
    printf("Enter the number");
    scanf("%d", &l &b);
    area = l * b;
    printf("The area is %d");
    getch();
}
```

Output:-

Enter the number 5,8
The area is 40.

Output

Enter the radius 7
 The volume is :- 1436.026733

Program 2 : Volume of sphere

Algorithm

- Step 1 : Specify 2 header files i.e stdio and conio.
- Step 2 : Define 3 variables in float datatype i.e. PI, radius, area.
- Step 3 : Use clrscr()
- Step 4 : Accept the radius of the circle from the user and store it in variable r.
- Step 5 : Calculate the volume by using the formula $(4/3) * \pi * r^3$
- Step 6 : Print the volume of the sphere.

Coding :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr()
    float r, v, PI;
    printf ("Enter the radius:");
    scanf ("%f", &r);
    PI = 3.14
    v = 4/3 * PI * r * r * r;
    printf ("The volume is :- %f", v);
    getch();
}
```

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Program 3:- Average of three numbers.

Algorithm

Step 1:- Specify 2 header file i.e. stdio.h and conio.h.

Step 2:- clrscr().

Step 3:- Define 4 variable i.e. a, b, & c also avg to calculate average.

Step 4:- Ask the user to enter a number.

Step 5:- Add 3 number to calculate sum and average by formula sum/3 i.e. $n_1+n_2+n_3/3$.

Step 6:- Print the corresponding output.

Program :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    float a,b,c,avg;
    clrscr();
    printf("Enter the numbers:");
    scanf("%f,%f,%f",&a,&b,&c);
    avg (a+b+c)/3;
    printf("Avg: %f",avg);
    getch();
}
```

Output :-

30928

Enter the numbers : 5 5 2

avg : 4.00

~~Output :-~~
Enter the value of celsius : }
Fahrenheit = 37.400002

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Program 4:- Convert temperature from celsius to fahrenheit.

Algorithm

Step 1 :- Specify 2 header file i.e. stdio & conio

Step 2 :- Define 2 variable name c for celsius and temp for the converted value in fahrenheit.

Step 3 :- Ask the user to enter temperature in celsius

Step 4 :- Store it in the variable c.

Step 5 :- Use the formula $(c * 9/5) + 32$.

Step 6 :- Print the output.

Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    float c, temp;
    clrscr();
    printf("Enter the temp in celsius:");
    scanf("%f", &c);
    temp = (c * 9/5) + 32
    printf("The converted value is %.f", temp);
    getch();
}
```

Program 5:- Convert temperature from fahrenheit to celsius.

Step 1: Specify the header file.

Step 2: Define 2 variable namely f & temp.

Step 3: Ask the user to enter the temp in fahrenheit store it in variable f.

Step 4: Use the formula $(5/9) * (f - 32)$

Step 5: Print the desired output.

Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    float f, temp;
    clrscr();
    printf("Enter the temperature in fahrenheit");
    scanf("%f", &f);
    temp = (5/9)*(f-32);
    printf("The converted temperature is %f", temp);
    getch();
```

Output :-

Enter the value of fahrenheit :- 36
Celsius : 26.666

6/6/02

Q8
Output :-

~~a=25, b=10
a=26, b=11, c=16, d=36
c=4, d=2~~

Practical No2

31

Aim :- Programs on operators and Expressions.

Program 1:- Increment and decrement

Algorithm:-

- Step 1:- Specify header file i.e. conio and stdio.
- Step 2:- Inside the void main block define 4 variables a,b,c and d of datatype integer.
- Step 3:- Initialize variable a with some value and variable b with some value.
- Step 4:- Print the value a and b.
- Step 5:- C = ++ a - b and a = b + + a;
- Step 6:- Print the value a,b,c,d and c = a / b, d = a / c
- Step 7:- Print the value c,d and print getch();

Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a,b,c,d;
    clrscr();
    a=25; b=10;
    printf ("\n a=%d, b=%d", a, b);
    c=++a-b;
    d=b++a;
    printf ("\n a=%d, b=%d, d=%d, c=%d", a, b, d, c);
    c=a%b; d=a/b;
    printf ("\n c=%d, d=%d", c, d);
    getch();}
```

Program 2:- Operators Precedence

Algorithm:

Step 1: Specify the header file i.e. conio and stdio.
Step 2: Inside the void main block define 6 variables a,b,c & x,y,z.

Step 3: Initialize Variable a,b,c with all float value
Step 4: Print the values of a,b,c.
Step 5: Perform the operators and store it in x,y,z.
Step 6: Print the value of x,y,z.

Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    float a,b,c,x,y,z;
    clrscr();
    a=5;
    b=15;
    c=3;
    printf("The value of a=%f, b=%f, c=%f",a,b,c);
    x=(a+b/(3+c))*0.1;
    y=(a-b/(3+c))*(2.1);
    z=(a-b/(3+c))*(2.1);
    printf("\n The value of x=%f, y=%f, z=%f",
          x,y,z);
    getch();
}
```

Output :-

a = 5.000000 , b = 15.000000 , c = 3.000000
~~x = 8.000000 , y = 5.500000 , z = 2.000000~~

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Output :-
~~a = 7, b = 6, c = 1, ans = 1~~

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Program 3:-

Algorithm:-

Step 1:- Specify the header files namely stdio and conio.

Step 2:- Inside the void main block define 3 variables namely a,b,c and ans.

Step 3:- Initialize the variable a,b,c with a value.

Step 4:- Perform the operation $+ a \& b++ \& c++$; C++ and store in variable ans.

Step 5:- Print the value of a,b,c and ans.

Code :-

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

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

```
void main()
```

```
{
```

```
    int a,b,c,ans;
```

```
    clrscr();
```

```
    a = 6;
```

```
    b = 4;
```

```
    c = 1;
```

```
    ans = + a & b++ & c++;
```

```
    printf("The value of a = %d , b = %d , c = %d  
and ans = %d . a , b , c , ans );
```

```
    getch();
```

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Program 4:-

Algorithm

Step 1: Initialize variable a,b,c,x with data type
int. Which is

Step 2: clear the screen clrscr();

Step 3: Store x=10;

Step 4: Post increment the value of x and store in a.

Step 5: Pre decrement the value of x and store in b.

Step 6: Perform $x++ * x-- - b$ and store in c.

Step 7: Print the value of a,b,c,x.

Step 8: End.

Code:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a,b,c,x;
    clrscr();
    x=10;
    a=x++;
    b=--x;
    c=x++*--b;
    printf("a=%d, b=%d, c=%d, x=%d", a, b, c, x);
    getch();
}
```

Output :-

~~a=10, b=9, c=90, x=11~~

~~for 03~~
~~03~~

34

18

Output :-

Enter value of n: 12

12 is even

Enter value of n: 51

51 is odd

Practical No:- 3

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Aim:- Program on decision making and branching.

Program 1:- Check whether number is odd or even.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int n, r;
    printf("\n Enter value of n:");
    scanf("%d", &n);
    r = n % 2;
    if (r == 0)
        printf("\n %d is even", n);
    else
        printf("\n %d is odd", n);
    getch();
}
```

Program 2: Check if the entered year is a leap year.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int y, r;
    printf("Enter the year");
    scanf("%d", &y);
    r = y % 4;
    if(r == 0)
        printf("\n%d is a leap year", y);
    else
        printf("\nIt is not a leap year");
    getch();
}
```

Output :-

Enter the year :- 2001
2001 is not a leap year
Enter the year :- 2004
~~2004 is a leap year~~

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Output:-

Enter the alphabet :- i
i is a vowel

Enter the alphabet :- s
s is a consonant

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Program 3: Check whether inserted alphabet is a vowel or consonant.

```
#include <csdlib.h>
#include <conio.h>
void main()
{
    clrscr();
    char ch;
    printf("Enter an alphabet");
    scanf("%c",&ch);
    if(ch=='a'||ch=='A'||ch=='e'||ch=='E'||ch=='i'||ch=='I'||ch=='o'||ch=='O'||ch=='u'||ch=='U')
        printf("\n entered alphabet is vowel");
    else
        printf("\n entered alphabet is a consonant");
    getch();
}
```

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Program 4:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a,b,c;
    clrscr();
    printf("Enter 3 no.s");
    scanf("%d,%d,%d",&a,&b,&c);
    if ((x>y)&&(x>z))
        printf("\n x is greater");
    else if ((y>x)&&(y>z))
        printf("\n y is greater");
    else
        printf("\n z is greater");
    getch();
}
```

Output :-

Enter 3 nos in 3

1

~~b is greater.~~

Output :-

Enter single digit decimal no.: 1
one
Enter single digit decimal no.: 15
Error

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Program 5:- Program to enter single digit decimal number from keyboard and print that digit in word form.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int n
    printf("In Enter single digit decimal no:");
    scanf("%d", &n);
    if (n == 0)
        printf("\n zero");
    else if (n == 1)
        printf("\n one");
    else if (n == 2)
        printf("\n two");
    else if (n == 3)
        printf("\n three");
    else if (n == 4)
        printf("\n four");
    else if (n == 5)
        printf("\n five");
    else if (n == 6)
        printf("\n six");
    else if (n == 7)
        printf("\n seven")
```

```

else if (n==8)
    printf ("\n eight");
else if (n==9)
    printf ("\n nine");
else if (n==10)
    printf ("\n ten");
getch();
}

else
    printf ("\n error");
getch();
}

```

Output :-

1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Exit

Enter your choice : 3
 Enter value of a & b : 5
 10
~~5 * 10 = 50.~~

Program : Program to perform addition, subtraction, multiplication, using switch case.

```
#include <stdio.h>
#include <conio.h>
{
    clrscr();
    int a, b, c, choice;
    printf("\n select your choice");
    printf("\n 1. Addition");
    printf("\n 2. Subtraction");
    printf("\n 3. Multiplication");
    printf("\n 4. Division");
    printf("\n 5. Exit");
    scanf("%d", &choice);
    if (choice >= 1 && choice <= 4)
    {
        printf("\n Enter value of a and b:");
        scanf("%d %d", &a, &b);
        switch (choice)
        {
            case 1:
                r = a + b;
                printf("\n %d + %d = %d", a, b, r);
                break;
        }
    }
}
```

Case 2

```
r=a+b;  
printf("\n %d - %d = %d ", a,b,r);  
break;
```

Case 3

```
r=a*b  
printf("\n %d * %d = %d ", a,b,r);  
break;
```

case 4

```
r=a/b;  
printf("\n %d / %d = %d ", a,b,r);  
break;
```

default;

```
printf("\n No Operation");
```

```
break;
```

```
}
```

```
} getch();
```

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Output

2
4
6
8
10
12
14
16
18
20

Practical No:-4

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Aim: Program to understand looping statement.

Program 1: Program to print even numbers from 1 to 100.

Algorithm:-

Step 1: Initialize a variable with datatype integer.
Step 2: Use condition statement to print even numbers. Initialize a variable upto the number you have to print.
Step 3: Display the even numbers.

Code

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i;
    clrscr();
    for (i=2; i<=20; i=i+2)
    {
        printf ("%d\n", i);
    }
    getch();
```

Program 2:-

Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int k, i;
    clrscr();
    i = 1;
    while (i <= 5)
    {
        k = 1;
        while (k <= i)
        {
            printf("%d", k);
            ++k;
        }
        printf("\n");
        i++;
    }
    getch();
}
```

Output :-

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

Output :-

Enter the value of n: 10
The sum of all odd no. are 25.

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Code / Program 3:-

Code

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i,n,sum,x;
    clrscr();
    printf ("Enter the value of n");
    scanf ("%d",&n);
    i=1
    sum=0
    d=0
    {
        x=i % 2;
        if (x==1)
        {
            sum=sum+i;
            x=x+1;
        }
        while (i<=n)
        printf ("The sum of all odd nos. are %d",sum);
        getch();
    }
```

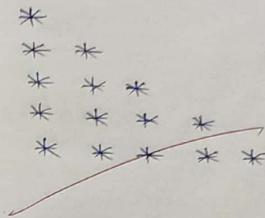
Program 4:-

Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, j;
    clrscr();
    for(i=1; i<=5; i++)
    {
        for(j=1; j<=i; j++)
        {
            printf("*");
        }
        printf("\n");
    }
    getch();
}
```

Output :-

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Output :-

1
2
3
5
8
13
21
34
65
89
144
233
377
610
987
1597
2684

Program 5:-

Code:-

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

```
{ int a,b,f,i;
```

```
clrscr();
```

```
a=1;
```

```
b=0;
```

```
for(i=3;i<=20;i++)
```

```
{
```

```
f=a+b;
```

```
printf("\n%d",f);
```

```
a=b;
```

```
b=f;
```

```
}
```

```
getch();
```

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03/03

Practical No: 5

Aim :- Program on arrays.

Program 1:- Write a program to find the sum of 5 numbers (array).

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, num[5], sum=0;
    clrscr();
    printf("Enter the elements into array");
    for(i=0; i<5; i++)
        scanf("%d", &num[i]);
    printf("\n Entered array elements are");
    for(i=0; i<5; i++)
        printf("\t%d", num[i]);
    for(i=0; i<5; i++)
        sum = sum + num[i];
    printf("\n sum of elements is : %d", sum);
    getch();
}
```

Output :-

48
Enter the elements into array: 3

4
5
6
7

Entered array elements are: 3 4 5 6 7
Sum of elements is: 26

Output:-

Enter 10 values in array:- 2

4
5
6
8
9
0
10
11
13

Largest number is :- 13

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Program 2:- Write a C program to find the largest of 10 numbers.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, num[10], l;
    clrscr();
    printf("\n Enter 10 values in array:");
    for(i=0; i<10; i++)
        scanf("%d", &num[i]);
    l = num[0];
    for(i=1; i<10; i++)
    {
        if [l, num[i])
            l = num[i];
    }
    printf("\n largest number is %d; l");
    getch();
}
```

③ Program 3:- Write a C program to find the number of positive nos. in the array.

```
#include < stdio.h>
#include < conio.h>
void main()
{
    clrscr();
    int i, num[10], p;
    printf("Enter the values into the array");
    for (i=0; i<10; i++)
        scanf("%d", &num[i]);
    p=0;
    for(i=1; i<10; i++)
    {
        if (num[i] > 0)
        {
            p=p+1;
        }
    }
    printf("No. of positive numbers present in
the given array:");
    getch();
}
```

Output:-

50
Enter the values into the array:
-55
22
5
-3
4
11
16
-19
20

No. of positive numbers present in the given array are :- 6

Output :

Enter the values in the array

2
3
4
5
6
7
8
8
9

No. of odd numbers is 5

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④ Program 4 :- Write a program to find the odd numbers available in an array.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int i, num[10];
    printf("Enter the values into array");
    for (i=0; i<10; i++)
        scanf("%d", &num[i]);
    p = 0;
    for (i=0; i<10; i++)
    {
        if (num[i] % 2 == 1)
        {
            p = p + 1;
        }
    }
    printf("\n no. of odd number is %d", p);
    getch();
}
```

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Program 5:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int i, j, num[5];
    printf("Enter the values into array");
    for (i = 0; i < 5; i++)
        scanf("%d", &num[i]);
    for (j = 0; j < 5; j++)
    {
        for (i = j + 1; i < 5; i++)
            if (num[i] > num[j])
            {
                t = num[i];
                num[i] = num[j];
                num[j] = t;
            }
    }
    printf("sorted array");
    for (i = 0; i < 5; i++)
        printf("\n%d", num[i]);
    getch();
}
```

Output

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Enter the value into array
2
4
6
9
1

Sorted array : 1 2 4 6 9

52
Enter elements of matrix x : 2

1
2
3
4
5
6
7
8

Enter elements of matrix y : 3

2
2
2
2
2
2
2

Matrix :

12	10	10
27	24	24
48	42	42

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Program 6:- Write a C program to print matrix multiplication.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int x[3][3], y[3][3], z[3][3];
    int r, c, k, t;
    printf("\n Enter elements of matrix x:");
    for (r = 0; r < 3; r++)
    {
        for (c = 0; c < 3; c++)
        {
            scanf("%d", &x[r][c]);
        }
    }
    printf("\n Enter elements of matrix y:");
    for (r = 0; r < 3; r++)
    {
        for (c = 0; c < 3; c++)
        {
            scanf("%d", &y[r][c]);
        }
    }
    printf("\n Enter the elements of matrix z:");
    for (r = 0; r < 3; r++)
    {
        for (c = 0; c < 3; c++)
        {
            z[r][c] = 0;
            for (k = 0; k < 3; k++)
            {
                z[r][c] += x[r][k] * y[k][c];
            }
        }
    }
    for (r = 0; r < 3; r++)
    {
        for (c = 0; c < 3; c++)
        {
            printf("%d ", z[r][c]);
        }
        printf("\n");
    }
}
```

```
for (c=0; c<3; c++)  
{    scanf ("%d", &y[r][c]);}  
for (r=0; r<3; r++)  
{    for (c=0; c<3; c++)  
    {        t=0;  
        for (k=0; k<3; k++)  
        {            t = t + x[r][k] * y[k][c];  
        }  
        z[r][c]=t;  
    }  
    printf ("\n Matrix 2:");  
    for (r=0; r<3; r++)  
    {        for (c=0; c<3; c++)  
        {            printf ("\t%d", z[r][c]);  
        }  
        printf ("\n");  
    }  
    getch();
```

~~10~~ Enter the elements of matrix m:3

4
5
6
7
8
9
2
3

~~Enter the elements of matrix n:2~~

3
4
5
6
7
8
9
0

Matrix sum:

5	7	9
11	13	15
17	11	3

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Program 7:- Write a C program to print Matrix Addition

```
#include<stdio.h>
#include<iostream.h>
#include<conio.h>
void main()
{
    int m[3][3], n[3][3], sum[3][3];
    int x, y;
    printf("Enter the elements of matrix m:");
    for (x=0; x<3; x++)
    {
        for (y=0; y<3; y++)
        {
            scanf("%d", &m[x][y]);
        }
    }
    printf("\nEnter the elements of matrix n:");
    for (x=0; x<3; x++)
    {
        for (y=0; y<3; y++)
        {
            scanf("%d", &n[x][y]);
        }
    }
    for (x=0; x<3; x++)
    {
        for (y=0; y<3; y++)
        {
            sum[x][y] = m[x][y] + n[x][y];
        }
    }
    for (x=0; x<3; x++)
    {
        for (y=0; y<3; y++)
        {
            printf("%d ", sum[x][y]);
        }
    }
}
```

```

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for (y=0; y<3; y++)
{
    sum[x][y] = m[x][y] + n[x][y];
}
printf ("\n Matrix Sum");
for (x=0; x<3; x++)
{
    for (y=0; y<3; y++)
        printf ("%d", sum[x][y]);
    printf ("\n");
}
getch();

```

8/03/08

Output :-

Enter your name :- Tushar
My name is : Tushar

Practical No:- 6

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Aim :- Program to understand string manipulation

Program 1 :- Write a program to display your name using string.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    char name[20];
    printf("Enter your name:");
    scanf("%s", &name);
    printf("In My name is : %s", name);
    getch();
}
```

Program 2: Write a program to print
the entered character.

```
#include
#include < stdio.h>
#include < conio.h>
void main()
{
    char a;
    clrscr();
    printf("Enter a character:");
    a = getch();
    printf("\n the character is:");
    putchar(a);
    getch();
}
```

Output

Enter a character: a
The character is :a

Output

Enter a string : bts
The entered string is : bts

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Program 3:- Write a program to enter a string.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    char [50];
    clrscr();
    printf("Enter a string:");
    gets(a);
    printf("The entered string is:");
    puts(a);
    getch();
}
```

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Program 4:- Write a program to print the string in vertical order

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char name[10] = "my name";
    clrscr();
    printf("My name is:");
    for(int i=0; i<10; i++)
    {
        printf("\n");
        putchar(name[i]);
    }
    getch();
}
```

Output

60

My name is

M
Y
N
A
M

E

Output

Enter a string: Tushar
The reversed string is :- rahsut

61

Program 5:- Program to print reverse string

```
#include<stdio.h>
#include<conio.h>
{
    char str[10];
    clrscr();
    printf("Enter a string:");
    scanf("%s", &str);
    reverse(str);
    printf("The reversed string is : %s", str);
    getch();
}
```

BS
03/03

a. Practical No. 7

Aim:

Program 1: Write a C program to calculate area and circumference of a circle.

```
#include <stdio.h>
#include <conio.h>
void circle (void);
void main
{
    clrscr();
    circle();
    getch();
}
void circle (void)
{
    int r;
    float area, circum;
    printf ("Enter the radius");
    scanf ("%d", &r);
    area = 3.14 * r * r;
    circum = 2 * 3.14 * r;
    printf ("\n Area: %f", area);
    printf ("\n Circumference = %f", circum);
    getch();
}
```

Output :-

82.
Enter the radius: 5
Area : 78.5000
Circumference : 31.4000

Output :-

Enter number : 31
Sum of digit : 4

63

Program 2:- Write a C program to find the sum of digits of entered numbers.

```
#include <stdio.h>
#include <conio.h>
void sum (int n);
void main()
{
    clrscr();
    int n;
    printf("Enter a number:");
    scanf ("%d", &n);
    sum(n)
    getch();
}
void sum (int n)
{
    int r, s=0;
    while (n!=0)
    {
        r = n%10;
        s = s+r;
        n = n/10;
    }
    printf ("\n Sum of digits is %d", s);
    getch();
}
```

Program 3:-

```
#include <stdio.h>
#include <conio.h>
void sum(int n1,int n2);
void main()
{
    clrscr();
    int n1,n2;
    printf ("Enter two numbers:");
    scanf ("%d%d", &n1,&n2);
    sum(n1,n2);
    getch();
}

void sum(int n1,int n2)
{
    int a;
    a=n1+n2;
    printf ("Sum of two numbers is: %d",a);
    getch();
}
```

Output:-

Enter two numbers: 78
66

Sum of two numbers is: 144

61

Output :-

Enter four marks: 20
30
40
50

The Total is 140
Average is 35.0000.

65

Program 4: Write a C program to calculate the total and average of 4 marks.

```
#include<stdio.h>
#include<conio.h>
void total (int m1,int m2,int m3,int m4);
void main()
{
    int a,b,c,d;
    printf("Enter four marks:");
    scanf("%d %d %d %d",&a,&b,&c,&d);
    total(a,b,c,d);
    getch();
}

void total (int m1,int m2,int m3,int m4)
{
    int total;
    total = m1 + m2 + m3 + m4;
    printf("\n The total is %.d",total);
    average(total);
}

void average (int total)
{
    float avg;
    avg = total / 4;
    printf("\n Average is %.f",avg);
    getch();
}
```

Program 5:- Write a C program to find the factorial of a number.

```
#include <stdio.h>
#include <conio.h>
int factorial(int n);
void main()
{
    int x, fact;
    printf("Enter a number:");
    scanf("%d", &x);
    fact = factorial(x);
    printf("Factorial of %d is %d", x, fact);
    getch();
}

int factorial(int n)
{
    int f;
    if(n==1)
        return 1;
    else:
        f = n * factorial(n-1);
        return(f);
    getch();
}
```

Output :-

66
Enter value of x: 4
Factorial of 4: 24

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03/03

Output:-

Enter roll no; name and total no. of students
1839
Tushar
100

Roll No:- 1839
Name :- Tushar
Total :- 100

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67

Aim:-

Program 1:- Student structure

```
#include < stdio.h>
#include < conio.h>
struct student
{
    int roll_no;
    char name[20];
    int total;
};

void main()
{
    struct student x;
    clrscr();
    printf("Enter roll no:");
    scanf("%d", &x.roll_no);
    printf("\nEnter name:");
    scanf("%s", &x.name);
    printf("\nEnter total:");
    scanf("%d", &x.total);
    printf("\n Student name : %s", x.name);
    printf("In Roll no: %d", x.roll_no);
    printf("\n Total: %d", x.total);
    getch();
}
```

Program 2 :- Employee Comparison

```
#include <stdio.h>
#include <conio.h>
{
    int emo, salary;
}
void main()
{
    struct employee n, y;
    printf("Enter emo and salary : ");
    scanf("%d %d", &n.em0, &n.salary);
    printf("Enter emo and salary : ");
    scanf("%d %d", &y.em0, &y.salary);
    if (n.em0 == y.em0 & n.salary == y.salary)
    {
        printf("both are equal.");
    }
    else
        printf("both are unequal");
    getch();
}
```

Output :-

68 -
Enter emo and salary : 5 20000
Enter emo and salary : 5 20000
Both are equal
Enter emo and salary : 3 15000
Enter emo and salary : 4 25000
Both are unequal

Output :-

Enter name, price & qty

Apple	20	5
Mango	15	3
Banana	50	9
Cherry	30	7
Grapes	30	15

name = Apple, price = 20, qty = 5

name = Mango, price = 15, qty = 3

name = Banana, price = 50, qty = 9

name = Cherry, price = 30, qty = 7

name = Grapes, price = 30, qty = 15

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Program 3:- Fruit structure

```
#include <stdio.h>
#include <conio.h>
struct fruit
{
    char name [20];
    int price,qty,total;
};
void main()
{
    struct fruit f [5];
    int k;
    clrscr();
    printf ("\n Enter name, price and qty:");
    for (k=0; k<5; k++)
    {
        scanf ("%s %d %d", &f[k].name, &f[k].price,
               &f[k].qty);
        f[k].total = f[k].price + f[k].qty;
    }
    for (k=0; k<5, k++)
    {
        printf ("\n name = %s, price = %d, qty = %d",
               f[k].name, f[k].price, f[k].total);
    }
    getch();
}
```

Program 4:- Cricketers & their Team

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
struct cricket
{
    char pname[20], tname[20];
    int average;
};

void main()
{
    clrscr();
    struct cricket p[5], t;
    int i, k, x;
    printf("\n Enter records of 5 players:");
    for (i=0; i<5; i++)
        scanf("\n %s %s %.2f \n", p+i, name, &p[i].average);
    for (i=0; i<4; i++)
    {
        for (k=i+1; k<5; k++)
        {
            x = strcmp(p[i].tname, p[k].tname);
            if (x>0)
            {
                t = p[i];
                p[i] = p[k];
                p[k] = t;
            }
        }
    }
}
```

Enter record of 5 players

MS DHONI

INDIA	100

VIRAT

ROHIT

SACHIN

RAHUL

INDIA 100

INDIA 100

INDIA 100

INDIA 100

INDIA 100

Player

Teamwise

MS DHONI

INDIA	100

VIRAT

ROHIT

SACHIN

~~RAHUL~~

INDIA	100

INDIA 100

INDIA 100

INDIA 100

INDIA 100

INDIA 100

```
71  
    }  
    }  
    printf ("\n teamwise player name\n");  
    for (i=0; i<5; ++i)  
    {  
        printf ("\n %s %s %d\n", p[i].phame,  
                p[i].tname);  
    }  
    getch();  
}
```

Program 5:- Structure within structure

```
#include <stdio.h>
#include <conio.h>
struct employee
{
    int salary;
};
struct employee
{
    int id;
    char name[10];
};
struct employee b2;
void main()
{
    clrscr();
    int i;
    struct employee s = {45, "man", 50000};
    printf("In Roll no: %d It Name = %s\n"
           "It salary= %d\n"
           "%d, %s, %d", s.id, s.name, s.b2.salary);
    getch();
}
```

Output :-

Roll No:- 45

72
Name: Man Salary: 50000

Output :-

a = 12

b = 4

x = 42

y = 42

Practical No: 9

73

Aim :- Programs on pointers in C-language

#Program 1:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=12, b=4, x, y, *z, p, *q;
    p=&a;
    q=&b;
    x = *p * *q - 6;
    y = 4 * (*p-*q) + 10;
    printf ("\n a = %d", a);
    printf ("\n b = %d", b);
    printf ("\n x = %d", x);
    printf ("\n y = %d", y);
    getch();
}
```

Program 2:-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    clrscr();
    int x[5]={10, 20, 30, 40, 50}
    int * p, i, sum=0;
    p=&x[0];
    for(i=0;i<5;i++)
    {
        sum=sum+* p;
        p=p+1;
    }
    printf ("\n sum=%d",sum);
    getch();
}
```

Output :-

Sum=150

74

Output :-

$x = 30$

75
#Program 3:- Pointers as function argument

```
#include < stdio.h>
#include < conio.h>
void change (int * p);
void main()
{
    clrscr();
    int x = 20;
    change (&x);
    printf ("\n x=%d", x);
    getch();
}
```

```
void main(int * p)
{
    * p = * p + 10;
```

```

#include <stdio.h>
#include <conio.h>
void exchange(int *a, int *b);
void main()
{
    int x, y;
    x = 10;
    y = 20;
    printf("In Before exchange x=%d y=%d", x, y);
    exchange(&x, &y);
    printf("In After exchange x=%d y=%d", x, y);
    getch();
}

void exchange(int *a, int *b)
{
    int t;
    t = *a;
    *a = *b;
    *b = t;
}

```

Output :-

Before exchange $x=10$
After exchange $y=20$
 $x=20$ $y=10$

Output :-

Opening the file test.c in write mode
Enter some text from keyboard to write
in file test.c

Hi! How are you doing?

Closing the file test.c

Practical No:-10

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Aim:- Programs on file handling.

#Program 1:- Open file → Write and close file.

```
#include <stdio.h>
#include <conio.h>
#include <string.h>
int main()
{
    FILE *FILE fp;
    char data[50];
    printf ("Opening the file test.c in write mode");
    fp = fopen ("test.c", "w");
    if (fp == NULL)
    {
        printf ("could not open file test.c");
        return 1;
    }
    printf ("\n Enter some text from keyboard
            to write in file:");
    while (strlen (gets (data)) > 0)
    {
        fputs (data, fp);
        fputs ("\n", fp);
    }
    printf ("closing the file test.c");
    fclose (fp);
    return 0;
}
```

Program 2:-

```
#include <stdio.h>
#include <conio.h>
int main()
{
    char name[20];
    int age, length;
    FILE *fp;
    fp = fopen ("text.txt", "w");
    fprintf (fp, "%s %d", "Fresh2refresh", 5);
    length = ftell (fp);
    rewind (fp);
    fscanf (fp, "%d", &age);
    fscanf (fp, "%s", &name);
    fclose (fp);
    printf ("Name : %s \n Age : %d \n", name, age);
    printf ("Total number of characters in file is %d", length);
    return 0;
}
```

Output :-

Name : Fresh2refresh
age : 5

Total number of characters in file is 15

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