

Bachelors of Science

SEM I

Journal

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Subject	Programming principles with C.

ANANDIBAI DAMODAR KALE
SHAIKSHANIK SANSTHA'S DEGREE



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CERTIFICATE

This is here to certify that Mr/Ms.
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INFORMATION TECHNOLOGY, has
satisfactorily completed the required number of
experiments prescribed by the **ANANDIBAI
DAMODAR KALE DEGREE COLLEGE
AFFILIATED TO UNIVERSITY OF
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Teacher In-Charge

Head of Department

External Examiner

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Experiment no – 01(6)

Aim: Write an algorithm and draw flowchart for Area of circle.

Algorithm:

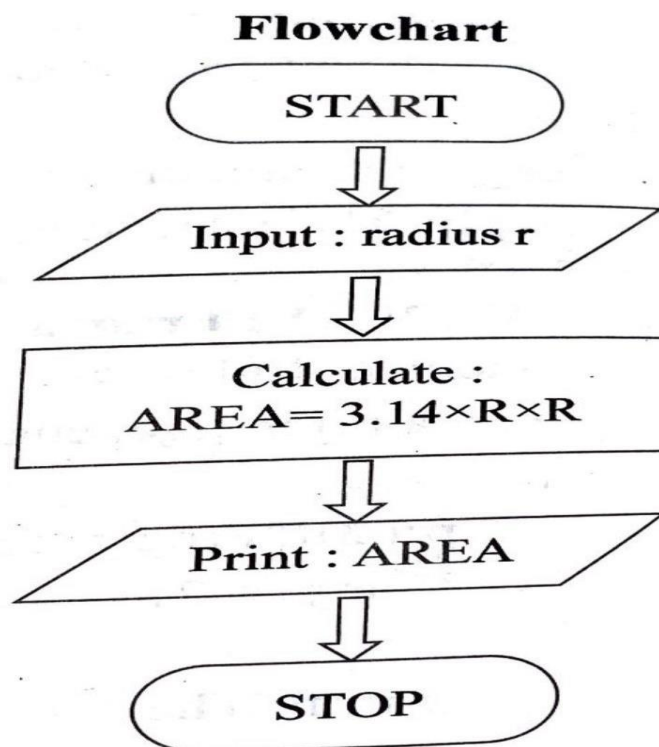
Step 1: Start

Step 2: Read the circle's radius R value.

Step 3: Calculate area of circle i.e. $AREA = 3.14 \times R \times R$

Step 4: Print AREA

Step 5: Stop **Flowchart:**



Conclusion : Successfully Drawn flowchart and wrote an algorithm

Experiment no – 01(7)

Aim: Write an algorithm and draw flowchart to print the given no. is even or odd.

Algorithm:

Step 1: Start

Step 2: Read the number value NUM.

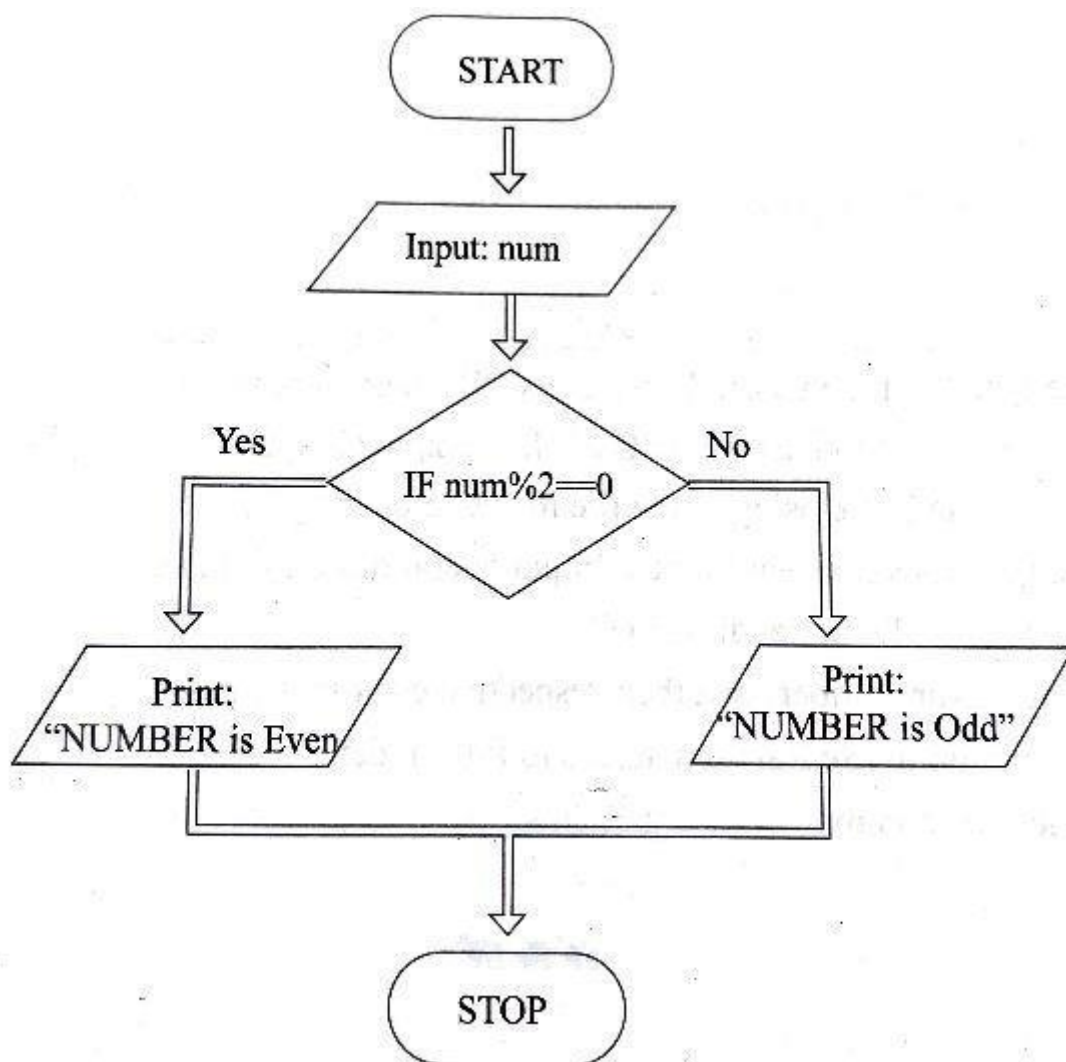
Step 3: Divide the NUM by 2 and store the remainder in REM

Step 4: If REM = 0 Then go to Step 6

Step 5: Print "NUMBER is Odd" go to step 7

Step 6: Print "NUMBER is Even"

Step 7: Stop **Flowchart:**



Conclusion : Successfully Drawn flowchart and wrote an algorithm

Experiment no – 01(7)

Aim: Write an algorithm and draw flowchart to print 1 to 10 numbers.

Algorithm:

Step 1: Start

Step 2: Initialize the variable NUM = 1

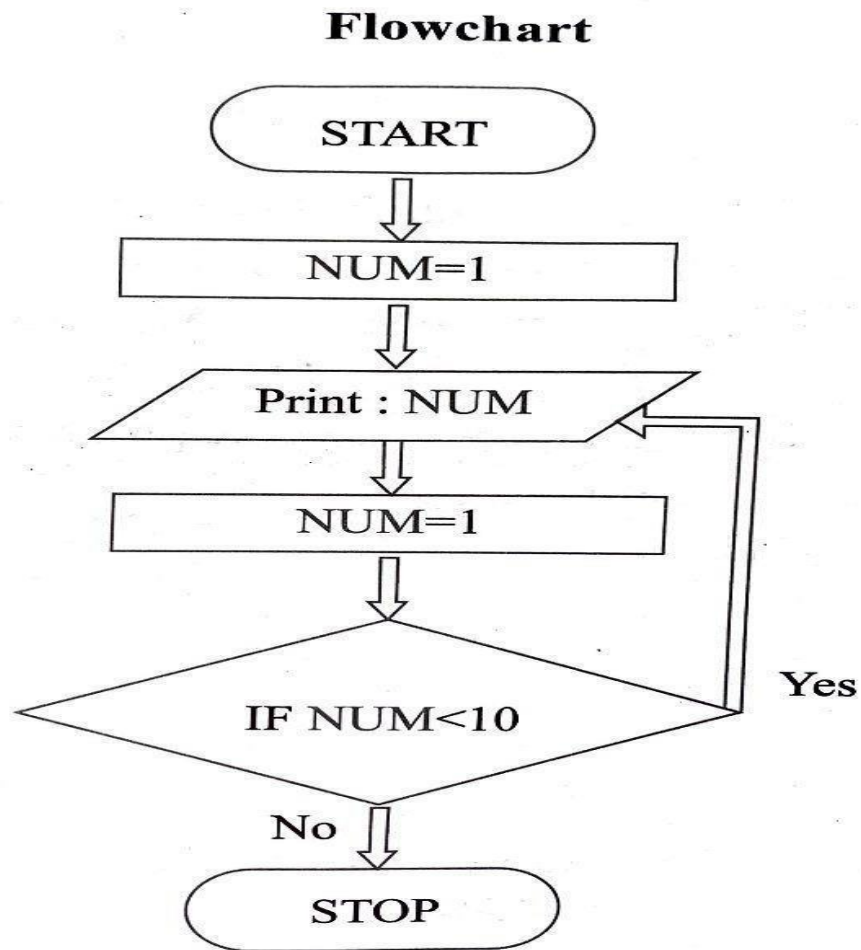
Step 3: Print NUM

Step 4: Increment NUM by 1 NUM=NUM+1

Step 5: If NUM <= 10 go to Step 3

Step 6: Stop

Flowchart:



Conclusion : Successfully Drawn flowchart and wrote an algorithm

Aim: Write an algorithm and draw flowchart for sum of 1 to 5 numbers.

Algorithm:

Step 1: Start

Step 2: Initialize the variable NUM = 1 and SUM=0

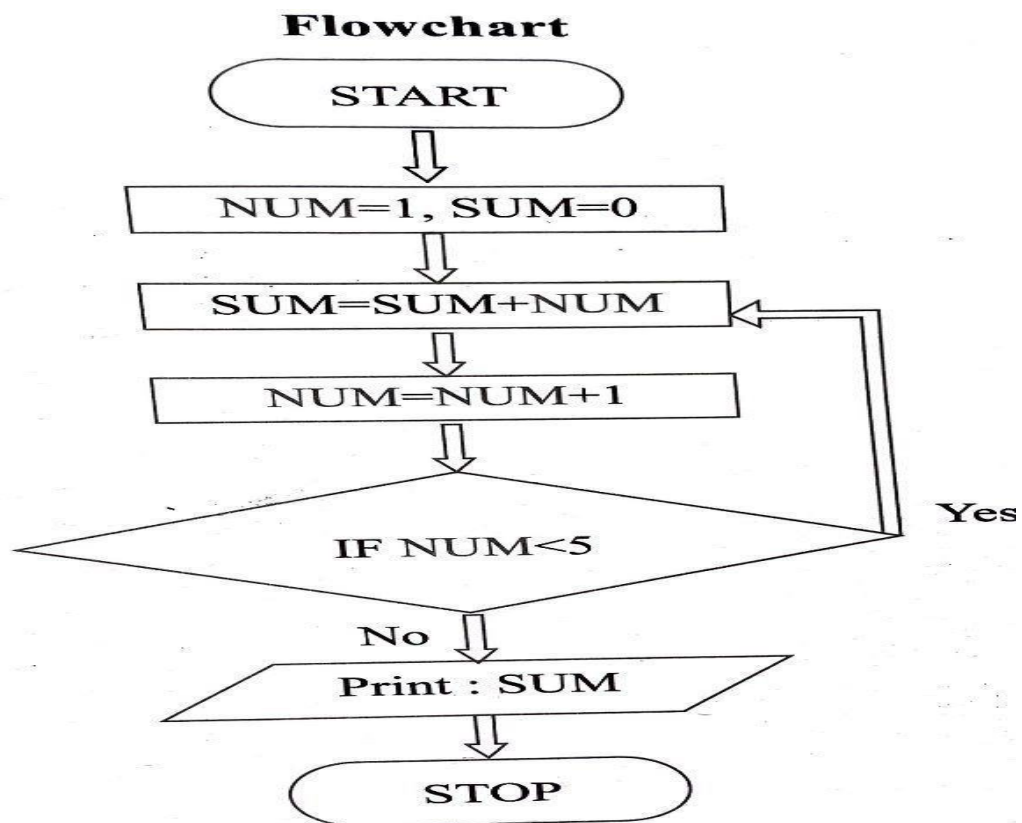
Step 3: SUM=SUM+NUM

Step 4: Increment NUM by 1 NUM=NUM+1

Step 5: If NUM<=5 go to Step 3

Step 6: Print SUM

Step 7: Stop **Flowchart:**



Conclusion : Successfully Drawn flowchart and wrote an algorithm

Experiment no – 01(10)

Aim: Write an algorithm and draw flow chart to compute the addition of digits of a given number.

Algorithm:

Step 1: Start

Step 2: Read the number value NUM

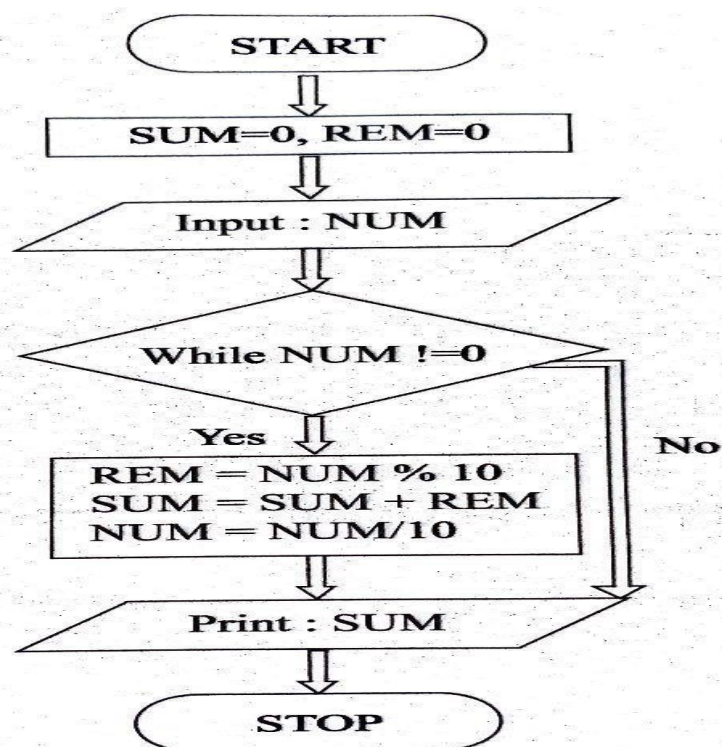
Step 3: Initialize SUM = 0

Step 4: Perform $REM = NUM \% 10$ and add REM to SUM i.e. $SUM = SUM + REM$

Step 5: Perform $NUM = NUM/10$

Step 6: IF NUM = 0 stop the process and Print SUM else go to Step 3

Step 7: Stop **Flowchart:**



Conclusion : Successfully Drawn flowchart and wrote an algorithm.

Experiment no – 02(a)

Aim: Write a program using while loop to reverse the digits of a number.

Algorithm:

Step 1:- Ask the user to enter any number.

Step 2:- Declare and initialize another variable reversed with 0, where reversed an integer variable.

Step 3:- Get the last digit of the given number by performing the modulo division (%) and store the value in last_digit variable, like last_digit= number % 10.

Step 4:- Multiply reversed by 10 and add last_digit, like reversed = reversed*10 + last_digit.

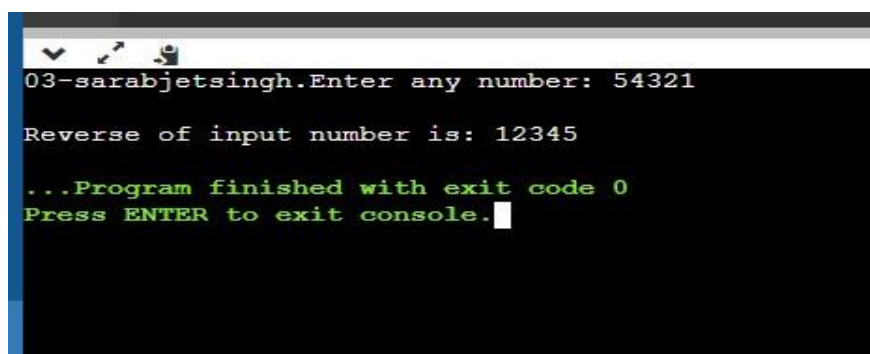
Step 5:- Divide numbered by 10, like numbered/10.

Step 6:- Repeat the steps 3 to 5 till numbered is not equal to (or greater than) zero.

Code:

```
#include<stdio.h>

int main()
{ printf("03-sarabjeetsingh."); int num, rnum = 0,
    rem;   printf("Enter any number: ");
    scanf("%d", &num);   while (num != 0) {
rem = num % 10;        rnum = rnum * 10 + rem;
    num = num / 10; }printf("\nReverse of input
    number is: %d", rnum);   return 0;}
```

OUTPUT

```
03-sarabjeetsingh.Enter any number: 54321
Reverse of input number is: 12345
...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed program using while loop to reverse the digits of a number.

Experiment no – 02(b)

Aim : Write a program to calculate the factorial of a given number.

ALGORITHM:-

STEP 1:-*Start program*

STEP 2:-*Ask the user to enter an integer to find the factorial*

STEP 3:-*Read the integer and assign it to a variable*

STEP 4:-*From the value of the integer up to 1, multiply each digit and update the final value*

STEP 5:-*The final value at the end of all the multiplication till 1 is the factorial*

Code :

```
#include <stdio.h> int main() {  
    {  
        printf("03-sarabjeetsingh");}  
        int n, i;  
        unsigned long long fact = 1;  
        printf("Enter an integer: "); scanf("%d",  
        &n);  
  
        // shows error if the user enters a negative integer if (n  
        < 0)  
        printf("Error! Factorial of a negative number doesn't exist."); else {  
            for (i = 1; i <= n; ++i) {  
                fact *= i;  
            }  
            printf("Factorial of %d = %llu", n, fact);  
        }  
        return 0;  
    }  
}
```

Output :-



```
03-sarabjeetsingh.Enter an integer: 4
Factorial of 4 = 24

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to calculate the factorial of a given number.

Experiment no – 02(c)

Aim:- Write a program to find the roots of quadratic equation.

ALGORITHM:-

STEP 1:-Start

STEP 2:-Read a, b, c values

STEP 3:-Compute $d = b^2 - 4ac$

STEP 4:-if $d > 0$ then

STEP 5:- $r1 = \frac{-b + \sqrt{d}}{2a}$

STEP 6:- $r2 = \frac{-b - \sqrt{d}}{2a}$

STEP 7:-Otherwise if $d = 0$ then

STEP 8:-compute $r1 = -b/2a, r2 = -b/2a$

STEP 9:-print $r1, r2$ values

STEP 10:-Otherwise if $d < 0$ then print roots are imaginary

STEP 11:-Stop

Code :

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

```
#include<math.h>
```

```
int main()
```

```
{
```

```
    printf("03-sarajeetsingh");
```

```
    float a,b,c,x1,x2,determinant,realpart,imaginaryPart;
```

```
    printf("Enter coefficients a,b and c:");
```

```
    scanf("%f%f%f",&a,&b,&c);    determinant=b*b -
```

```
    4*a*c;    if (determinant>0)
```

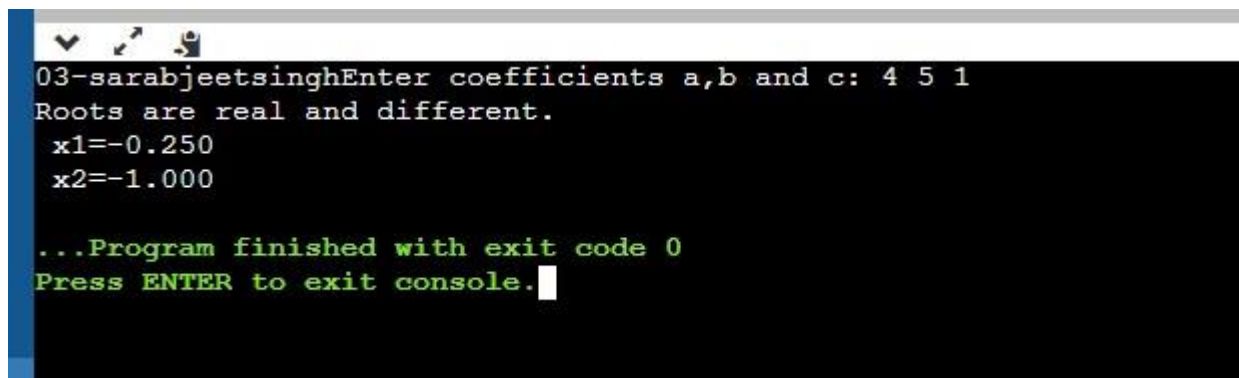
```
{
```

```
    x1=(-b + sqrt(determinant))/(2*a);
```

```
    x2=(-b - sqrt(determinant))/(2*a);
```

```
printf("Roots are real and different.");  
printf("\n x1=%.3f",x1); printf("\n  
x2=%.3f",x2);  
}  
else if (determinant==0)  
{  
printf("Roots are real and same.");  
x1=(-b+sqrt(determinant))/(2*a);  
printf("\n x1=%.ef",x1);  
printf("\nx2=%.3f",x2);  
}  
e  
/  
s  
e  
{  
realpart=-b/(2*a);  
imaginaryPart=sqrt(determinant)/(2*a); printf("\n  
Roots are complex and differtent."); printf("\n  
x1=%.3f+%.fi",realpart,imaginaryPart); printf("\nx2  
= %.3f-%3fi",realpart,imaginaryPart);  
}  
return 0;
```

Output :-



```
03-sarabjeetsinghEnter coefficients a,b and c: 4 5 1  
Roots are real and different.  
x1=-0.250  
x2=-1.000  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to find the roots of quadratic equation.

Experiment no – 02(d)

Aim :- Write a program to print the Fibonacci series.

ALGORITHM:-

STEP 1:-START

STEP 2:-Take integer variable A, B, C STEP 3:-

Set A = 0, B = 0 iv.

STEP 4:-DISPLAY A, B

STEP 5:-C = A + B

STEP 6:-DISPLAY C

STEP 7:-Set A = B, B = C

STEP 8:-REPEAT from 4 - 6, for n times

STEP 9:-STOP

Code :-

```
#include <stdio.h>

int main() {
    printf("03-sarabjeetsingh");

    int i, n;

    // initialize first and second terms
    int t1 = 0, t2 = 1;

    // initialize the next term (3rd term)
    int nextTerm = t1 + t2;

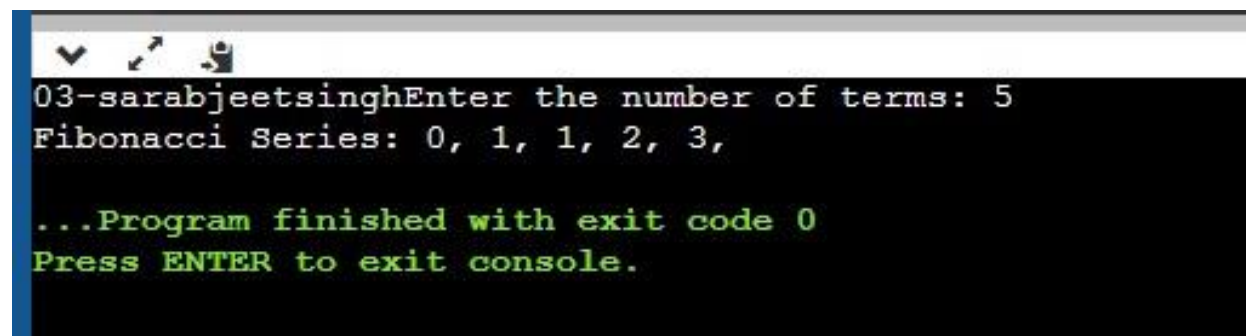
    // get no. of terms from user
    printf("Enter the number of terms: ");
    scanf("%d", &n);
```

```
// print the first two terms t1 and t2  
printf("Fibonacci Series: %d, %d, ", t1, t2);
```

```
// print 3rd to nth terms  
for (i = 3; i <= n; ++i) {  
    printf("%d, ", nextTerm);  
    t1 = t2;    t2 = nextTerm;  
    nextTerm = t1 + t2;  
}
```

```
return 0;  
}
```

Output :-

A screenshot of a terminal window with a dark background and light green text. The prompt is '03-sarabjeetsingh'. The user has entered '5'. The program output is 'Fibonacci Series: 0, 1, 1, 2, 3,'. Below this, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.'

```
03-sarabjeetsinghEnter the number of terms: 5  
Fibonacci Series: 0, 1, 1, 2, 3,  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print the Fibonacci series.

Experiment no - 03(a)

Aim: Write a program in C to check entered character vowel or consonant.

Algorithm:

Start

Declare character type variable ch

Read ch from User

Checking both lower and upper case vowels.

IF (ch == 'a' || ch == 'A' ||

i. ch == 'e' || ch == 'E' || ii.

ch == 'i' || ch == 'I' ||

ch == 'o' || ch == 'O' ||

ch == 'u' || ch == 'U')

Print "Vowel"

ELSE

Print "Consonant"

Stop

Code:

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

```
int main() { char
```

```
c;
```

```
printf("03-sarabjeetsingh."); int
```

```
lowercase_vowel, uppercase_vowel;
```

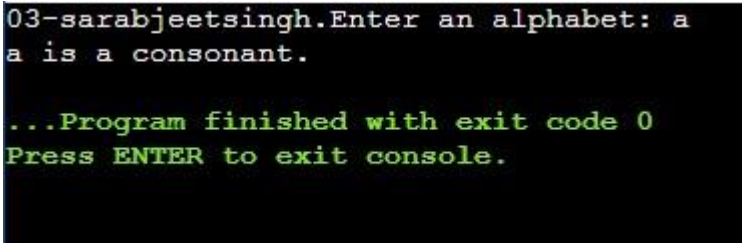
```
printf("Enter an alphabet: ");
```

```
scanf("%c", &c);
```

```
// evaluates to 1 if variable c is a lowercase vowel lowercase_vowel =  
(c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');
```

```
// evaluates to 1 if variable c is a uppercase vowel uppercase_vowel = (c  
== 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U'); // evaluates to 1 (true) if c  
is a vowel if (lowercase_vowel || uppercase_vowel) printf("%c is a  
vowel.", c); else
```

```
printf("%c is a consonant.", c);  
  
return 0;  
  
}
```

Output:

```
03-sarabjeetsingh.Enter an alphabet: a  
a is a consonant.  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program in C to check entered character vowel or consonant.

Experiment no - 03(b)

Aim: Write a program to C program to print day name of week using switch-case.

Algorithm:

- i. Input day number from user. Store it in some variable say *no*.
- ii. Switch the value of *week* i.e. use `switch(no)` and match with cases. iii.
There can be 7 possible values(choices) of *week* i.e. 1 to 7. Therefore write 7 case inside switch. In addition, add default case as an else block.
- iv. For case 1: print "MONDAY", for case 2: print "TUESDAY" and so on. Print "SUNDAY" for case 7:.
- v. If any case does not matches then, for default: case print "Invalid week number".

Code:

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

```
int main()
```

```
{ printf("03-sarabjeetsingh.");
```

```
int week;
```

```
/* Input week number from user */
```

```
printf("Enter week number(1-7): ");
```

```
scanf("%d", &week);
```

```
switch(week)
```

```
{ case 1:
```

```
printf("Monday");
```

```
break; case 2:
```

```
printf("Tuesday");
```

```
break; case 3:
```

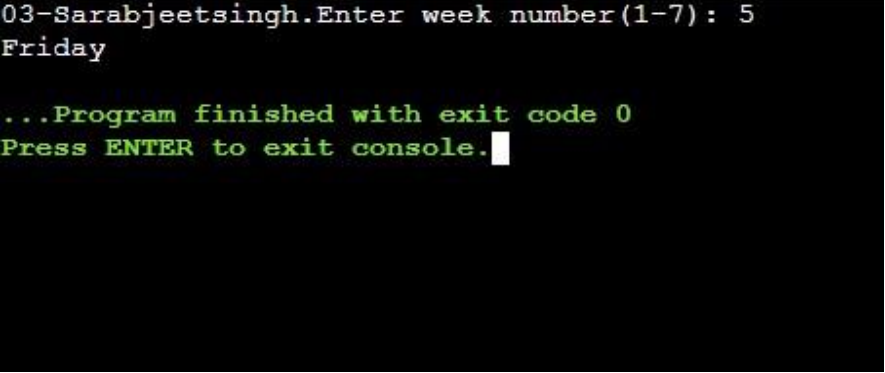
```
printf("Wednesday");
```

```
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.");
}

return 0;
}
```

Output:

```
03-Sarabjeetsingh.Enter week number(1-7): 5
Friday

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to C program to print day name of week using switch-case.

Experiment no - 03(c)

Aim: Write a program to read three values from keyboard and print out the largest of them without using if statement.

Algorithm:

- i. Ask the user to enter three integer values.
- ii. Read the three integer values in num1, num2, and num3 (integer variables).
 - iii. Check if num1 is greater than num2. iv. If true, then check if num1 is greater than num3.
 - a. If true, then print 'num1' as the greatest number.
 - b. If false, then print 'num3' as the greatest number.
 - v. If false, then check if num2 is greater than num3.
 - a. If true, then print 'num2' as the greatest number.
 - b. If false, then print 'num3' as the greatest number.

Code:

```
#include<stdio.h> int
main()
{ printf("03-sarabeetsingh."); int N1,
N2, N3, lrg; printf("Enter three
numbers:"); scanf("%d %d %d", &N1,
&N2, &N3);
lrg = N1 > N2 ? (N1 > N3 ? N1 : N3) : (N2 > N3 ? N2 : N3); printf("%d is the
largest number.",lrg); return 0;
}
```

Output:

```
03-sarabjeetsingh.Enter three numbers:123 111 369
369 is the largest number.

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to read three values from keyboard and print out the largest of them without using if statement.

Experiment no - 04(a)

Aim: a. Write a program to print the pattern of asterisks as shown below :

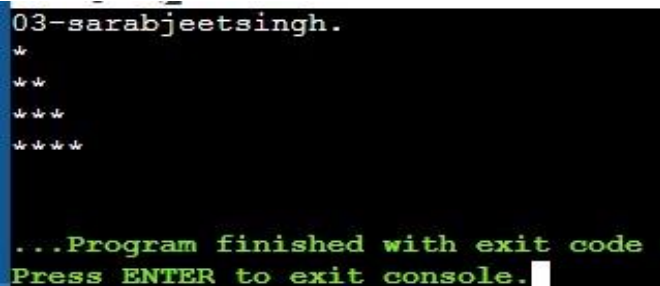
```
*  
* *  
* * *  
* * * *
```

Algorithm:

Display * and go to new line
Display * * and go to new line.
Display * * * and go to new line.
Display * * * *

Code:

```
#include<stdio.h> int main()  
{ printf("03-sarabjeetsingh.\n");  
  int i, j, n;  
  /* for used as row wise */ for(i=1; i<=4; ++i)  
  {  
    /* for used as column wise */ for(j=1; j<=i;  
    ++j)  
    { printf("*");  
    } printf("\n");  
  } return 0;  
}
```

Output: 

Conclusion : Successfully performed a program to print the pattern of asterisks

Experiment no - 04(b)

Aim: Write a program to print the pattern of asterisks as shown below :

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

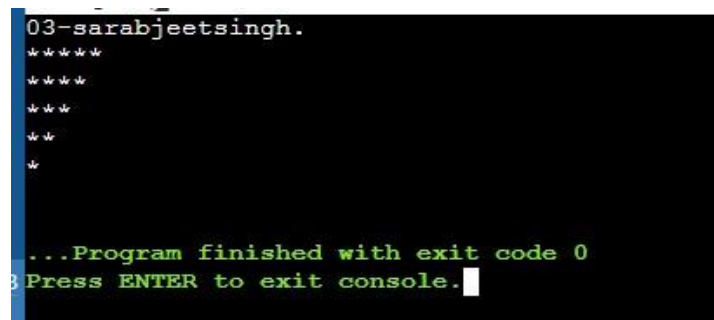
Algorithm:

Display ***** and go to new line
Display * * * * and go to new line.
Display * * * and go to new line.
Display * * and go to new line.
Display *

Code: `#include<stdio.h> int main()`

```
{ printf("03-sarabjeetsingh.\n");  
  int i, j;  
  /* for used as row wise */ for(i=5; i>=1; i--)  
  {  
    /* for used as column wise */ for(j=1; j<=i;  
    j++)  
    { printf("*");  
    } printf("\n"); } return 0;
```

Output:



```
03-sarabjeetsingh.  
*****  
****  
***  
**  
*  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print the pattern of asterisks.

Experiment no - 04(c)

Aim: Write a program to print Floyd's Triangle.

Algorithm:

Create variables that hold rows and column values as i and j. Take a number to display the rows as num and set the variable k to 1 as its initial value.

Use nested for loops:

Outer for loop starts its iteration i = 1 up to n rows.

Inner for loop starts its iteration from j = 1 up to (j <= i).

Print the values of k.

Increment k by 1 or $k = k + 1$.

Jump to newline after each iteration of the inner for loop.

Stop

Code:

```
#include <stdio.h> int main()
{ printf("03-sarabjeetsingh.\n");
  int n, i, c, a = 1;

  printf("Enter the number of rows of Floyd's triangle to print\n"); scanf("%d", &n);

  for (i = 1; i <= n; i++)
  {
    for (c = 1; c <= i; c++)
    {
      printf("%d ", a); // Please note space after %d    a++;
    } printf("\n");
  } return 0;
}
```

Output:

```
03-sarabjeetsingh.  
Enter the number of rows of Floyd's triangle to print  
5  
1  
2 3  
4 5 6  
7 8 9 10  
11 12 13 14 15  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print Floyd's Triangle.

Experiment no – 05(a)

Aim: Write a program to print area of square using function.

Algorithm:

Start.

Declare at s as integer.

Initialize value of s.

Calculate at s×s.

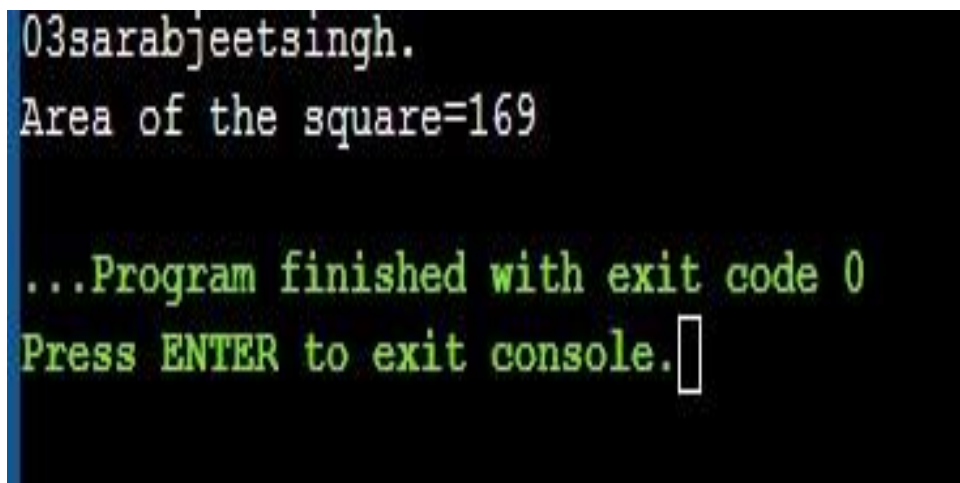
print area of triangle . .

End.

Code:

```
#include <stdio.h> int main() {  
printf("03sarabjeetsingh.\n"); int  
s=13; int  
area_square=s*s;  
printf("Area of the square=%d",area_square);  
}
```

Output:



```
03sarabjeetsingh.  
Area of the square=169  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print area of square using function.

Experiment no – 05(b)

Aim: Write a program using recursive function.

Algorithm:

Start.

Read the Input.

Perform recursion.

Print result.

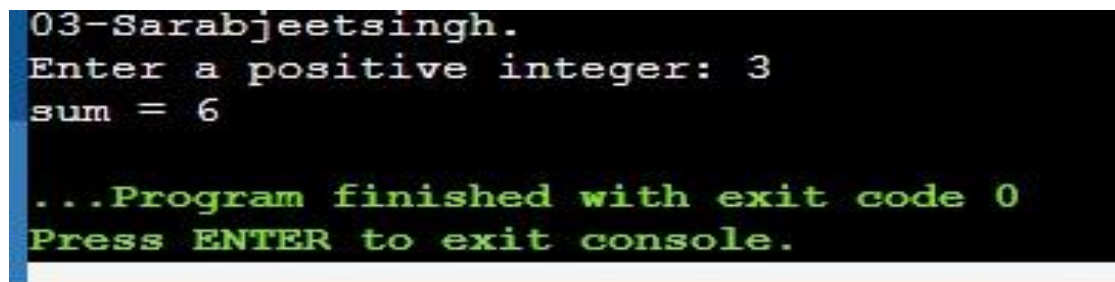
Stop.

Code:

```
#include <stdio.h> int sum(int n);

int main() { printf("03-Sarabjeetsingh.\n");
int number, result;

    printf("Enter a positive integer: ");
scanf("%d", &number);  result =
sum(number);  printf("sum = %d", result);
return 0; } int sum(int n) {  if (n != 0)
    // sum() function calls itself    return n
+ sum(n-1);  else    return n;
}
```

Output:A screenshot of a terminal window with a black background and green text. The output shows the program name '03-Sarabjeetsingh.', a prompt 'Enter a positive integer: 3', and the result 'sum = 6'. At the bottom, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.'

Conclusion : Successfully performed a program using recursive function

Experiment no – 05(c)

Aim: Write a program to square root, abs() value using function.

Algorithm:

- i. Start ii. Read the input
- iii. Calculate absolute value iv.

Calculate square root value v.

Print results

vi. Stop **Code:**

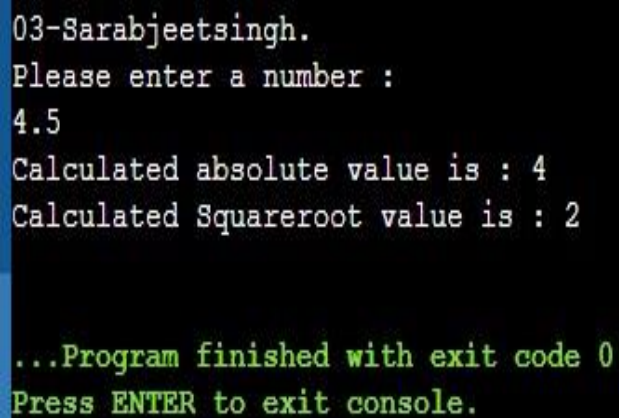
```
#include<stdio.h>
#include<math.h> int main()
{ printf("03-Sarabjeetsingh.\n"); int
num, a;

printf("Please enter a number :\n");
scanf("%d",&num); a = abs(num);

printf("Calculated absolute value is : %d\n", a); a = sqrt(num);
printf("Calculated Squareroot value is : %d\n",a);

return 0;
}
```

Output:



```
03-Sarabjeetsingh.
Please enter a number :
4.5
Calculated absolute value is : 4
Calculated Squareroot value is : 2

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to square root, abs() value using function.

Experiment no – 05(d) Aim:

Write a program using go to statement.

Algorithm:

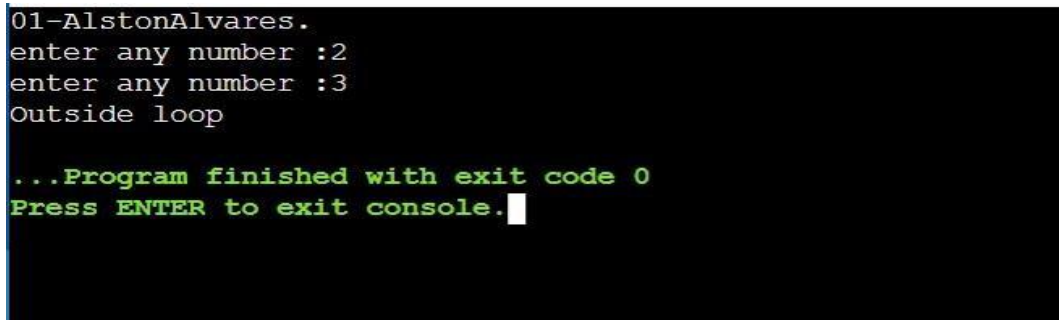
Start
Read the Input
Check if the input is inside loop or outside loop
Print result
Stop

Code:

```
#include<stdio.h> int main()
{ printf("03-sarabjeesingh.\n");
  int n;
  for(;;) /*ifinite loop*/
  {
    printf("enter any number :");
    scanf("%d",&n); if(n == 5)
    goto ap; /* use of goto statement*/ if
```



```
(n% 2 == 0) continue; /*use of continue
statement*/
if (n% 3 == 0) break; /*use of break state*/
printf("Inside loop"); } ap: printf("Outside
loop"); return 0;
}
```

Output:

```
01-AlstonAlvares.
enter any number :2
enter any number :3
Outside loop

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program using go to statement.

Experiment no – 06(a)

Aim: a. Write a program to print rollno and names of 10 students using array.

Algorithm:

- i. Start
- ii. Store Student Information
- iii. Create the student's structure variable
- iv. Display information
- v. Stop

Code:

```
// C Program to Store Information
```

```
// of Students Using Structure
```

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

```
#include <stdlib.h> #include
```

```
<string.h> // Create the student
```

```
structure struct Student {
```

```
    char* name; int
```

```
roll_number;
```

```
};
```

```
// Driver code int main()
```

```
{ printf("03-sarajeetsingh\n"); int i =
```

```
0, n = 10;
```

```
// Create the student's structure variable

// with n Student's records

struct Student student[n];    // Get the
students data  student[0].roll_number =
1; student[0].name = "Geeks16";
student[1].roll_number = 2;
student[1].name = "Geeks54";
student[2].roll_number = 3;
student[2].name = "Geeks22";
student[3].roll_number = 4;
student[3].name = "Geeks41";
student[4].roll_number = 5;
student[4].name = "Geeks39";
student[5].roll_number = 6;
student[5].name = "Geeks3";
student[6].roll_number = 7;
    student[6].name = "Geeks32";
student[7].roll_number = 8; student[7].name =
"Geeks36";
    student[8].roll_number = 9;
    student[8].name = "Geeks35";
    student[9].roll_number = 10;
student[9].name = "Geeks34"; // Print the
Students information  printf("Student
Records:\n\n");    for
(i = 0; i < n; i++) {
    printf("\tName = %s\n", student[i].name);    printf("\tRoll
Number = %d\n", student[i].roll_number);
    }
    return 0;
}
```

Output:

```
03-Sarabjeetsingh
Student Records:

    Name = Geeks16
    Roll Number = 1
    Name = Geeks54
    Roll Number = 2
    Name = Geeks22
    Roll Number = 3
    Name = Geeks41
    Roll Number = 4
    Name = Geeks39
    Roll Number = 5
    Name = Geeks31
    Roll Number = 6
    Name = Geeks32
    Roll Number = 7
    Name = Geeks36
    Roll Number = 8
    Name = Geeks35
    Roll Number = 9
    Name = Geeks34
    Roll Number = 10

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print rollno and names of 10 students using array.

Experiment no – 06(b) Aim:

Write a program to read a matrix of size m*n.

Algorithm:

- i. Start
- ii. Enter row and column size
- iii. Construct Matrix
- iv. Display result
- v. Stop

```
Code: #include<stdio.h> int main() {  
printf("03-sarabjeetsingh.\n"); int i,j,m,n; float  
a[10][10];  
  
printf("Enter row and column size:\n");  
scanf("%d%d", &m, &n); printf("Enter matrix  
elements:\n"); for(i=0;i< m;i++)  
{  
for(j=0;j< n;j++) {  
printf("a[%d][%d]=",i,j); scanf("%f",  
&a[i][j]);  
}  
}  
printf("Matrix read is:\n");  
for(i=0;i< m;i++)  
{  
for(j=0;j< n;j++)  
{  
printf("%f\t",a[i][j]);  
}  
printf("\n");  
}  
}
```

Output:

```
03-sarabjeetsingh.  
Enter row and column size:  
2 2  
Enter matrix elements:  
a[0][0]=12  
a[0][1]=23  
a[1][0]=45  
a[1][1]=56  
Matrix read is:  
12.000000      23.000000  
45.000000      56.000000  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to read a matrix of size m*n

Experiment no – 06(c)

Aim: Write a program to sort the elements of array in ascending or descending order.

Algorithm:

- i. Start.
- ii. Input size of array.
- iii. Place currently selected element array to its correct place.
- iv. Swap if currently selected array element to its correct place.
- v. Print the sorted array.
- vi. Stop.

Code:

```
/**
 * C program to sort elements of array in ascending order
 */
#include <stdio.h>

#define MAX_SIZE 100 // Maximum array size

int main()
{ printf("03-sarabeetsingh.\n"); int
arr[MAX_SIZE];
int size;
int i, j, temp;

/* Input size of array */ printf("Enter
size of array: "); scanf("%d", &size); /*
Input elements in array */ printf("Enter
elements in array: "); for(i=0; i<size; i++)
{
scanf("%d", &arr[i]);
}

for(i=0; i<size; i++)
{
/*
* Place currently selected element array[i]
* to its correct place.
*/
```

```
    for(j=i+1; j<size; j++)
    {
        /*
        *      Swap if currently selected array element
        * is not at its correct position.
        */
        if(arr[i] > arr[j])
        {
            temp
            = arr[i];      arr[i] =
            arr[j];      arr[j]
            = temp;
        }
    }
}

/* Print the sorted array */
printf("\nElements of array in ascending order: ");  for(i=0; i<size;
i++)
{
    printf("%d\t", arr[i]);
}

return 0;
}
```

Output:

```
03-Sarabjeetsingh
Enter size of array: 5
Enter elements in array: 27 11 34 56 13

Elements of array in ascending order: 11      13      27      34      56

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to sort the elements of array in ascending or descending order

Experiment no - 07(a)

Aim: Write a program to extract the portion of a character string and print the extracted part.

Algorithm:

Start

Enter index start

Enter index last

Print result v.

Stop

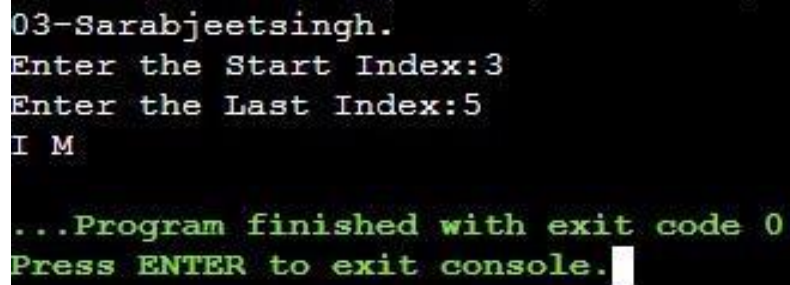
Code:

```
#include<stdio.h>

#include<conio.h>

#include<string.h>    void
demo(char*s,int  start,int
end)
{ int i;
  for(i=start;i<=end;i++)
    printf("%c",s[i]);
} int main()
{ printf("03-Sarabjeetsingh.\n");
  char str[100]="NAVI MUMBAI";
  int s,e;
  printf("Enter the Start Index:");
  scanf("%d",&s);
  printf("Enter the Last Index:");
  scanf("%d",&e);
  if(e>strlen(str)
  ||(s>strlen(str)))
    printf("The indeex's starting or ending value is out of range "); else
    demo(str,s,e); return 0;
}
```

Output:

A screenshot of a terminal window with a black background and white and green text. The text shows the execution of a C program. It starts with a prompt '03-Sarabjeetsingh.' followed by 'Enter the Start Index:3' and 'Enter the Last Index:5'. Then, the string 'I M' is entered. The program then prints '...Program finished with exit code 0' and 'Press ENTER to exit console.' with a cursor at the end.

```
03-Sarabjeetsingh.  
Enter the Start Index:3  
Enter the Last Index:5  
I M  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to extract the portion of a character string and print the extracted part

Experiment no - 07(b)

Aim: Write a program to find the given string is palindrome or not.

Algorithm:

- i. Start
- ii. Check "hello" = palindrome
- iii. If true then print is a palindrome
- iv. If false then print is not a palindrome
- v. Check "madam" = palindrome
- vi. If true then print is a palindrome
- vii. If false then print is not a palindrome
- viii. Stop.

Code:

```
#include<stdio.h>

#include<string.h> void
isPal(char s[]) { int l =
0; int h = strlen(s)-1;
while(h>l)

{
if(s[l++]!=s[h--])
{
printf("%s: not a palindrome\n",s);
return;
}
}

printf("%s :palindrome\n",s);
} int main() {
printf("03sarabjeetsingh\n")
; isPal("hello");
isPal("madam"); return 0;
}
```

Output:

```
03-sarabjeetsingh  
hello:not a palindrome  
madam :palindrome  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to find the given string is palindrome or not.

Experiment no – 07(c) Aim:

Write a program to using strlen(), strcmp() function.

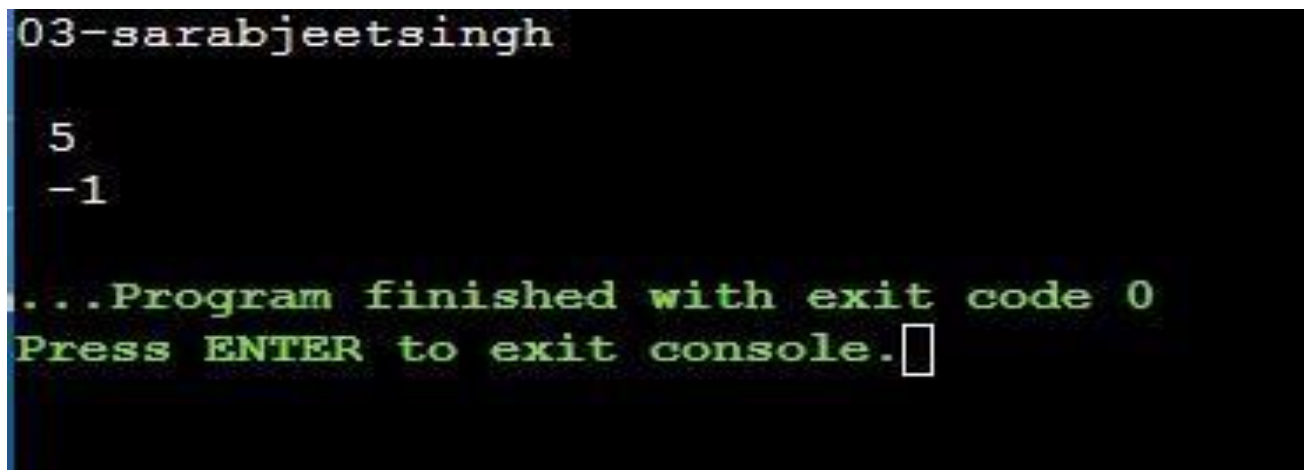
- i. **Algorithm:** Start
- ii. Use strlen function
- iii. Use strcmp function
- iv. Print result
- v. Stop **Code**

CODE

```
#include<stdio.h>

#include<string.h> int main()
{ printf("03-
sarabjeetsingh\n");   int i;
i=strlen("Hello");   printf("\n
%d",i);

i=strcmp("Hello!","World");
printf("\n %d",i);   return 0;
}
```

Output:

```
03-sarabjeetsingh

5
-1

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to using strlen(), strcmp() function.

Experiment no - 08(a)

Aim: Write a program to display the values using different data types and its address using pointer.

Algorithm:

Start ii.

Declare v1,v2,v3

Declare *p1,*p2,*p3

Insert values

Print result

Stop

Code:

```
#include <stdio.h> int
main()
{ printf("03.sarabjeetsingh.\n");
int v1; float v2;
char v3; int *p1;
float *p2; char
*p3; v1=11;
v2=3.14;
v3='Y';

p1 = &v1; p2 = &v2; p3 = &v3;
printf("Address of v1 = %u\n", &v1);
printf("Value is = %d\n", *p1);
printf("Address of v2 = %u\n", &v2);
printf("Value is = %f\n", *p2);
printf("Address of v3 = %u\n", &v3);
printf("Value is = %c\n", *p3);
```

Output:

```
03-Sarabjeetsingh.  
Address of v1 = 3157290232  
Value is = 11  
Address of v2 = 3157290236  
Value is = 3.140000  
Address of v3 = 3157290231  
Value is = Y  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to display the values using different data types and its address using pointer.

Experiment no - 08(b)

Aim: Write a program to perform addition and subtraction using pointer.

Algorithm:

- i. Start
- ii. Enter numbers
- iii. Addition or Subtraction is performed
- iv. Display results
- v. Stop

Code:

//Add//

```
#include<stdio.h> int main()
{ printf("03-Sarabeetsingh.\n");
int num1 ,num2, *p,*q,sum;
printf("Enter any two
integers:\n");
scanf("%d%d", &num1,&num2);

    p = &num1;    q
= &num2;    sum
= *p+*q;

    printf("Sum= %d\n",sum);

    return 0;
}
```

//Sub//

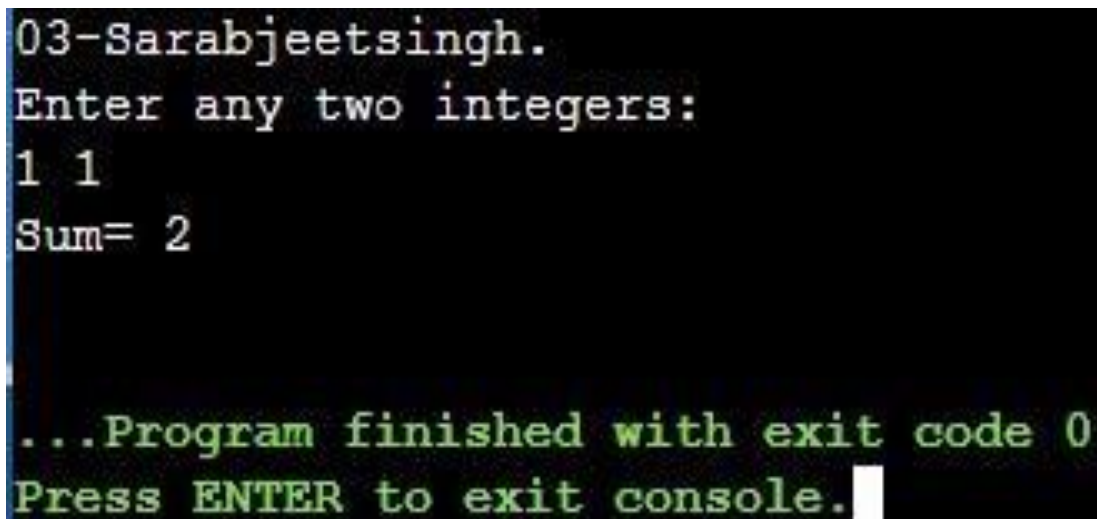
```
#include<stdio.h> int main() {
printf("03-Sarabeetsingh.\n");
int num1 ,num2, *p,*q,sub;
```



```
printf("Enter any two  
integers:\n");  
scanf("%d%d", &num1,&num2);  
  
p =  
&num1; q  
= &num2;  
sub  
= *p-*q;  
  
printf("Sub= %d\n",sub);  
  
return 0;  
}
```

Output:

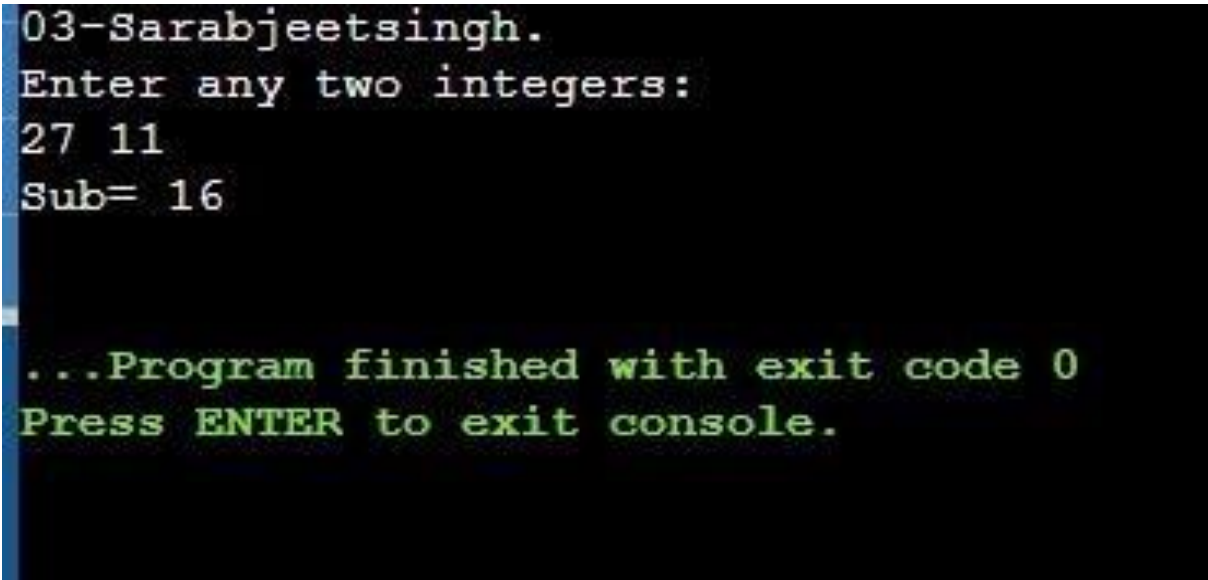
Add



A screenshot of a terminal window with a black background and green text. The output shows the program's execution: the user's name '03-Sarabjeetsingh.' is printed, followed by a prompt 'Enter any two integers:'. The user enters '1 1', and the program outputs 'Sum= 2'. At the bottom, it says '...Program finished with exit code 0' and 'Press ENTER to exit console.' with a white cursor block.

```
03-Sarabjeetsingh.  
Enter any two integers:  
1 1  
Sum= 2  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Sub



```
03-Sarabjeetsingh.  
Enter any two integers:  
27 11  
Sub= 16  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to perform addition and subtraction using pointer.

Experiment no – 09(a)

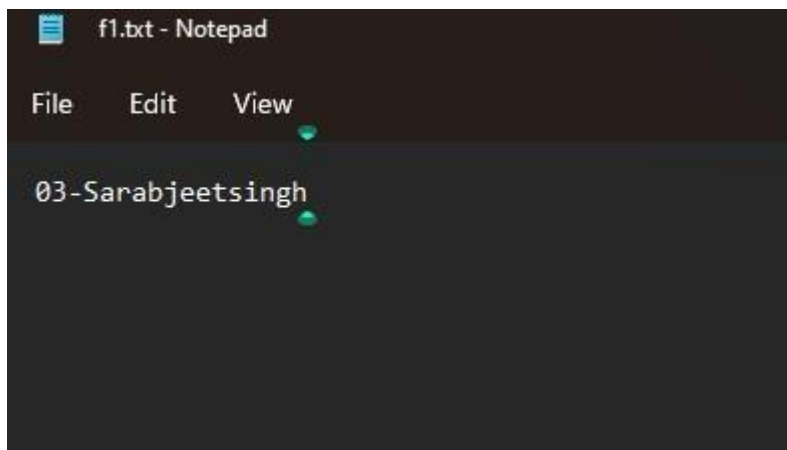
Aim: Write a program to copy the contents of the file from one file into other.

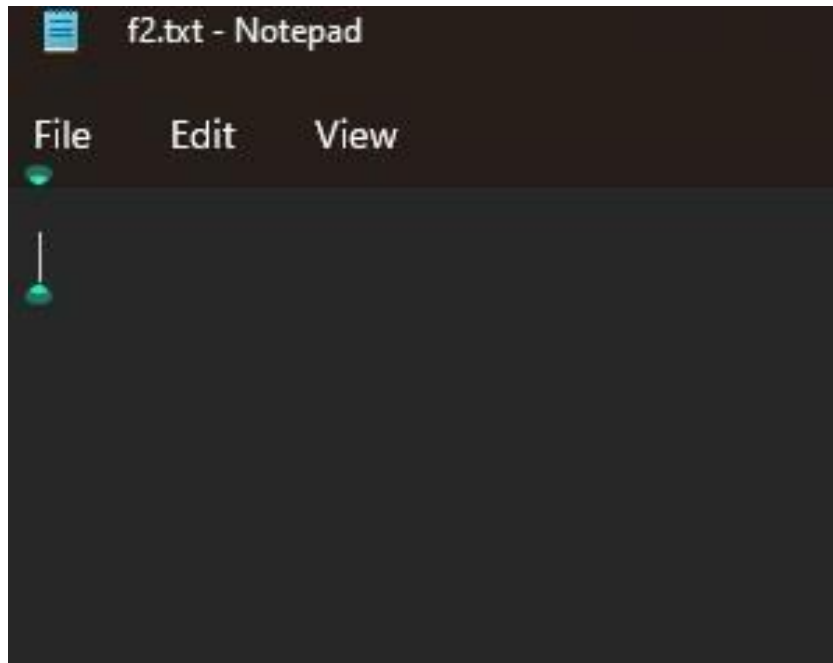
Algorithm:

- i. Start
- ii. Create 2 files, f1 and f2
- iii. Add text to f1
- iv. Use getc, putc, FILE.
- v. Open f2
- vi. File f1's content has been copied to f2
- vii. Stop

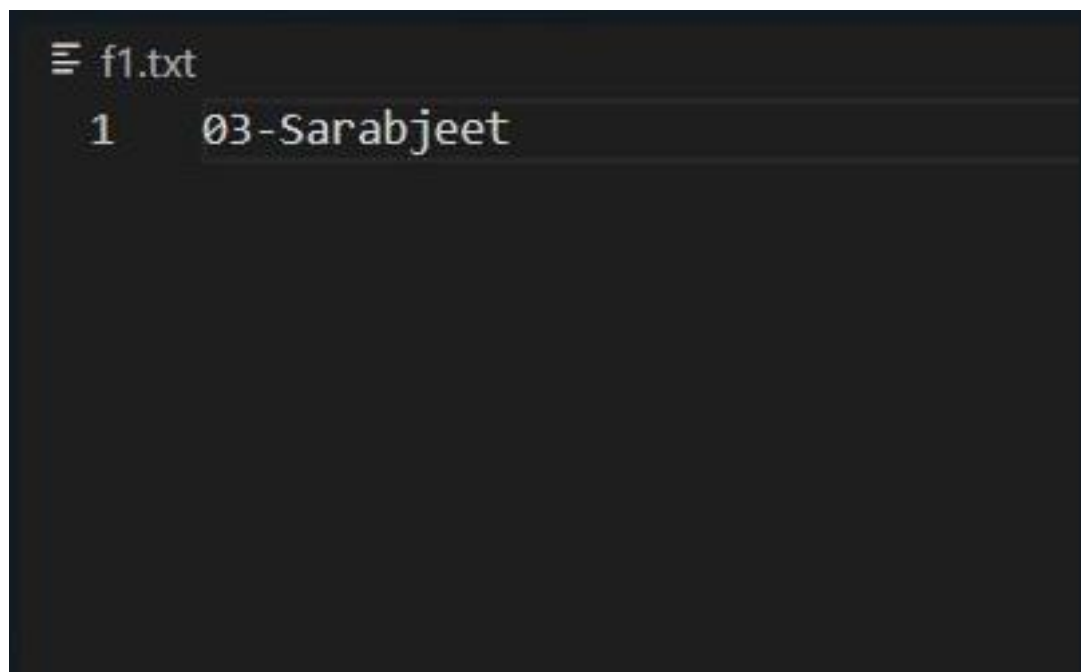
Code:

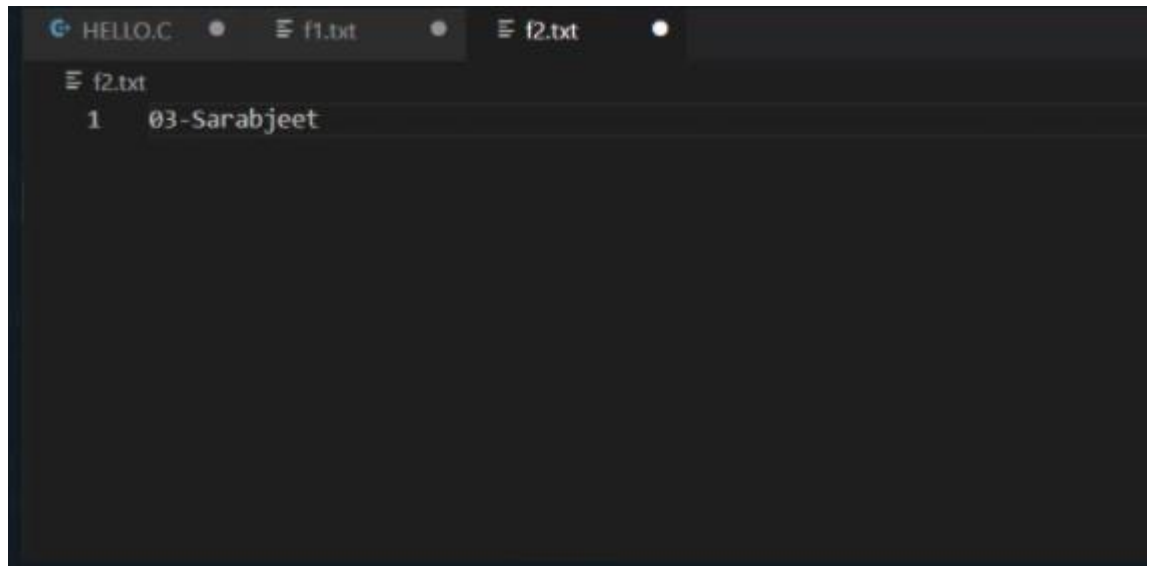
```
#include<stdio.h> main()
{
    FILE *fp1, *fp2;  char ch;
    fp1 = fopen("f1.txt", "r");  fp2 =
    fopen("f2.txt", "w");  while((ch =
    getc(fp1)) != EOF)  putc(ch, fp2);
    fclose(fp1);  fclose(fp2);  getch();
}
```





Output:



A screenshot of a code editor window. The title bar shows three tabs: 'HELLO.C', 'f1.txt', and 'f2.txt'. The 'f2.txt' tab is active. The editor content shows a single line of text: '03-Sarabjeet'. The line is numbered '1' on the left margin. The background is dark, and the text is light gray.

Conclusion : Successfully performed a program to copy the contents of the file from one file into other.

Experiment no – 09(b)

Aim: Write a program to print the structure using

- Title
- Author
- Subject
- Book ID Print the details of two students.

Code:

```
#include<stdio.h> struct book
{
char Title[40]; char
Author[40]; char
Subject[40]; int Book_ID; }; int
main() {
printf("03sarabjeet.\n.");
struct book b[3];
int i;
for(i=0; i<3; i++)
{
printf("Enter details of book #%d\n", i+1);
printf("Enter book Id: "); scanf("%d",
&b[i].Book_ID); printf("Enter book Title: ");
scanf("%s", &b[i].Title); printf("Enter book Subject:
"); scanf("%s",
&b[i].Subject); printf("Enter book Author:
"); scanf("%s", &b[i].Author); } for(i=0; i<3; i++)
{
printf("\nBook %d..... .\n\n", i+1); printf("Book Id:
%d\n", b[i].Book_ID); printf("Book Name: %s\n",
b[i].Title); printf("Book Subject: %s\n", b[i].Subject);
printf("Book Author: %s\n", b[i].Author);
} return
```

```
0;  
}
```

Output:

```
03-Sarabjeetsingh  
.Enter details of book #1  
Enter book Id: 101  
Enter book Title: CJ  
Enter book Subject: CoreJAVA  
Enter book Author: Sambare  
Enter details of book #2  
Enter book Id: 102  
Enter book Title: PP  
Enter book Subject: PythonProgramming  
Enter book Author: Sambare  
Enter details of book #3  
Enter book Id: 103  
Enter book Title: OS  
Enter book Subject: OperatingSyatem  
Enter book Author: Sambare  
  
Book 1..... .  
  
Book Id: 101  
Book Name: CJ  
Book Subject: CoreJAVA  
Book Author: Sambare  
  
Book 2..... .  
  
Book Id: 102  
Book Name: PP  
Book Subject: PythonProgramming  
Book Author: Sambare  
  
Book 3..... .  
  
Book Id: 103  
Book Name: OS  
Book Subject: OperatingSyatem  
Book Author: Sambare  
  
...Program finished with exit code 0  
Press ENTER to exit console.
```

Conclusion : Successfully performed a program to print the details of two students.

Experiment no – 10

Aim: Create a mini project on “Bank management system” . The program should be menu driven

Algorithm:

- i. Start ii. Enter number of customers record to enter iii. Read the number iv. Enter account number
- v. Enter name vi. Display Press 1 to deposit amount, Press 2 to withdraw amount, Press 0 to Exit. vii.

Stop Code:

```
#include <stdio.h> struct customer
{
int account_no; char name[80];
int balance;
};
void accept(struct customer[], int); int search(struct customer[],
int, int); void deposit(struct customer[], int, int, int); void
withdraw(struct customer[], int, int, int); int main()
{
struct customer data[20]; int n, choice, account_no, amount, index;
printf("Banking System\n\n"); printf("Number of customer records you want
to enter? :"); scanf("%d", &n); accept(data, n); do
{
printf("\nBanking System Menu:\n"); printf("Press 1 to deposit
amount.\n"); printf("Press 2 to withdraw amount.\n");
printf("Press 0 to exit\n"); printf("\nEnter choice(0-4): ");
scanf("%d",
&choice); switch (choice)
{

case 1:
printf("Enter account number: ");
scanf("%d",          &account_no);
```

```
printf("Enter amount to deposit: "); scanf("%d",
&amount); deposit(data, n, account_no, amount);
break;
```

case 2:

```
printf("Enter account number: ");
scanf("%d",&account_no), printf("Enter
amount to withdraw :");
scanf("%d",&amount); withdraw(data,
n, account_no, amount);
}
}
while (choice != 0); return
0;
}

void accept(struct customer list[80], int s) { int i; for (i = 0; i < s; i++)
{
printf("\nEnter data for Record #%d", i + 1); printf("\nEnter account_no: ");
scanf("%d",
&list[i].account_no);
printf("01AlstonAlvares ");
gets(list[i].name); list[i].balance =
0; }
}

int search(struct customer list[80], int s, int number)
{ int i; for (i = 0; i < s; i++)
{
if (list[i].account_no == number)
{
return i;
```

```
    }  
}  
return -1;  
}  
void deposit(struct customer list[], int s, int number, int amt)  
{  
    int i= search(list, s, number);  
    if (i == -1)  
    {  
        printf("Record not found");  
    }  
    else  
    {  
        list[i].balance+=amt;  
    }  
}  
void withdraw(struct customer list[], int s, int number, int amt)  
{  
    int i=search(list, s, number); if(i==  
-1)  
    {  
        printf("Record not found\n");  
    }  
    else if (list[i].balance < amt)  
    {  
        printf("Insufficient balance\n");  
    }  
    else  
    {  
        list[i].balance-=amt;  
    }  
}
```

}

Output:

```
Banking System

Number of customer records you want to enter? :1

Enter data for Record #1
Enter account_no: 403
03-Sarabjeetsingh.
Banking System Menu:
Press 1 to deposit amount.
Press 2 to withdraw amount.
Press 0 to exit

Enter choice(0-4): 1
Enter account number: 403
Enter amount to deposit: 5000

Banking System Menu:
Press 1 to deposit amount.
Press 2 to withdraw amount.
Press 0 to exit

Enter choice(0-4): 2
Enter account number: 403
Enter amount to withdraw :1000

Banking System Menu:
Press 1 to deposit amount.
Press 2 to withdraw amount.
Press 0 to exit

Enter choice(0-4): 0

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion : Successfully performed a mini project on “Bank management system” . The program should be menu driven