

C Programming

Practical 1

Aim : Programs to understand the basic datatypes I/O.

Source Code :

```
#include <conio.h>
#include <stdio.h>
void main ()
{
    int roll;
    char name[10];
    char grade;
    char mob[12];
    char add[50];
    float percentage;
    clrscr();
}

printf (" * * * * Demonstration of
datatypes * * * * );
printf (" \n Enter the Roll No : ");
scanf ("%d", &roll);
printf (" Enter the Name of Student : ");
scanf ("%s", &name);
printf (" Enter the grade " );
scanf ("%c", &grade);
```

output:

30

* * * * Demonstration of datatypes * * * *

Enter the Roll No : 1766

Enter the Name of student : Mayank

Enter the grade 'B'

Enter the mobile number 8108831256

Enter the address Thakur

Enter the percentage 65.10

Roll Number is 1766

Name is Mayank

Grade is B

Mobile No is 8108831256

Address is Thakur

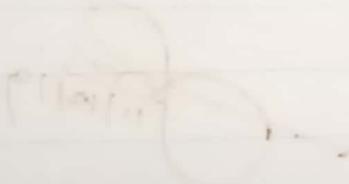
Percentage is 65.10

```
printf("Enter the mobile number");
scanf("%s", mob);
printf("Enter the address");
scanf("%s", add);
printf("Enter the percentage is ");
scanf("%f", percentage);
```

```
printf("In Roll number is %.d", roll);
printf("In Name is %s", name);
printf("In Grade is %.c", grade);
printf("In mobile no is %s", mob);
printf("In Address is %s", add);
printf("In Percentage is %.f", percentage);
```

```
getch();
```

3



Area of circle

```
#include <conio.h>
#include <stdio.h>
void main()
{
    int pi = 3.14;
    float area, r;
    clrscr();
}
```

~~printf ("Enter the radius of circle");~~

$$\text{area} = \text{pi} * \text{r} * \text{r};$$

~~scanf ("%f", &r);~~

getch();

}

Finishing

Output :

32

Enter the radius of circle 1

Area is 3.14

OUTPUT :

Enter 1st number 4

Enter 2nd number 2

Addition is 6

Subtraction is 2

Multiplication is 8

Division is 2

PRACTICAL - 2

Aim : Write a C program to illustrate the use of various types of operators.

Source Code :

```
#include <Stdio.h>
#include <Conio.h>
void main()
{
    int num1, num2, add, sub, mul, div;
    clrscr();
    printf("Enter 1st number");
    scanf("%d", &num1);
    printf("Enter 2nd number");
    scanf("%d", &num2);
    add = num1 + num2;
    printf("Addition is %d", add);
    sub = num1 - num2;
    printf("\n Subtraction is %d", sub);
    mul = num1 * num2;
    printf("\n Multiplication is %d", mul);
    div = num1 / num2;
    printf("\n Division is %d", div);
    getch();
}
```

* *Logical Operators *\

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a, b, c, v1, v2, v3, v4, v5;
    clrscr();
    printf("Enter 3 values");
    scanf("%d %d %d", &a &b &c);
    v1 = (x < y) && (z > y);
    printf("Value is %d", &v1);
    v2 = (x = y) && (z < y);
    printf("Value is %d", &v2);
    v3 = (x < y) || (z = y);
    printf("Value is %d", &v3);
    v4 = !(x == y);
    printf("Value is %d", &v4);
    v5 = (x == y);
    printf("Value is %d", &v5);
    getch();
}
```

OUTPUT:

34

Enter 3 values 9 8 2

value is 0

value is 1

value is 1

value is 0

value is 1

18:

OUTPUT

Largest number is 100

/* Ternary operator */

```
#include <conio.h>
#include <stdio.h>
void main()
{
    int a = 120, b = 10, c = 4, big;
    clrscr();
    if (a > b) big = a;
    else big = b;
    printf("Largest number is %d", big);
    getch();
}
```

RE

Practical - 3

Decision statements

write a program to find out odd even numbers.

Algorithm :

- Step 1 : Start
- Step 2 : Take input from user.
- Step 3 : Use if conditional Statement and accordingly print result.
- Step 4 : Exit

Source Code

```
#include <conio.h>
#include <stdio.h>
Void main()
{
    int n;
    clrscr();
    printf("Enter a number");
    scanf("%d", &n);
    if(n % 2 == 0)
        printf("Even number");
    else
        printf("Odd number");
```

OUTPUT:

Enter a number : 4

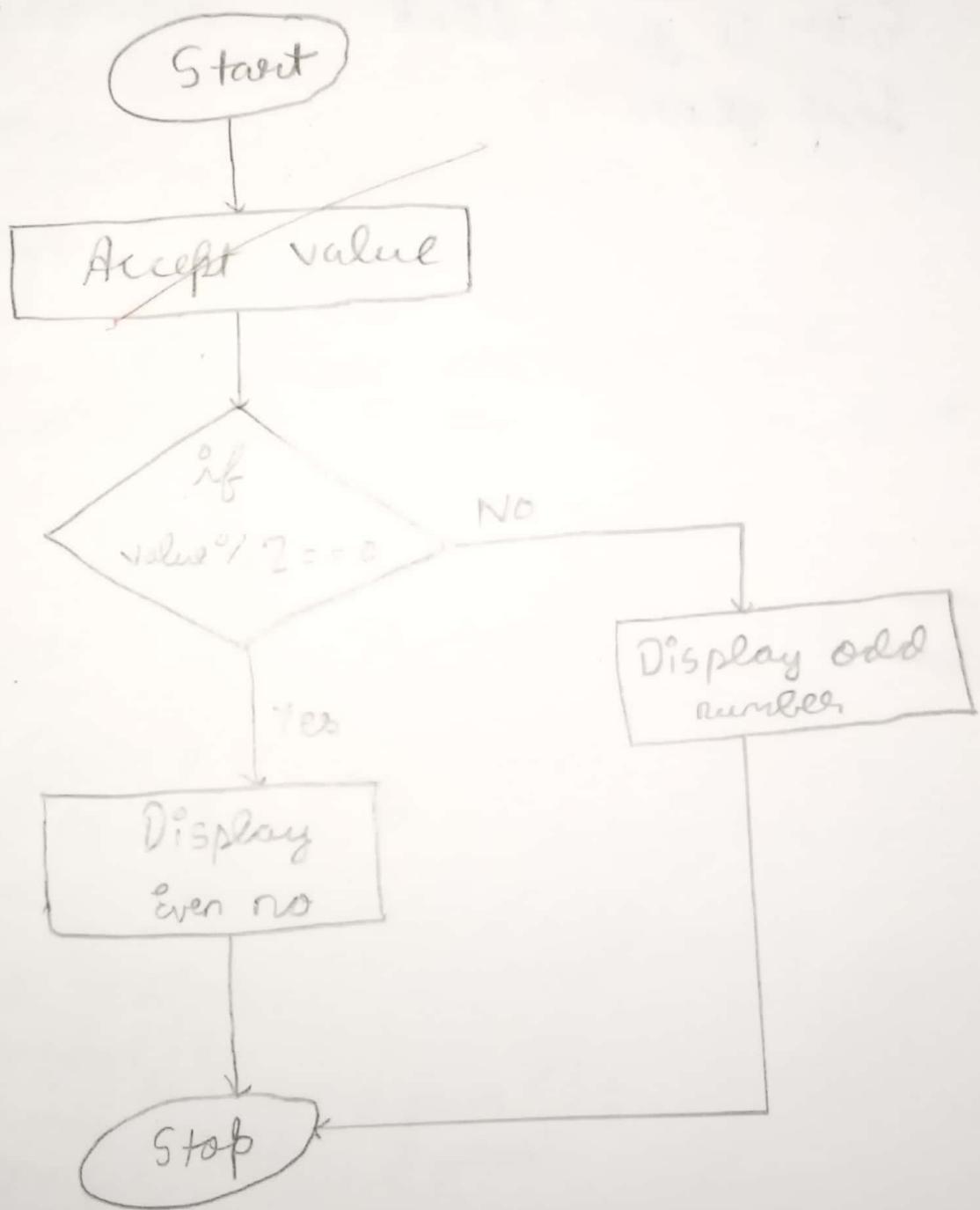
Even number

Enter a number : 5

Odd number

36

FLOWCHART :



as
OUTPUT:

Enter a year : 2005

Not a leap year

Enter a year : 2008

leap year

```
getch();  
}
```

- a. Write a program to find the entered year is a leap year or not.

Algorithm:

- Step 1 : Start
- Step 2 : Take input from user.
- Step 3 : Use conditional statement and accordingly display the output
- Step 4 : Exit

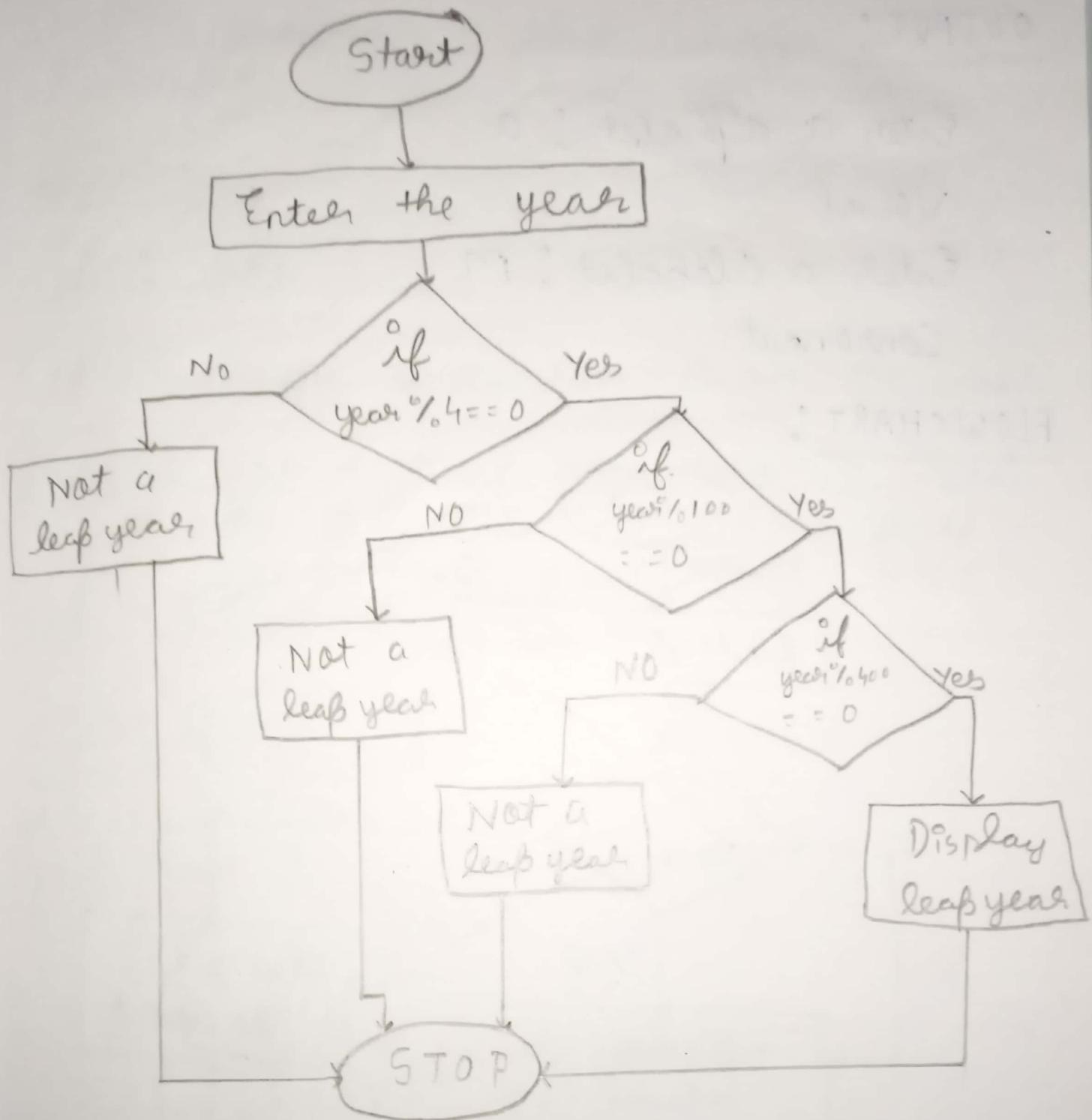
Source code:

```
#include <stdio.h>  
#include <conio.h>  
void main()  
{  
    int year;  
    clrscr();  
    printf("Enter a year ");  
    scanf("%d", &year);
```

```
{   if (year % 4 == 0) .  
{     if (year % 100 == 0)  
{       if (year % 400 == 0)  
{           printf ("Leap year");  
       } else  
{           printf ("Not a leap year");  
       }  
     } else  
{       printf ("Not a leap year");  
     }  
   } else  
{   }  
getch();
```

Flowchart

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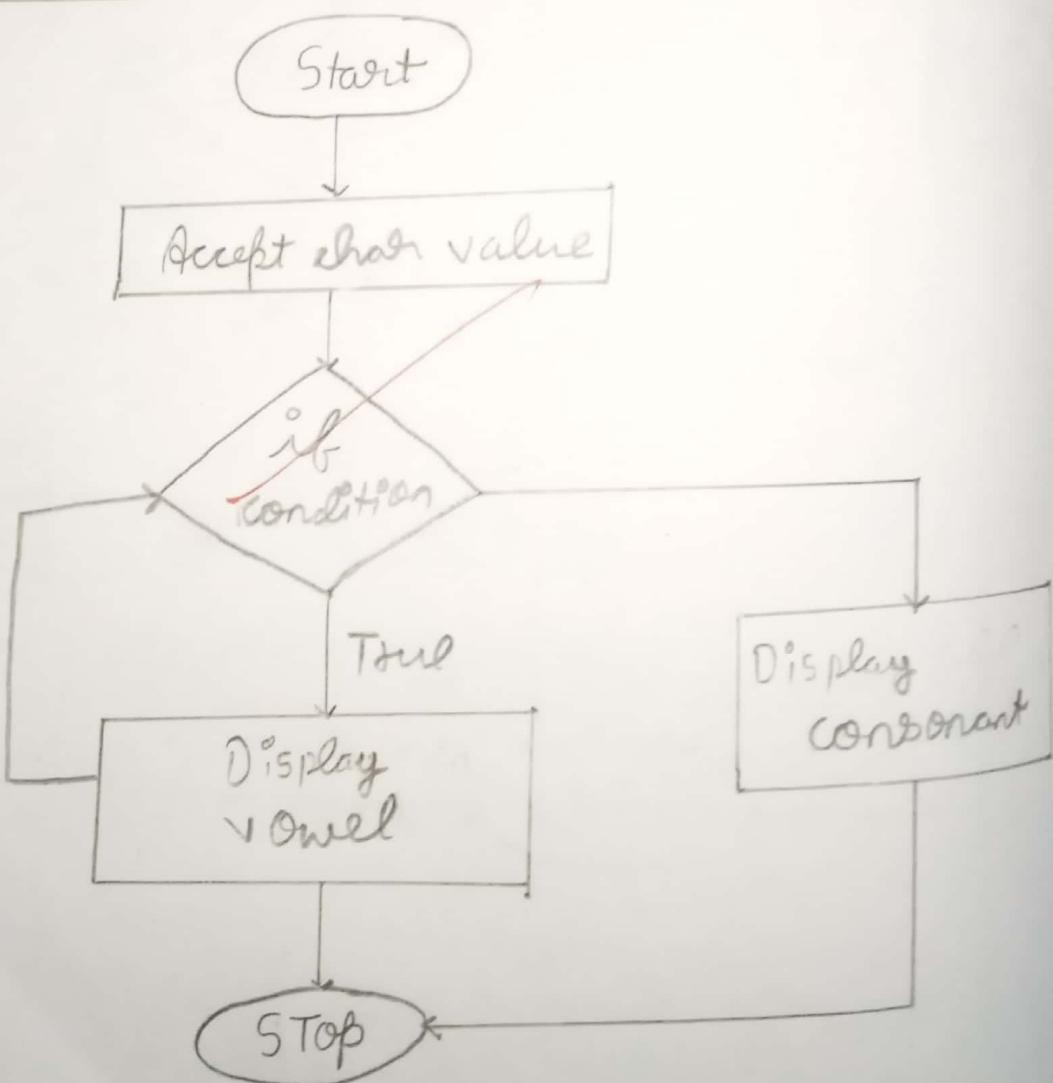
88

OUTPUT :

Enter a alphabet : a
Vowel

Enter a alphabet : M
Consonant.

FLOWCHART :



Write a program to find whether the character is vowel or consonant.

Algorithm

Step 1 : Start

Step 2 : Accept a number from the user

Step 3 : Use different operators to check the multiple conditions and accordingly print result.

Step 4 : Exit

Source Code :

```
#include <stdio.h>
#include <conio.h>
void main()
{
    char a;
    clrscr();
    printf("Enter the alphabet");
    scanf("%c", &a);
    if ((a == 'a') || (a == 'e') || (a == 'i') || (a == 'o') ||
        (a == 'u') || (a == 'A') || (a == 'E') || (a == 'O') ||
        (a == 'I') || (a == 'U'))
    {
        printf("Vowel");
    }
}
```

```
else  
{  
    printf("konsonant");  
}  
getch();
```

Output :

All even numbers between 0 to 50 are

0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50

Practical - 4

Write a program to print even number between 0-50 using for loop

Source Code

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, n = 50;
    clrscr();
    printf("Even numbers between 0 to 50 are
           %d \n");
    for (i = 0; i <= n; i = i + 2)
        printf("%d \n", i);
}
```

Algorithm

Step 1 : Start

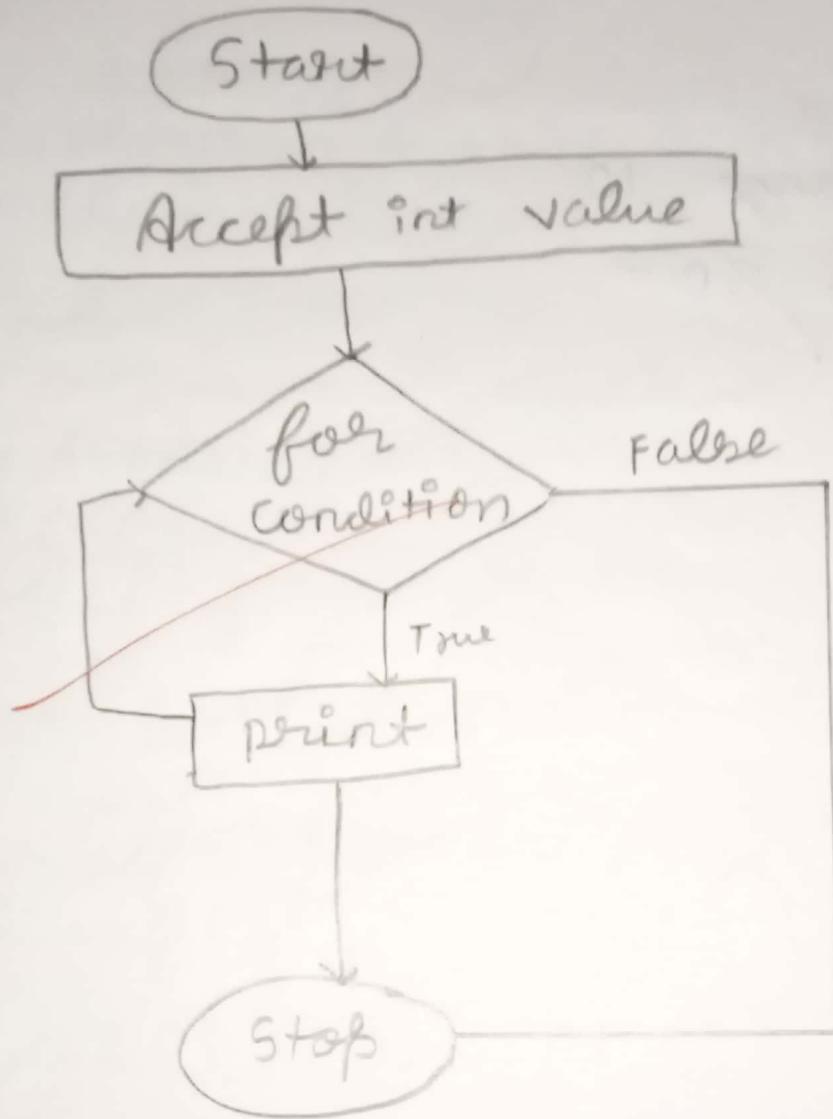
Step 2 : Initialize variable and assign any value.

Step 3 : Use for loop and display output accordingly.

Step 4 : Stop.

Flowchart

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Output :

Enter the range 10

Sum of is 30

② Write a program to print sum of all even numbers between 1 to n using while loop.

Source Code

```
#include <Stdio.h>
#include <Conio.h>
void main()
{
    int i, n, sum = 0;
    clrscr();
    printf("Enter the range ");
    scanf("%d", &n);
    i = 2;
    while (i <= n)
    {
        sum = sum + i;
        i = i + 2;
    }
    printf("sum is %d ", sum);
    getch();
}
```

② Write a program to print sum of all even numbers between 1 to n using while loop.

Source Code

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int i, n, sum = 0;
    clrscr();
    printf("Enter the range ");
    scanf("%d", &n);
    i = 2;
    while (i <= n)
    {
        sum = sum + i;
        i = i + 2;
    }
    printf("sum is %d ", sum);
    getch();
}
```

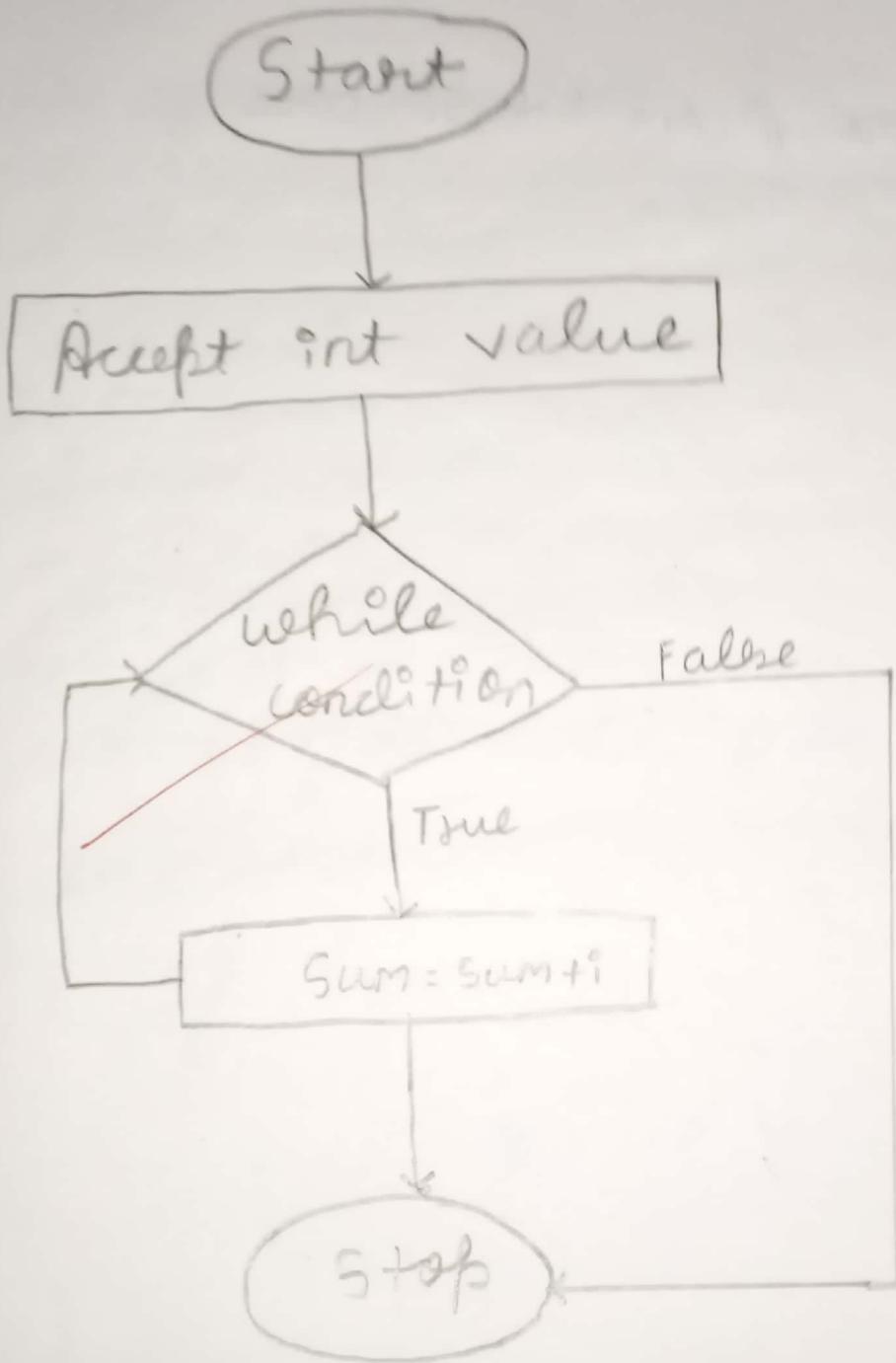
84

Algorithm

- Step 1 : Start
- Step 2 : ~~In Accept a range from the user till the user want to find the sum~~
- Step 3 : ~~Use while conditional statement to calculate the sum and store it in a variable.~~
- Step 4 : ~~Display the output~~
- Step 5 : Stop.

Flowchart

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~~Ques.~~

Output :

Odd numbers from 1 to 50 are

1
3
5
7
9
11
13
15
17
19
21
23
~~23~~
25
27
~~28~~
29
31
33
35
37
39
41
43
45
47
49

Aim: Use of do while loop

Source code:

```
#include <conio.h>
#include <stdio.h>
void main()
{
    int i, n = 50;
    clrscr();
    printf("Odd numbers from 1 to 50 are\n");
    i = 1;
    do
    {
        if { i % 2 == 1 }
            printf("%d\n", i);
        i++;
    }
    while (i <= n);
    getch();
}
```

Algorithm :

Step 1 : Start

Step 2 : Accept the value from the user to find the range till odd numbers to be found.

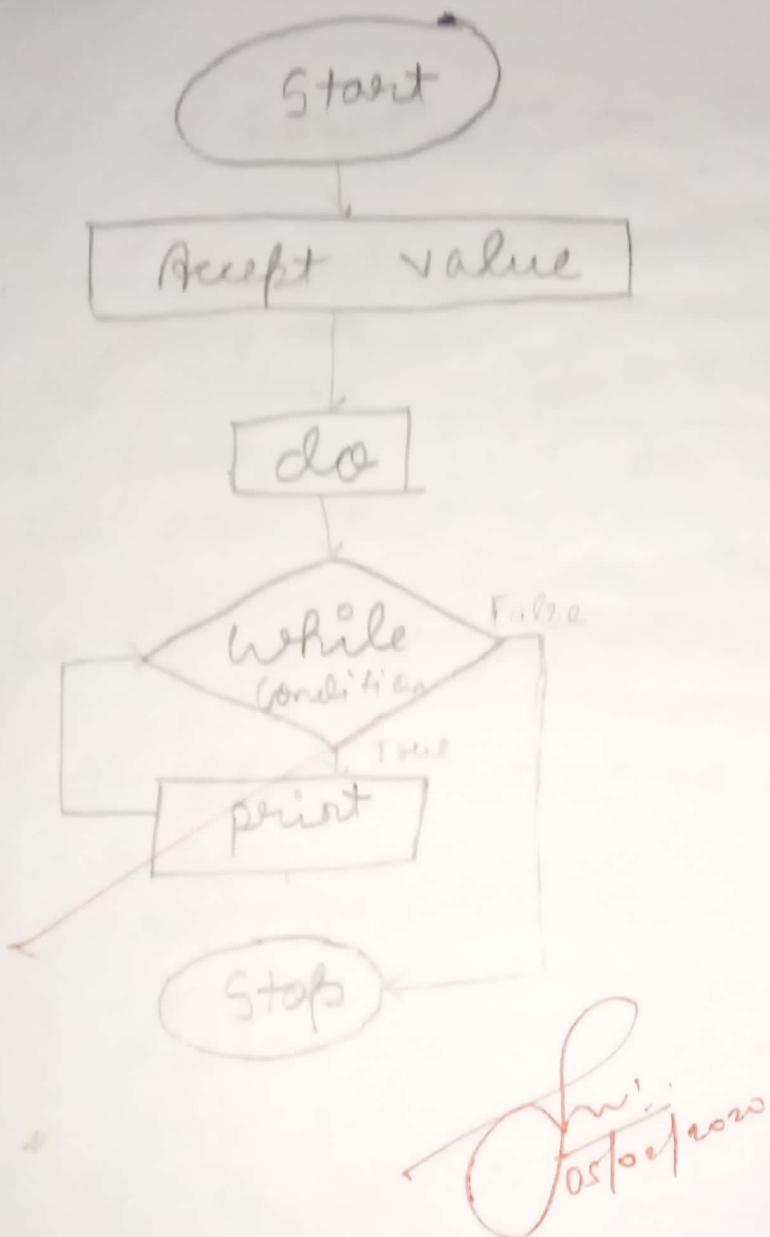
Step 3 : Make use of do while loop and in do use if condition to check condition and store result accordingly.

Step 4 : Display the output using printf

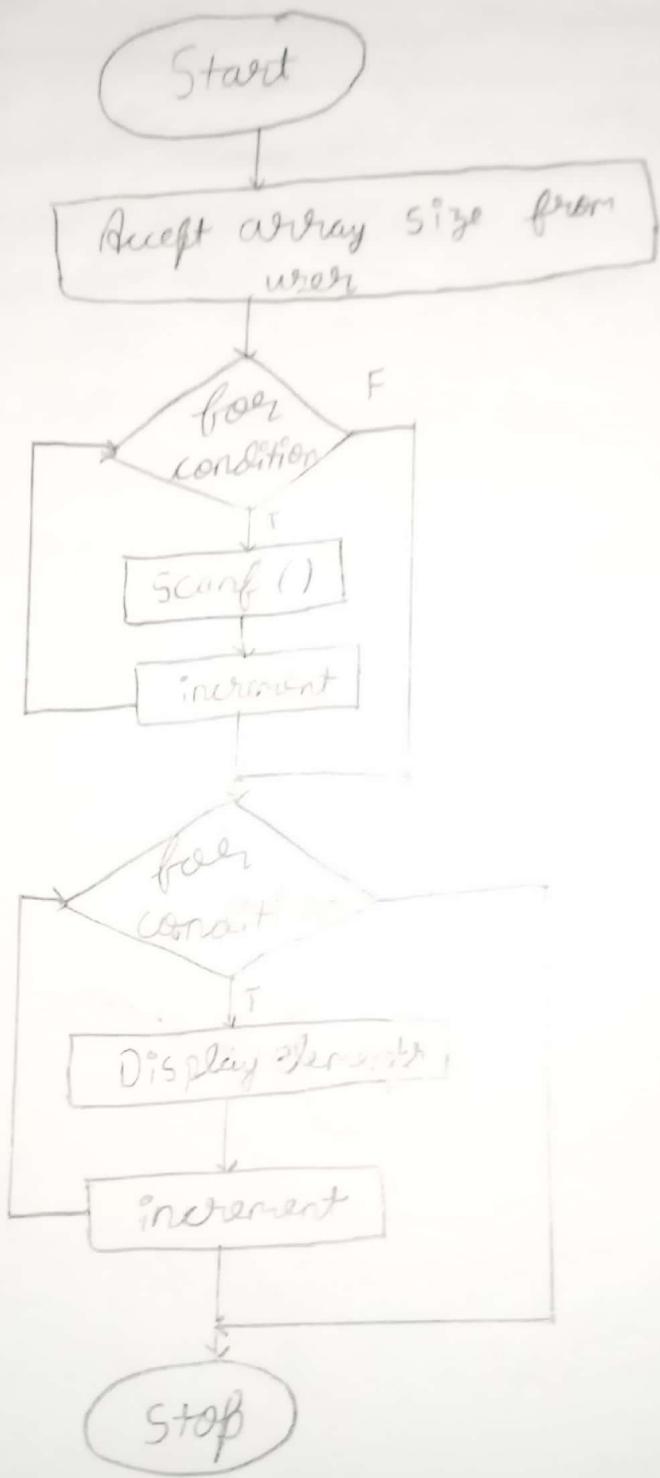
Step 5 : Stop

Flowchart :

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Ques
Flowchart :-



Practical - 5

Arrays

Basics of Array
Write a program in C to read array elements from the user and display them.

Algorithm :-

- Step 1 :- Declare a array of any size
- Step 2 :- Accept the number of elements user want to enter in array.
- Step 3 :- Use for loop to accept the array elements from the user.
- Step 4 :- Again use for loop to display array elements.

Source Code :-

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int a[15], size, i;
    clrscr();
    printf("Enter the size of array you want : ");
    scanf("%d", &size);
    for(i=0; i<size; i++)
    {
        printf("\nEnter the value of a[%d]\nElement : ", i);
        scanf("%d", &a[i]);
    }
    printf("\nThe array elements are : ");
    for(i=0; i<size; i++)
    {
        printf("\n a[%d] = ", i);
        printf("%d", a[i]);
    }
    getch();
}
```

Output :-

Enter the size of array you want : 5 **48**

Enter the value of a[0] element : 11

Enter the value of a[1] element : 12

Enter the value of a[2] element : 13

Enter the value of a[3] element : 14

Enter the value of a[4] element : 15

The elements of array are :

$$a[0] = 11$$

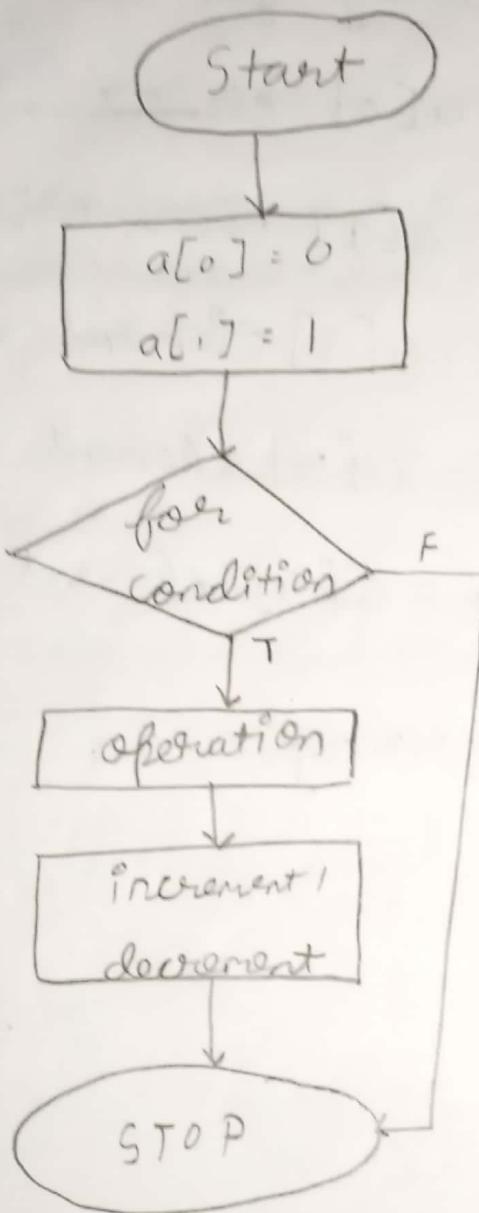
$$a[1] = 12$$

$$a[2] = 13$$

$$a[3] = 14$$

$$a[4] = 15$$

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Fibonacci Series Using Array

- a. Write a program in C to develop fibonacci series using array.

Algorithm :

- Step 1 :- Declare a array of any size of data-type int.
- Step 2 :- Accept a value from user till you want to display the fibonacci series.
- Step 3 :- Initialize first element of array to 0 and second element to 1 as series starts from 0 and 1.
- Step 4 :- Use for loop to develop fibonacci series.
- Step 5 :- Display the series using printf() function.

Source code :-

```
#include <iostream.h>
#include <stdio.h>
void main()
{
    int a[20], term, i, j;
    clrscr();
    printf("Enter the number of terms : ");
    scanf("%d", &term);
    a[0] = 0;
    a[1] = 1;
    printf("%d", a[0]);
    printf("\n%d", a[1]);
    for(i = 2; i < term; i++)
    {
        a[i] = a[i - 1] + a[i - 2];
        printf("\n%d", a[i]);
    }
    getch();
}
```

Output :

Enter the number of terms : 7

50

0

1

1

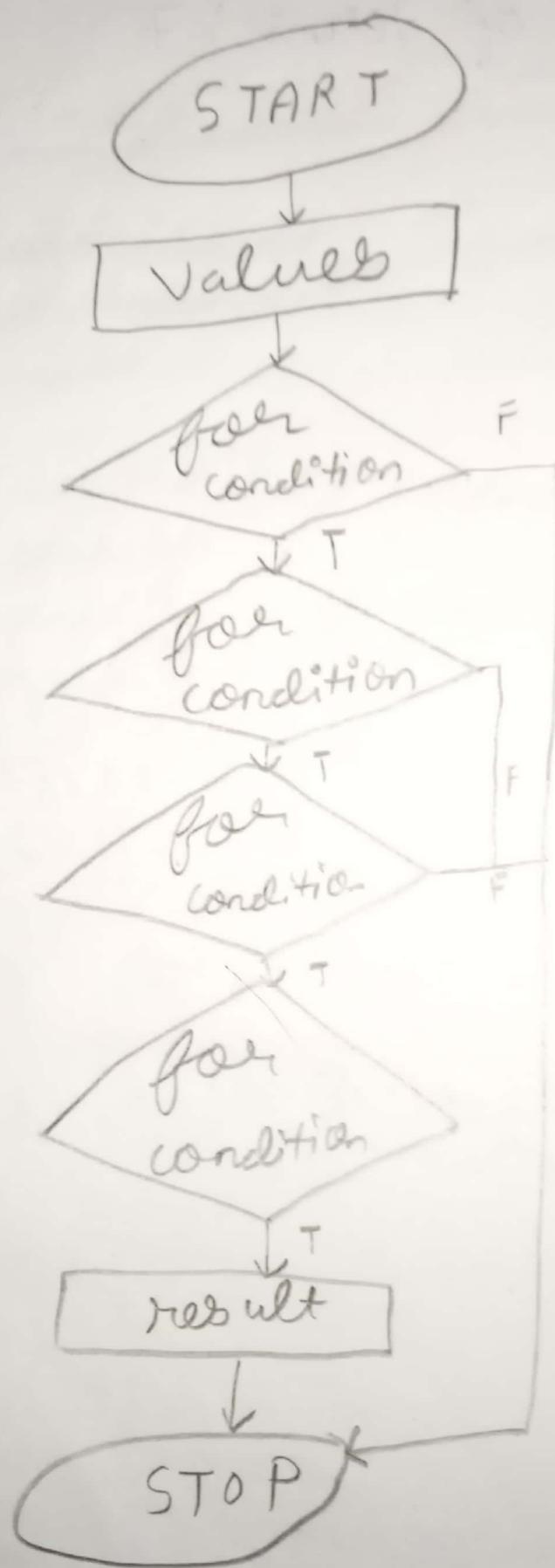
2

3

5

8

Flowchart :-



Multidimensional Array

- Write a program to accept rows and columns value from user and display them in matrix format.

Algorithm :

- Step 1 : Declare a multidimensional array with any size.
- Step 2 : Accept the value of rows and columns from user want to create.
- Step 3 : Use 2 for loops for accepting the value of elements of array using scanf().
- Step 4 : Again use 2 for loops to display the elements of rows and column accordingly using printf().

Source Code :-

```

#include <conio.h>
#include <stdio.h>
void main()
{
    int a[10][10], row, col, i, j;
    clrscr();
    printf("Enter the number of rows:");
    scanf("%d", &row);
    printf("Enter the number of columns:");
    scanf("%d", &col);
    for (i = 0; i < row; i++)
    {
        for (j = 0; j < col; j++)
        {
            printf("Enter the a[%d][%d] element : ", i, j);
            scanf("%d", &a[i][j]);
        }
    }
    printf("\n\nThe Displayed Matrix is");
    for (i = 0; i < row; i++)
    {
        for (j = 0; j < col; j++)
        {
            printf("%d\t", a[i][j]);
        }
        printf("\n");
    }
}

```

Output :

52

Enter the number of rows : 2

Enter the number of columns : 2

Enter the a[0][0] element : 5

Enter the a[0][1] element : 6

Enter the a[1][0] element : 7

Enter the a[1][1] element : 8

The Displayed Matrix is :

<u>11</u>	<u>12</u>
5	6
7	8

```
getch();  
}
```

Practical - 6

String functions

Aim :- To count number of words in entered string.

Algorithm :-

Step 1 :- Import header file `string.h` to calculate length of entered string.

Step 2 :- Accept a line of string from user.

Step 3 :- Use while loop to count the words present in entered string.

Step 4 :- Display the number of words using `printf()`.

Source Code:

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```
#include <conio.h>
#include <stdio.h>
#include <string.h>
void main()
{
    char a[50];
    int i, c = 0;
    clrscr();
    printf("Enter a line of String : ");
    gets(a);
    for (i = 0; i < strlen(a); i++)
    {
        if (a[i] == ' ')
        {
            if (a[i + 1] != ' ')
            {
                c = c + 1;
            }
        }
    }
    if (a[0] == ' ')
    {
        c = c - 1;
    }
}
```

18 printf("%d", Are the total words present,
in entered string ", c+1);
getch();
}

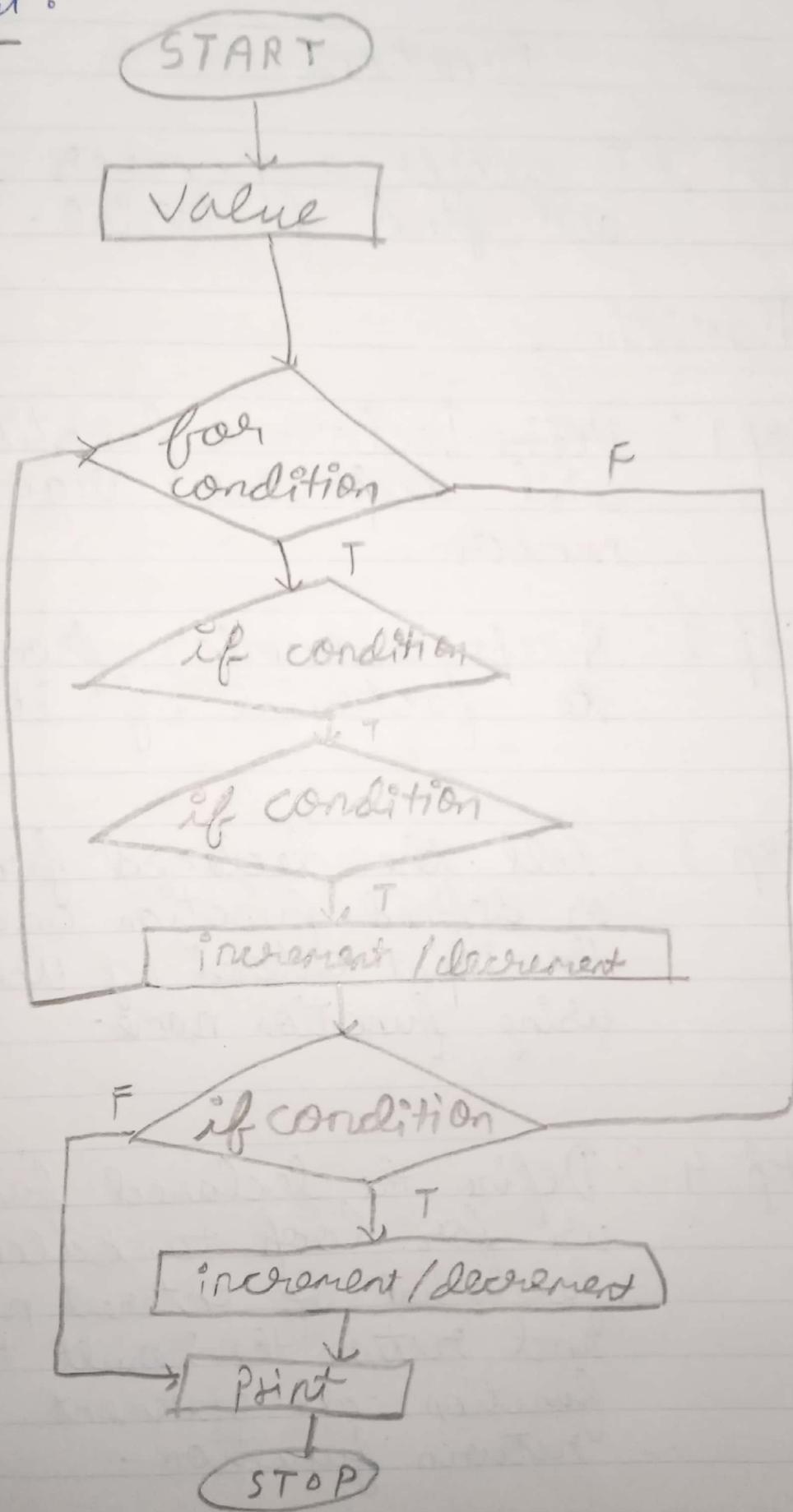
Output :

Enter a line of string : Python
DS

DBMS

3 are the total words present in
entered string.

Flowchart :



Practical - 7

Functions

Aim :- To accept a number from user and find factorial.

Algorithm :-

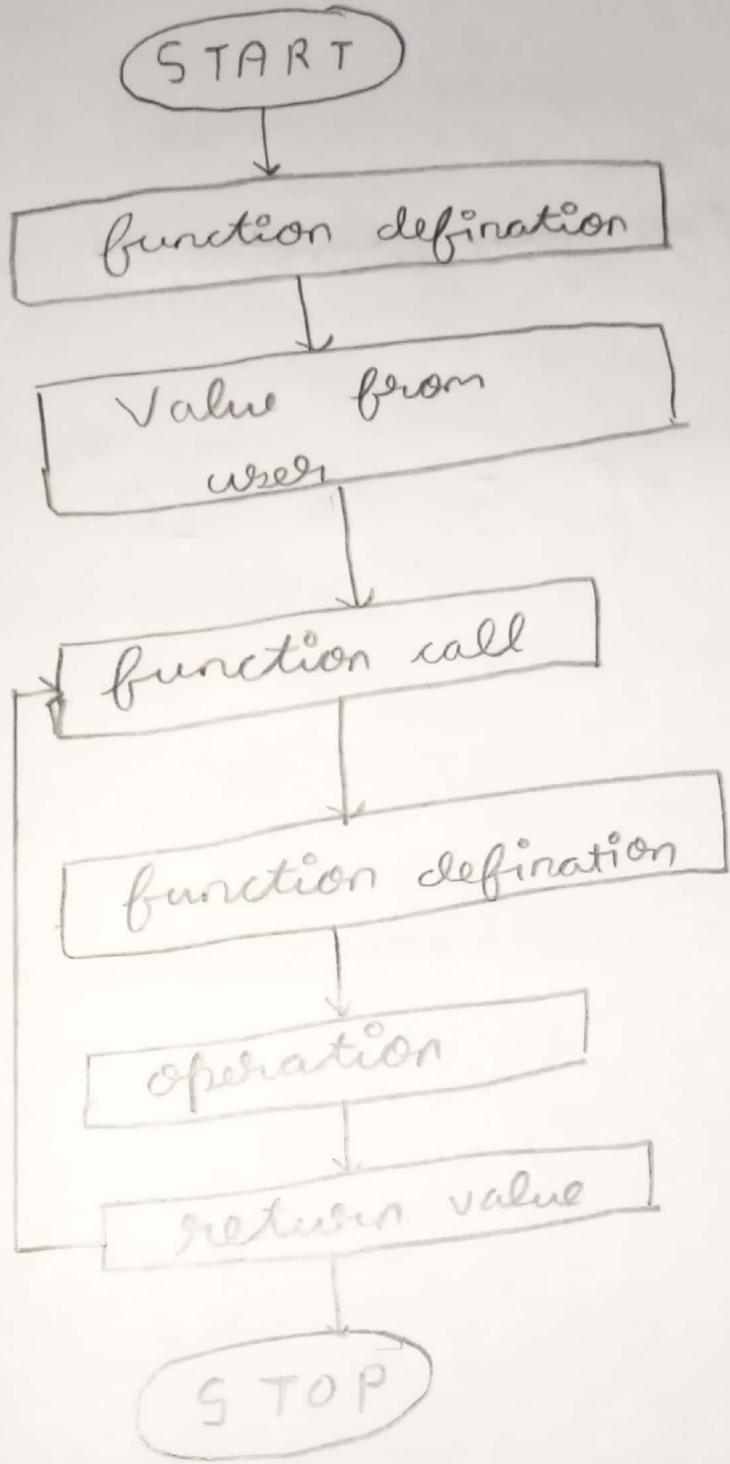
Step 1 :- Define/Declare a function which will accept one argument as number.

Step 2 :- Accept a number from user to factorial of it.

Step 3 :- Call the declared function or defined function and pass the input entered by user using function name.

Step 4 :- Define the declared function and use for loop to calculate factorial of entered number and return the result to the function call statement using return function.

Flowchart



Output :-

Enter a number you want to find
factorial: 5

The Factorial of 5 is 120

Step 5 :- Finally display the result in the main function using printf().

Source Code :-

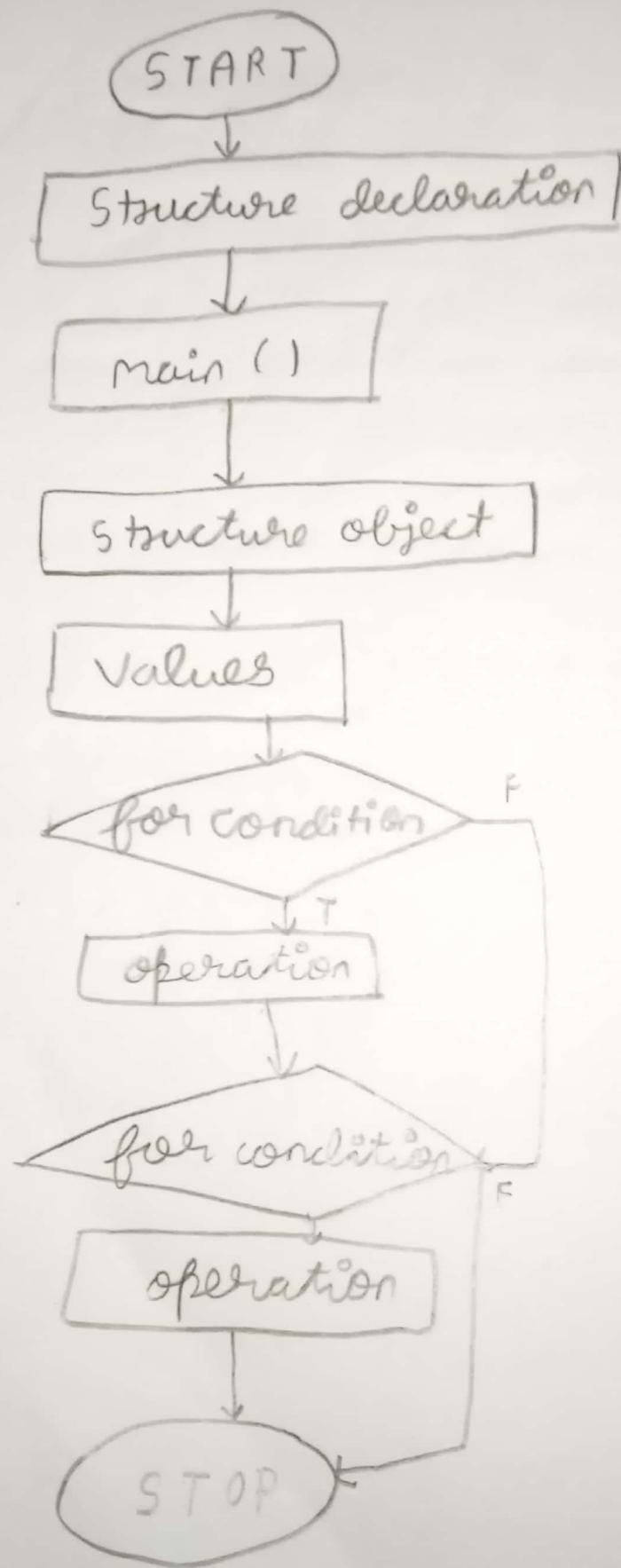
```
#include <conio.h>
#include <stdio.h>
int fact(int n);
void main()
{
    int num, call;
    clrscr();
    printf("Enter a number you want to find factorial:");
    scanf("%d", &num);
    call = fact(num);
    printf("The Factorial of %d is %d", num, call);
    getch();
}
int fact(int n)
{
    int res = 1, i;
    for(i = 1; i <= n; i++)
        res = res * i;
}
```

7.2.

return (res);

}

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Flowchart:



Practical - 8

Structure

Aim :- To create database of employees using structure

Source Code :-

```
#include <stdio.h>
#include <conio.h>
struct employee
{
    int id;
    char name[50];
    char add[50];
};

void main()
{
    struct employee e[50];
    int size, i;
    clrscr();
    printf("Enter the number of records you want to insert : ");
    scanf("%d", &size);
}
```

```

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{
    for (i = 1; i <= size; i++)
        {
            printf("1n%ld Enter the ID --> ");
            scanf("%d", &e[i].id);
            printf("1n%d Enter the Name --> ");
            scanf("%s", e[i].name);
            printf("1n%d Enter the Address --> ");
            scanf("%s", e[i].add);
        }

    printf("1n1n The Employee records are
           as follows : 1n1n");
    printf("1tID 1tName 1tAddress");
    for (i = 1; i <= size; i++)
        {
            printf("1n1n 1t%ld 1t%5s 1t%5s",
                   e[i].id, e[i].name, e[i].add,
                   "1n");
        }
    getch();
}

```

Output :
Enter the number of records you want 60
to insert : 2
1 Enter the ID --> 101
1 Enter the Name --> Mahesh
1 Enter the Address --> Mumbai
2 Enter the ID --> 102
2 Enter the Name --> Roman
2 Enter the Address --> Russia

The Employee records are as follows :

ID	Name	Address
101	Mahesh	Mumbai
102	Roman	Russia

Algorithm :-

Step 1 :- Define a structure of different members which will accept different attributes or declare different structure members.

Step 2 :- Declare a structure object using structure within main function.

Step 3 :- Use for loop to take data of employees from the user using scanf() and by using various datatype identifiers.

Step 4 :- Again use for loop to display the details of the employees using printf().