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Experiment No. 6

Write a program to count the number of digits in a given integer.

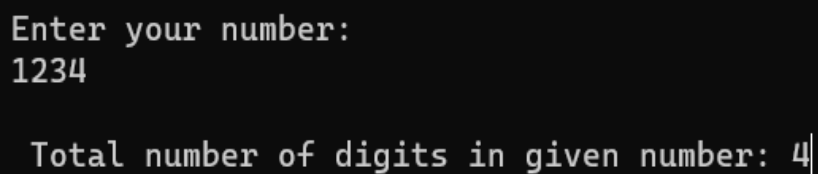
Aim :

Counting the number of digits in a given integer.

Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int num,count=0,rem;
    //clrscr();
    printf("Enter your number:\n");
    scanf("%d",&num);
    while(num>0)
    {
        count++;
        num=num/10;
    }
    printf("\n Total number of digits in given number: %d",count);
    getch();
}
```

Output :

A screenshot of a terminal window with a black background and white text. The first line shows the prompt 'Enter your number:' followed by the input '1234' on the next line. The second line shows the output 'Total number of digits in given number: 4' followed by a cursor bar.

```
Enter your number:
1234

Total number of digits in given number: 4|
```

Conclusion :

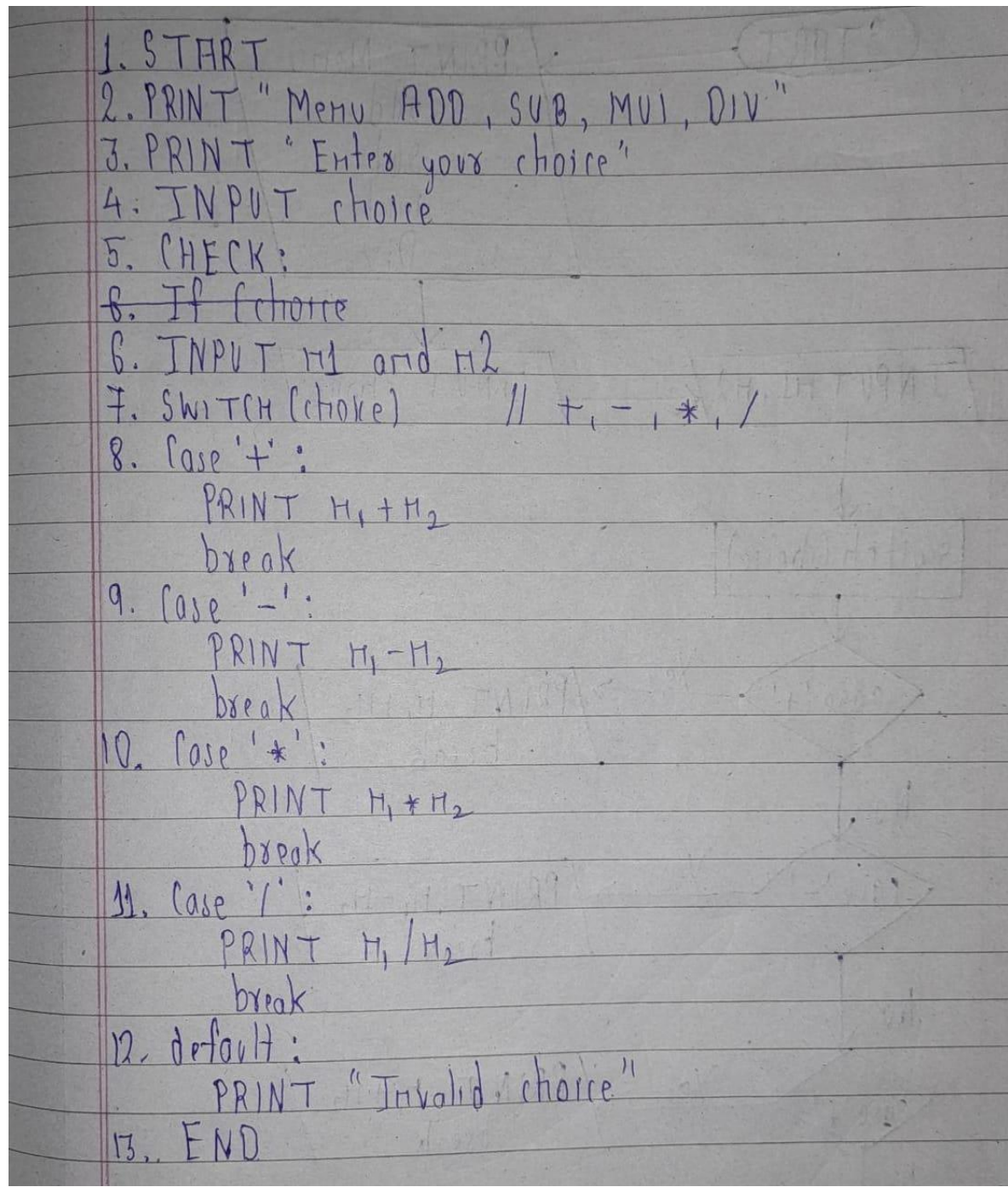
We understand the use of while loop and how to count number digits in given number.

Experiment No. 7

Write a menu driven program to perform simple arithmetic operations based on the user's choice. The user will indicate the operation to be performed using the signs e.g. + for addition, etc. Write an algorithm and draw flowchart for same.

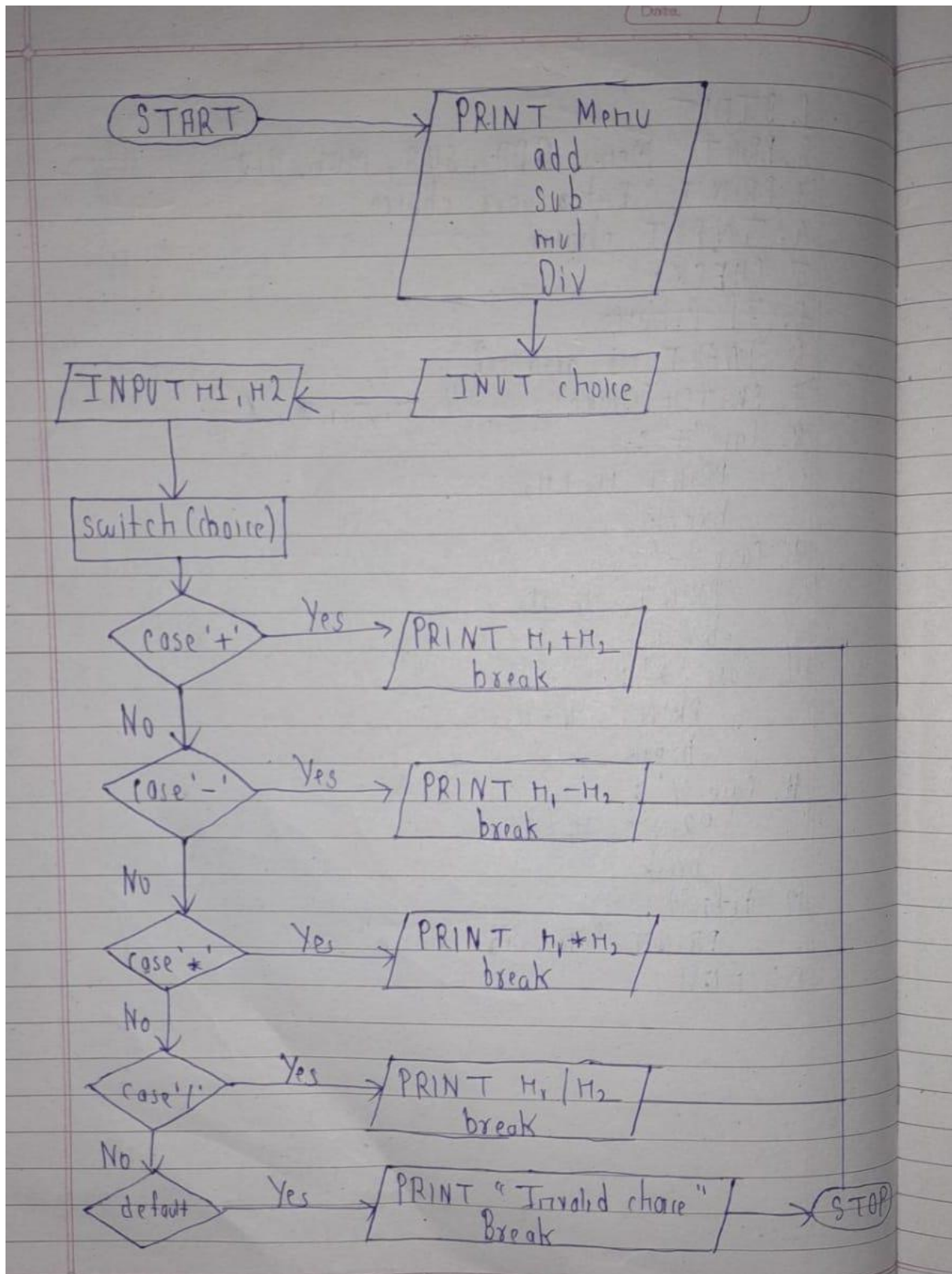
Aim : Use of switch in making simple calculator

Algorithm :



```
1. START
2. PRINT "Menu ADD, SUB, MUL, DIV"
3. PRINT "Enter your choice"
4. INPUT choice
5. CHECK:
6. If choice
7. INPUT m1 and m2
8. SWITCH (choice) // +, -, *, /
9. Case '+':
    PRINT m1 + m2
    break
10. Case '-':
    PRINT m1 - m2
    break
11. Case '*':
    PRINT m1 * m2
    break
12. Case '/':
    PRINT m1 / m2
    break
13. default:
    PRINT "Invalid choice"
14. END
```

Flowchart :



Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n1,n2;
    char choice;
    //clrscr();
    printf("Menu of Simple calculator\n");
    printf("+. Addition\n-. Subtraction\n*. Multiplication\n/. Division");
    printf("\nEnter your choice according to the Menu:\n");
    scanf("%c",&choice);
    printf("\nEnter two number:\n");
    scanf("%d %d",&n1,&n2);
    switch(choice)
    {
        case '+':
            printf("\nAddition of two number is %d",n1+n2);
            break;
        case '-':
            printf("\nSubtraction pof two number is %d",n1-n2);
            break;
        case '*':
            printf("\nMultiplication of two number is%d",n1*n2);
            break;
        case '/':
            printf("\nDivision of two number is %d",n1/n2);
            break;
        default:
            printf("\nEnter valid number");
    }
    getch();
}
```

Output :

```
Menu of Simple calculator
+. Addition
-. Subtraction
*. Multiplication
/. Division
Enter your choice according to the Menu:
+

Enter two number:
2
8

Addition of two number is 10|
```

```
Menu of Simple calculator
+. Addition
-. Subtraction
*. Multiplication
/. Division
Enter your choice according to the Menu:
-

Enter two number:
2
9

Subtraction pof two number is -7|
```

```
Menu of Simple calculator
+. Addition
-. Subtraction
*. Multiplication
/. Division
Enter your choice according to the Menu:
*

Enter two number:
2
8

Multiplication of two number is 16|
```

```
Menu of Simple calculator
+. Addition
-. Subtraction
*. Multiplication
/. Division
Enter your choice according to the Menu:
/

Enter two number:
25
5

Division of two number is 5|
```

Conclusion :

We understand the concept of switch statement in above given program.

Experiment No. 8

Write a program to read a number of more than one digit, reverse the number and display the sum of digits of numbers. Write algorithm and draw flowchart for the same.

Aim :

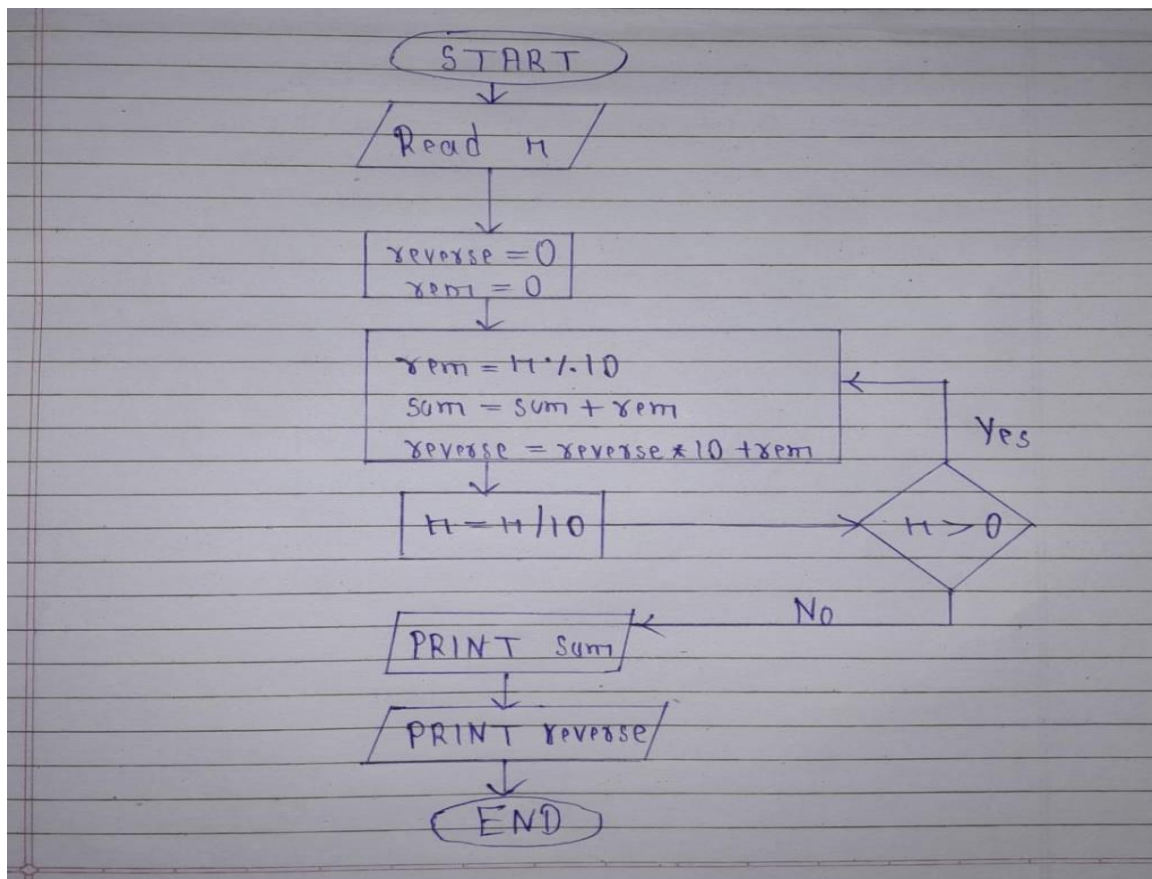
reverse the number and display the sum of digits of numbers

Algorithm :

```
graph TD; 1[1. START] --> 2[2. rev = 0, Read n]; 2 --> 3[3. rem = n % 10]; 3 --> 4[4. rev = rev * 10 + rem]; 4 --> 5[5. n = n / 10]; 5 --> 6[6. Repeat the step 3 to 5 till number is not equal to zero.]; 6 --> 7[7. STOP];
```

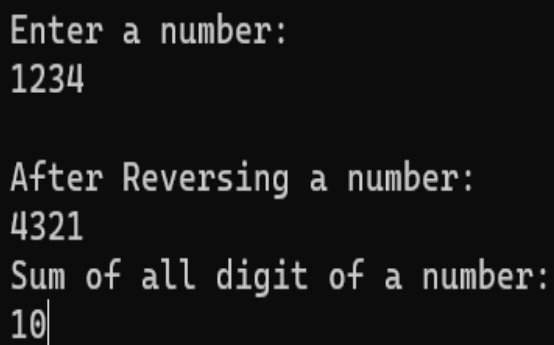
1. START
2. $rev = 0$, Read n
3. $rem = n \% 10$
4. $rev = rev * 10 + rem$
5. $n = n / 10$
6. Repeat the step 3 to 5 till number is not equal to zero.
7. STOP

Flowchart :



code :

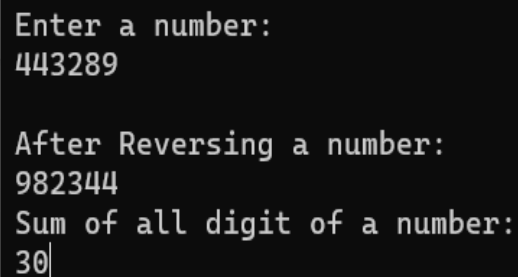
```
#include<stdio.h>
#include<conio.h>
void main()
{
    int num,rem,reverse=0,sum=0;
    //clrscr();
    printf("Enter a number:\n");
    scanf("%d",&num);
    while(num>0)
    {
        rem=num%10;
        sum+=rem;
        reverse=reverse*10+rem;
        num/=10;
    }
    printf("\nAfter Reversing a number:\n%d",reverse);
    printf("\nSum of all digit of a number:\n%d",sum);
    getch();
}
```

Output :

Enter a number:
1234

After Reversing a number:
4321

Sum of all digit of a number:
10|



Enter a number:
443289

After Reversing a number:
982344

Sum of all digit of a number:
30|

Conclusion :

We understand how to reverse a number and sum of all digits of a given number.

Experiment No. 9

Write programs to display each of the following patterns. Write algorithm and draw flowchart for the same

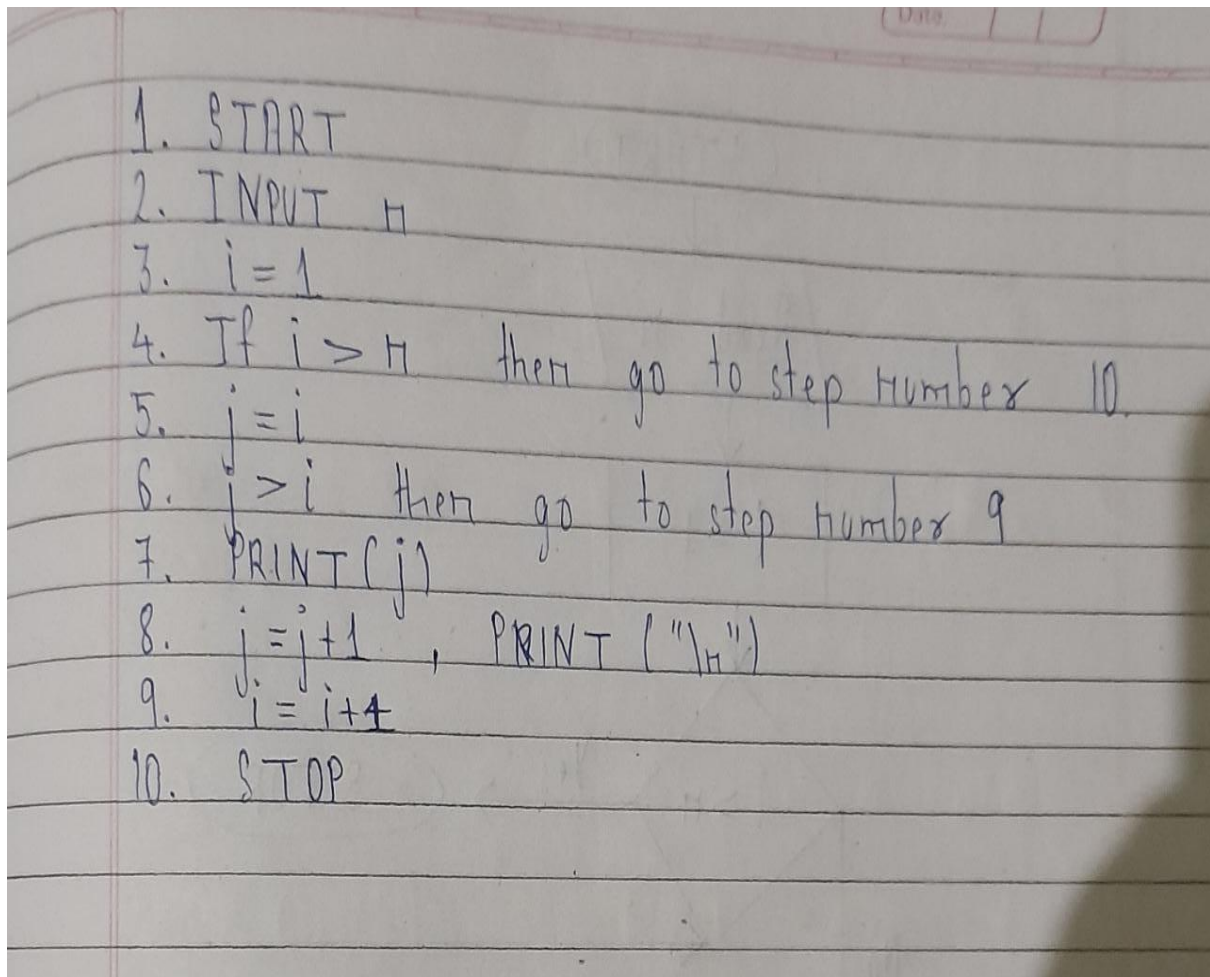
A) 1
2 1
3 2 1
4 3 2 1
5 4 3 2 1

B) A
ABA
ABCBA
ABCD CBA
ABCDEDCBA

Aim :

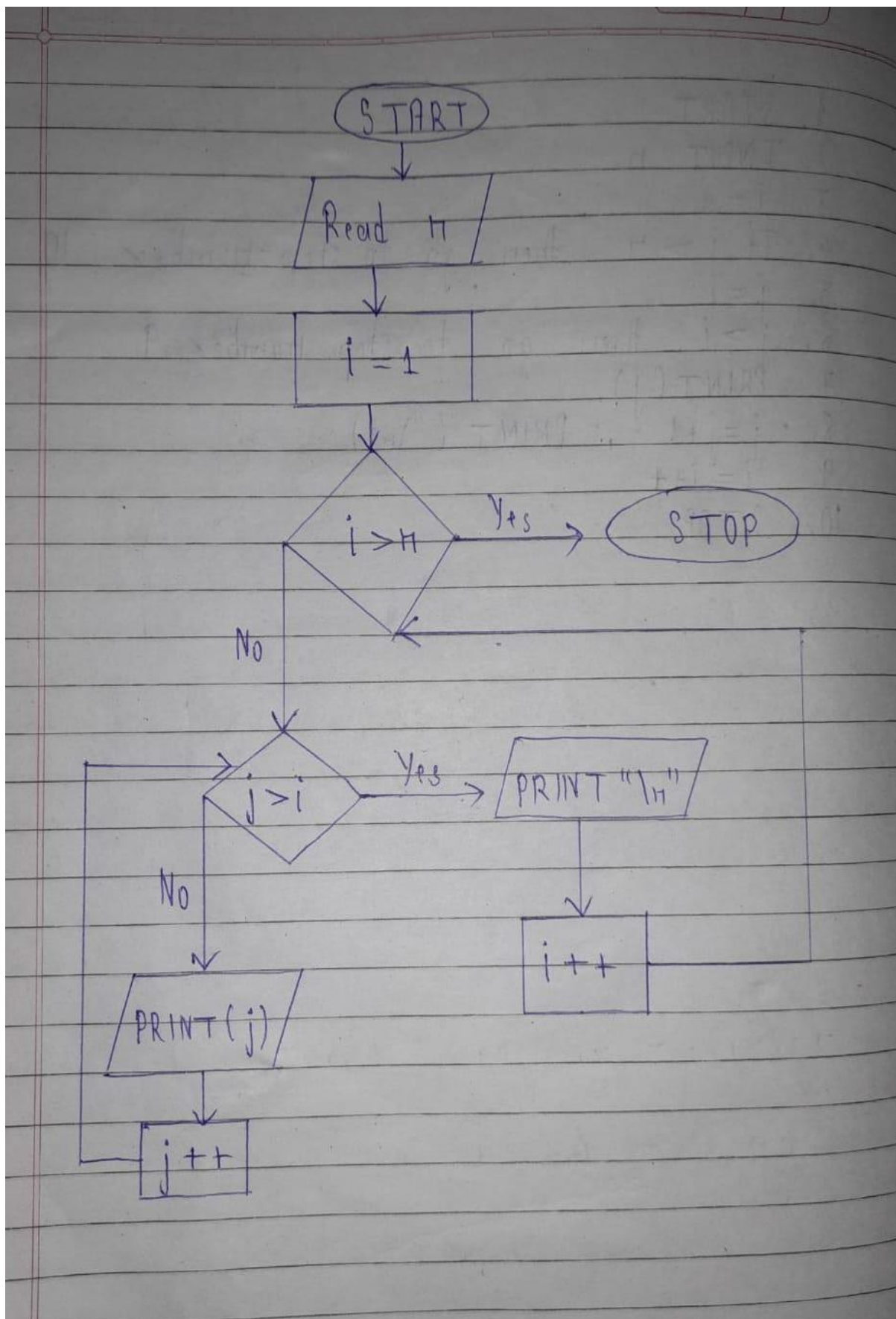
study of pattern using loop

Algorithm :



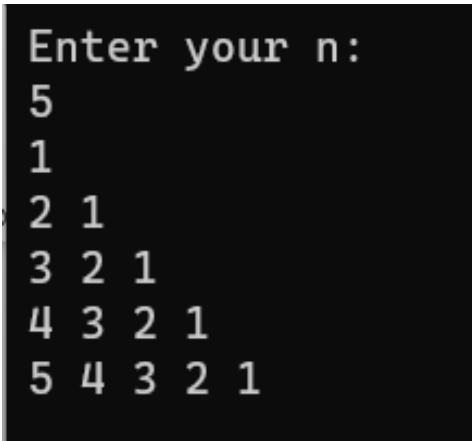
```
1. START
2. INPUT H
3. i = 1
4. If i > H then go to step Number 10.
5. j = i
6. j > i then go to step Number 9
7. PRINT(j)
8. j = j + 1, PRINT("\n")
9. i = i + 1
10. STOP
```

Flowchart :



Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,j,n;
    //clrscr();
    printf("Enter your n:\n");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        for(j=i;j>=1;j--)
        {
            printf("%d ",j);
        }
        printf("\n");
    }
}
```

Output :

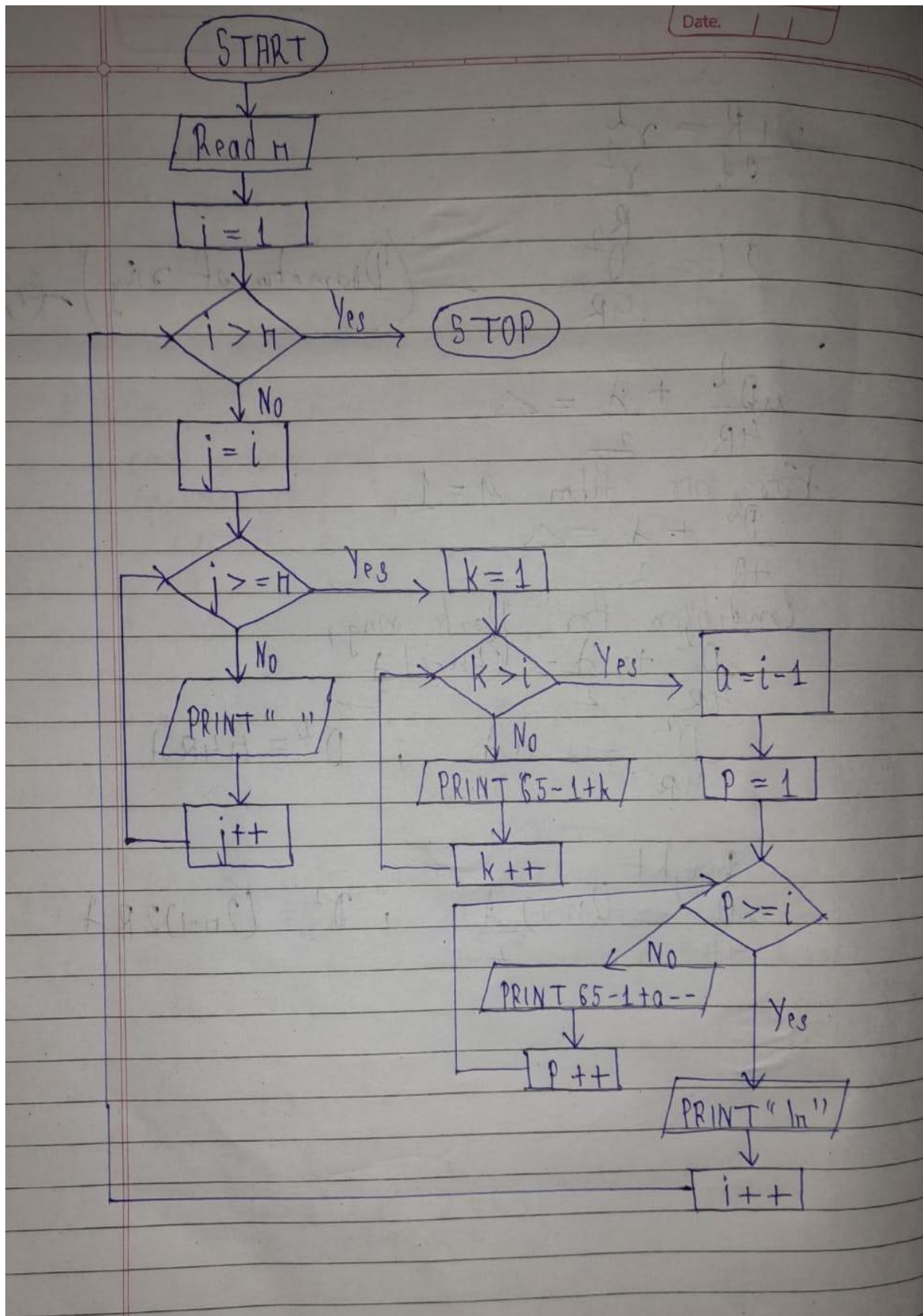
```
Enter your n:
5
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
```

B)

Algorithm :

1. START
2. Read n
3. $i = 1$
4. $i > n$ then go to step 20
5. $j = i$
6. $j \geq n$ then go to step 9
7. PRINT " "
8. $j = j + 1$ and go to step 6
9. $k = 1$
10. $k > i$ then go to step 13
11. PRINT $5 - 1 + k$
12. $k = k + 1$ and go to step 10
13. $a = i - 1$
14. $p = 1$
15. $p \geq i$ then go to step 18
16. PRINT $5 - 1 + a$
17. $p = p + 1$ and go to step 15
18. PRINT " \n "
19. $i = i + 1$ and go to step 4
20. STOP

Flowchart :



Code :

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,j,n,k,a,p;
    //clrscr();
    printf("Enter rows:\n");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
        for(j=i;j<=n;j++)
        {
            printf(" ");
        }
        for(k=1;k<=i;k++)
        {
            printf("%c",65-1+k);
        }
        a=i-1;
        for(p=1;p<=i;p++)
        {
            printf("%c",65-1+a--);
        }
        printf("\n");
    }
    getch();
}
```


Output:

Enter rows:

5

```

    A
  ABA
 ABCBA
ABCDcba
ABCDEDCBA

```

Enter rows:

8

```

    A
  ABA
 ABCBA
ABCDcba
ABCDEDCBA
ABCDEFEDCBA
ABCDEFGFEDCBA
ABCDEFGHGFEDCBA

```

Conclusion :

We understand the concept of for loop and how to tackle pattern like problem.

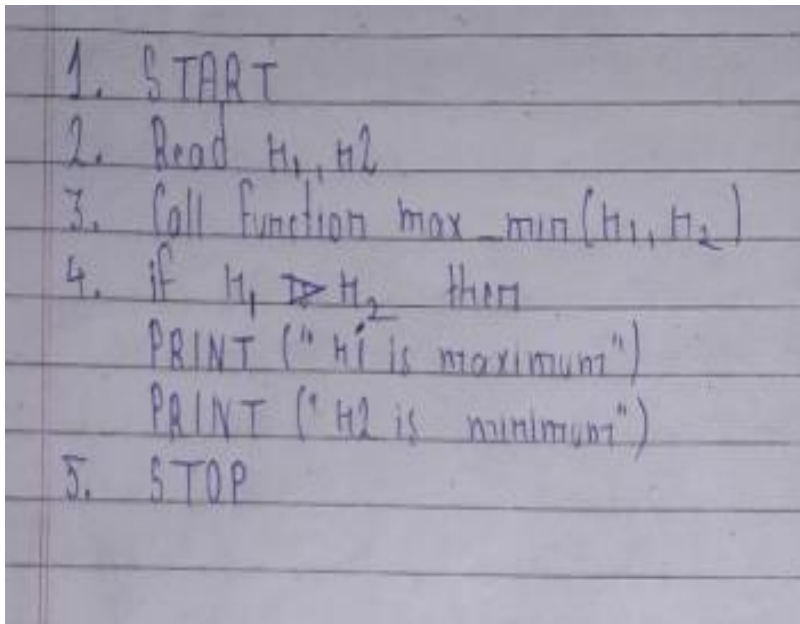
Experiment No. 10

Write a C program to find maximum and minimum between two numbers using functions. Write algorithm and draw flowchart for the same.

Aim :

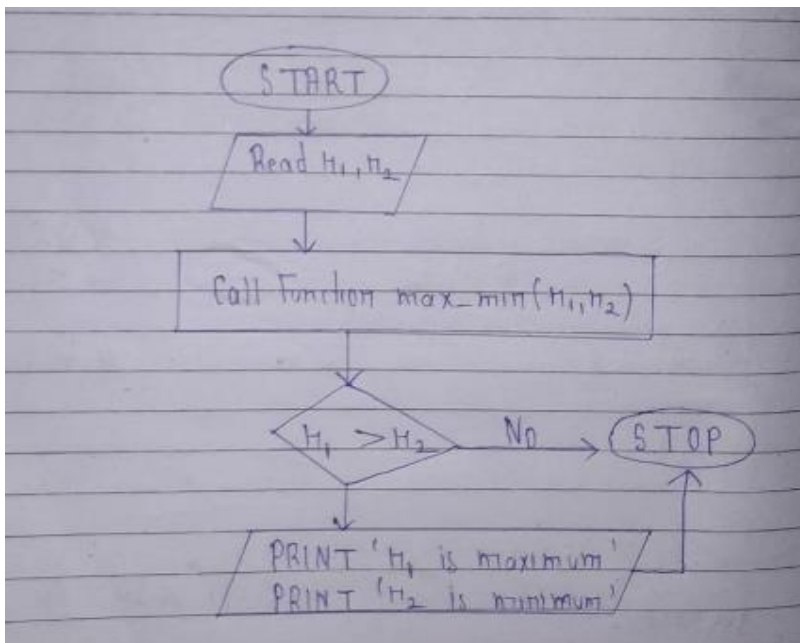
Study of function

Algorithm :



```
1. START
2. Read H1, H2
3. Call function max_min(H1, H2)
4. if H1 > H2 then
    PRINT ("H1 is maximum")
    PRINT ("H2 is minimum")
5. STOP
```

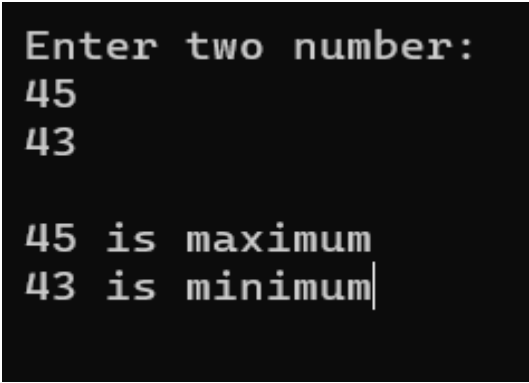
Flowchart :



Code :

```
#include<stdio.h>
#include<conio.h>
void max_min(int n1,int n2);
void main()
{
    int n1,n2;
    //clrscr();
    printf("Enter two number:\n");
    scanf("%d %d",&n1,&n2);
    max_min(n1,n2);
    getch();

}
void max_min(int n1,int n2)
{
    if(n1>n2)
        printf("\n%d is maximum",n1);
        printf("\n%d is minimum",n2);
}
```

Output:

```
Enter two number:
45
43

45 is maximum
43 is minimum|
```

Conclusion :

We understand that how to use if else statement and how to check which is maximum or minimum number.