

i) Aim:- Write a program to Perform Addition, Subtraction, Multiplication, Division, and Modulo.

i.) Write a program for addition using ('+') operator.

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=25, c;
    c = a+b;
    cout << "the result of addition is=";
    cout << c;
    getch();
}
```

Output:-

the result of addition is = 45

ii) Write a program for Subtraction using (-) operator

Code :-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=200, b=25, c;
    c = a - b;
    cout << "the result of subtraction is : ";
    cout << c;
    getch();
}
```

Output :-

the result of subtraction is : 175

iii) Write a program for Multiplication using ('*') operator.

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=25, c;
    c = a*b;
    cout << "the result of Multiplication is:" ;
    cout << c;
    getch();
}
```

Output:-

the result of Multiplication is : 500

iv) Write a program for Division using ('/') operator

Code :

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=2,c;
    c=a/b;
    cout << "the result of division is : ";
    cout << c;
    getch();
}
```

Output :

the result of division is : 10

V) Write a program for Modulo using '%' operator.

Code::

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=10, b=3, c;
    c = a % b;
    cout << "the result of Modulo is : ";
    cout << c;
    getch();
}
```

O Output ::

the result of Modulo is : 1

Q.B.) Aim:- Write a program for Logical AND, Logical OR, Logical NOT operators.

A.) Write a program for logical AND operators using ('&&').

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=10, c=15, answer;
    answer = (a>b) && (a>c);
    cout << "the result of logical and operators is:" ;
    cout << answer;
    getch();
}
```

Output:-

the result of logical and operators is: 1

B) Write a program for logical OR operators using ('||').

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=30, c=25, answer;
    answer = (a>b) || (a>c);
    cout << "the result of logical OR operator is:";
    cout << answer;
    getch();
}
```

Output:-

the result of Logical OR operator is: 1

c) Write a program for Logical NOT operator using ('!').

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a = 20, b = 30, c;
    c = !(a > b);
    cout << "the result of logical NOT operator is:";
    cout << c;
    getch();
}
```



Output:-

the result of logical NOT operator is:

Q.C.) Aim:- Write a program For Conditional operators.

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a = 10, b = 20, c;
    c = (a > b) ? a : b;
    cout << "the result of conditional operation is=";
    cout << c;
    getch();
}
```

Output:-

the result of conditional operation is=20

Q.D.) Aim:- Write a program For while loop.

code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    ClsScx();
    int a=1;
    while(a<=5)
    {
        cout<<a<<endl;
        a++;
    }
    getch();
}
```

Output:-

1
2
3
4
5

Q.E.) Aim:- Write a program for do-while loop.

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int i=1;
    do
    {
        cout << "Hii World" << endl;
        cout << i << endl;
        i++;
    } while (i<10);
    getch();
}
```

Output:-

Hii World

1

Hii World

2

Hii World

3

Hii World

4

Hii World

5

HiiWorld

6

HiiWorld

7

HiiWorld

8

Hii World

9

Q.F.) Write a program for ~~do~~^{for} ~~while~~ loop.

Code :-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int i;
    for (i=0; i<=8; i++)
    {
        cout << i << endl;
    }
    getch();
}
```

Output :-

0
1
2
3
4
5
6
7
8

Q.G.) Write a program for Manipulations using endl, setw, setprecision and setfill().

Code:-

```
#include <iostream.h>
#include <conio.h>
#include <iomanip.h>
void main()
{
    clrscr();
    int a = 25;
    float b = 11.4567;
    cout << "this is program for manipulations:" ;
    cout << setw(5) << a << endl;
    cout << setprecision(2) << b << endl;
    cout << setfill('$') << setw(10) << a ;
    getch();
}
```

Output:-

this is program for manipulations: 25
11.46
\$\$\$\$\$\$\$\$25

Q2.) Aim :- Write a program Fox to check even or odd by using (if, else statements).

A.)

Code:-

```
#include <iostream.h>
#include <conio.h>
Void main()
{
    ClsSc();
    int a=5;
    if(a%2 == 0)
    {
        cout << "even" << a;
    }
    else
    {
        cout << "odd" << a;
    }
    getch();
}
```

Output:-

Odd 5

Q.B.) Aim:- Write a program to check among three numbers which is greater (Nested if statement).

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int a=20, b=10, c=5;
    if (a>b)
    {
        if (a>c)
        {
            cout << "a is greater:" << a;
        }
        else
        {
            cout << "c is greater:" << c;
        }
    }
    else
    {
        cout << "b is greater:" << b;
    }
    getch();
}
```

Output:-

a is greater: 20

(Q.C.) Aim:- Write a program to check whether entered character is vowel or not using (switch statement).

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    char n;
    cout << "enter the vowel";
    cin >> n;
    switch(n)
    {
        case 'a':
            cout << "this is vowel";
            break;
        case 'e':
            cout << "this is vowel";
            break;
        case 'i':
            cout << "this is vowel";
            break;
        case 'o':
            cout << "this is vowel";
            break;
```

ay.

case 'U' :

```
cout << "this is vowel";
```

```
break;
```

default :

```
cout << "invalid value";
```

```
break;
```

```
}
```

```
getch();
```

```
}
```

Output:-

enter the vowel a

this is vowel

Q.0) Write a program to Single dimension array.

Code:-

```
#include<iostream.h>
#include<conio.h>
void main()
{
    clrscr();
    int i;
    int a[5];
    cout << "elements of array are as follows:";
    for(i=0; i<5; i++)
    {
        cin >> a[i];
    }
    cout << endl;
    getch();
}
```

Output:-

elements of array are as follows: 9

2

3

4

5

Q.E) Write a program to Multi-dimensional Arrays.

Code:-

```
#include <iostream.h>
#include <conio.h>
void main()
{
    clrscr();
    int i, j, a[3][3];
    cout << "elements of array are as follows";
    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 3; j++)
        {
            cin >> a[i][j];
        }
    }
    cout << "elements are as follows";
    for (i = 0; i < 3; i++)
    {
        for (j = 0; j < 3; j++)
        {
            cout << a[i][j];
        }
        cout << endl;
    }
    getch();
}
```

Output:-

elements of array are as follows 12

23

34

45

56

67

78

89

90

elements are as follows 12334

455667

788990

D.G.

Q.F.) Write a program by using Break, continues,
goto statement.

i) Break statement.

Code:-

```
#include <iostream.h>
#include <conio.h>
Void main()
{
    clrscr();
    int i;
    for (i=1; i<=10; i++)
    {
        if (i==5)
            break;
        cout << i << endl;
    }
    getch();
}
```

Output :-

1

2

3

4

ii) Continue Statement

Code:-

```
#include <iostream.h>
#include <conio.h>
Void main()
{
    clrscr();
    int i;
    For (i=1; i<=10; i++)
    {
        if (i==5)
            continue;
        cout << i << endl;
    }
    getch();
}
```

Output:-

1
2
3
4
6
7
8
9
10

iii) goto Statement :.

Code :.

```
#include<iostream.h>
#include<conio.h>
Void main()
{
    clrscr();
    cout << "Hii welcome";
    goto bb;
    cout << "programming";
bb: cout << "language";
    getch();
}
```

Output :.

Hii Welcome language.

Q.G.) Aim :- Write a program by using string.

Code:-

```
#include <iostream.h>
#include <conio.h>
#include <stdio.h>
Void main()
{
    Clsscr();
    char a[50];
    cout << "enter a string";
    gets(a);
    cout << "the entered string is" << a;
    getch();
}
```

Output:-

```
enter a string Hii world of programme
the entered string is Hii world of programme
```

Practical No : 3

i) Aim: Write a program for destructor.

code:

```
# include <iostream.h>
# include <conio.h>
class test
{
    int *P;
public:
    test()
    {
        P = new int;
    }
    void read()
    {
        cout << "Enter a number";
        cin >> *P;
    }
    void display()
    {
        cout << "Value = " << *P << endl;
    }
    ~test()
    {
        delete P;
        cout << "Destroyed";
    }
};
```

```
void main()
{
    class();
    test t;
    t.read();
    t.display();
    getch();
}
```

Output:

Enter a number 5

Value=5

Destroyed

BB

(3) Aim: Write a program to demonstrate the Internally define Function in a program.

code:

```
#include <iostream.h>
#include<conio.h>
class circle
{
    int r;
    int a;
public:
    void read()
    {
        cout<<"enter radius:";
        cin >> r;
    }
    void compute()
    {
        a = 3.14 * r * r;
    }
    void display()
    {
        cout<<"area of circle = "<<a;
    }
};

void main()
{
}
```

```
class C  
{  
    Circle c;  
    void read();  
    void compute();  
    void display();  
    getch();  
}
```

O/P: enter radius: 7
area of circle = 153.86

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Q) Aim: Write a program to demonstrate the Externally define Function in a program.

Code:

```
# include <iostream.h>
# include <conio.h>
class circle
{
    int r;
    float a;
public:
    void read();
    void compute();
    void display();
};

void circle::read()
{
    cout << "enter radius:" ;
    cin >> r;
}

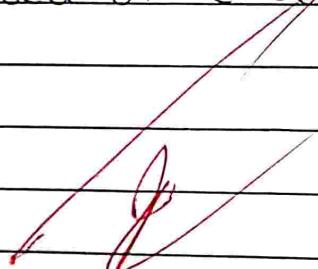
void circle::compute()
{
    a = 3.14 * r * r;
}

void circle::display()
{
    cout << "area of circle = " << a;
}
```

```
}

void main()
{
    clrscr();
    circle c;
    c.read();
    c.compute();
    c.display();
    getch();
}
```

O/P: enter radius: 7
area of circle = 153.86



Q) Aim: Write a program to demonstrate the inline function in a program.

code:

```
# include <iostream.h>
# include <conio.h>
class circle
{
    int r;
    float a;
public:
    void read();
    void compute(); →
    void display();
};

inline void circle::read()
{
    cout << "Enter radius:" ;
    cin >> r;
}

inline void circle::compute()
{
    a = 3.14 * r * r;
}

inline void circle::display()
{
    cout << "Area = " << a;
}
```

```
void main()
{
    clrscr();
    c.read();
    c.compute();
    c.display();
    getch();
}
```

OIP: Enter radius: 5
Area = 78.5



E) Aim: Write a program to demonstrate the parameterized constructor.

code:

```
#include <iostream.h>
#include <conio.h>
class circle
{
    float r, a;
public:
    circle (float x)
    {
        r = x;
    }
    void compute();
    void display();
}
inline void circle::compute()
{
    a = 3.14 * r * r;
}
inline void circle::display()
{
    cout << "Area = " << a;
}
void main()
{
```

```
clrscr();
float r;
cout << "Enter the radius of the circle";
cin >> r;
circle c(r);
c.compute();
c.display();
getch();
}
```

O/P: Enter radius: 5
Area = 78.5

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Aim: Write a program to demonstrate the default constructor.

code:

```
# include <iostream.h>
# include <conio.h>
class Circle
{
    cout << "Enter the value of radius:";
    cin >> r;
}
Void compute();
Void display();
}
inline void circle :: compute()
{
    a = 3.14 * r * r;
}
inline void circle :: display()
{
    cout << "Area = " << a;
}
Void main()
{
    Circle();
    C. compute();
    C. display();
}
```

```
getch();  
}
```

O/P: Enter the value of radius: 5
Area = 78.5

62

A) Aim: Write a program For Single inheritance

code:

```
#include <iostream.h>
#include <conio.h>
class Data
{
public:
    int a, b;
public:
    void read()
    {
        cout << "Enter two numbers";
        cin >> a >> b;
    }
};

class Sum : public Data
{
public:
    int sum;
public:
    void add()
    {
        sum = a + b;
    }
    void display()
    {
    }
};
```

```
{  
    cout << "The sum is " << sum;  
}  
};  
void main()  
{  
    clrscr();  
    Sum s;  
    s.read();  
    s.add();  
    s.display();  
    getch();  
}
```

Output:

Enter two numbers 4

5

The sum is 9

Q) Write a program for Multi Level Inheritance.

Code:

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

```
class Data
```

```
{
```

```
public:
```

```
int p, c, m;
```

```
public:
```

```
void read()
```

```
{
```

```
cout << "Enter the marks obtained in Physics, Chemistry  
and Maths";
```

```
cin >> p >> c >> m;
```

```
}
```

```
};
```

~~Class Sum : public Data~~

```
{
```

```
public:
```

```
int total;
```

```
public:
```

```
void sum()
```

```
{
```

```
total = P + C + M;
```

```
}
```

```
};
```

class Percent; Public Sum

{

 Public:

 float percent;

 Public:

 void calculate()

{

 percent = total / 300.0 * 100;

}

 void display()

{

 cout << "The percentage is " << percent;

}

 void main()

{

 Class();

 Percent a;

 a.read();

 a.sum();

 a.calculate();

 a.display();

 getch(); }

Output output:

Q

Enter the marks obtained in Physics, Chemistry
and Maths "go

98

The percentage ⁹⁹ is 98.66.

FOR EDUCATIONAL USE

Practical No : 5

1.) Write a program for multiple inheritance

code:

```
#include <iostream.h>
#include <conio.h>
class Polygon
{
```

public:

```
int height, width;
```

public:

```
void read(int a, int b)
```

```
{
```

```
height = a;
```

```
width = b;
```

```
}
```

```
};
```

class Output

```
{
```

public:

```
void output(int x)
```

```
{
```

```
cout << "Area is " << x;
```

```
}
```

```
};
```

class Rectangle : public Polygon, public Output

```
{
```

public:

```
int area()
{
    return (height * width);
}

};

class Triangle : public Polygon, public Output
{
public:
    int area()
    {
        return (height * width / 2);
    }
};

void main()
{
    cls();
    int h, w, choice, a;
    cout << "1. Area of Rectangle\n 2. Area of Triangle\n";
    cout << "Enter your choice:";

    cin >> choice;
    cout << "Enter height and width:";

    cin >> h >> w;
    switch (choice)
    {
        case 1:
            Rectangle r;
            r.read(h, w);
            a = r.area();
    }
}
```

```
x.output(a);
break;
case 2;
Triangle t;
t.read(h,w);
a = t.area();
t.output(a);
break;
default: cout << "Invalid choice";
}
getch();
```

Output:

1. Area of Rectangle
2. Area of Triangle
Enter your choice: 2
Enter height and width: 5
4
Area is 10

B) Write a program for Hierarchical inheritance

Code:

```
#include <iostream.h>
```

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

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

```
class staff
```

```
{
```

```
public:
```

```
char name[20];
```

```
int code;
```

```
};
```

```
class Teacher : public staff
```

```
{
```

```
public:
```

```
char subject[20];
```

```
int experience;
```

```
public:
```

```
void read()
```

```
{
```

```
cout << "Enter name, code, subject and experience of  
teacher";
```

```
gets(name);
```

~~```
cin >> code;
```~~~~```
getS(subject);
```~~~~```
cin >> experience;
```~~~~```
{
```~~

?;

Class OFFicer : Public STAFF

{

Public:

char dept [20];

int grade;

Public:

void read()

{

cout << "Enter name, code, department and grade of
OFFicer";

gets(name);

cin >> code;

gets(dept);

cin >> grade;

}

void display()

{

Cout << "OFFicer Details : In Name:" << name << "\n"
code: "<< code" \n Department: "<< dept
<< "\n Grade:" << grade;

}

?;

Class Typist : Public STAFF

{

Public:

int speed, experience;

?;

Class Regular : Public Typist

{

Public:

int salary;

Public:

void read()

{

cout << "Enter name, code, speed, experience and
salary of regular typist";

gets(name);

cin >> code >> speed >> department >> salary;

}

void display()

{

cout << "Regular Typist Details: \n Name" << name <<
"\n code" << code << "\n Speed" << speed << "\n
experience" << experience << "\n Salary" <<
Salary;

{

};

Class Casual : Public Typist

{

Public:

int dailywages;

Public:

void read()

{

cout << "Enter name, code, speed, experience, and
dailywages of the casual typist:";

```

    gets(name);
    cin >> code >> speed >> experience >> dailywages;
}

void display()
{
    cout << "Causal Typist Details: \n Name : " <<
        name << "\n code : " << code << "\n Speed : "
        << speed << "\n Experience : " << experience
        << "\n Dailywages : " << dailywages;
}

void main()
{
    clrscr();
    int choice;
    cout << "1. Teacher \n 2. OFFICE \n 3. Regular Typist
    \n 4. Casual Typist \n Enter your choice,
    whose details you want to enter : ";
    cin >> choice;
    switch (choice)
    {
        case 1: Teacher t;
        t.read();
        t.display();
        break;
        case 2: OFFICE O;
        O.read();
        O.display();
    }
}

```

```
break;  
case 3: Regular x;  
    x.read();  
    x.display();  
    break;  
case 4: casual c;  
    c.read();  
    c.display();  
    break;  
default: cout << "Invalid choice:";  
    {  
        getch();  
    }
```

Output:

- 1. Teacher
- 2. Officer
- 3. Regular Typist
- 4. Casual Typist

Enter the choice, whose detail you want to enter: 1

Enter name, code, subject and experience of teacher : Satis

234

Maths

13

Teacher Details

Name : Satis
Code: 234

Subject : Maths
Experience: 13

Practical No : 6

Q.6.) Aim: Write a program for Hybrid inheritance.

Code:

```
#include <iostream.h>
#include <conio.h>
#include <stdio.h>
Class Student
{
```

Public:

```
Char name [20];
int roll_no;
};
```

Class Test: Public Student

```
{
```

Public:

```
int marks;
```

Public:

```
void read()
```

```
{
```

cout << "Enter name, roll number and marks obtained:";

```
gets(name);
```

```
cin >> roll_no >> marks;
```

```
}
```

```
};
```

Class Sports

```
{
```

Public :

```
int score;
Public:
void accept()
{
    cout << "1. Student has won in national sports event\n";
    cout << "2. Student has not won in any national sports
event\n Enter your choice:";

    cin >> score;
}
```

Class Result : Public Test, public Sports

```
{

int total;
Public:
void calculate()
{
    if(score == 1)
        total = marks + 15;
    else
        total = marks;
}

void display()
{
    cout << "The total is " << total;
}
```

```
void main()
{
```

```
close();  
Result r;  
r.read();  
r.accept();  
r.calculate();  
r.display();  
getch();  
}
```

Output:

Enter name, roll number and marks obtained: Sandeep

24

81

1. Student has won in national sports event
2. Student has not won in any national sports event

Enter your choice: 1

The total is 96

✓

Practical No: 7

Q.7.

(A) Aim: Write a program to demonstrate function overriding

code:

```
#include <iostream.h>
#include <conio.h>
class Base
{
public:
    int a,b;
public:
    void send()
    {
        cout << "Enter two values:" ;
        cin >> a >> b;
    }
    void display()
    {
        cout << "The values are :" << a << "\n" << b;
    }
};

class Sub : public Base
{
public:
    int c,d;
public:
}
```

```
void read()
{
    cout << "Enter 4 values: ";
    cin >> a >> b >> c >> d;
}

void display()
{
    cout << "The values are: " << a << "\n" << b << "\n" << c
        << "\n" << d;
}

void main()
{
    Class();
    Sub s;
    s.read();
    s.display();
    getch();
}
```

Output :

Enter 4 values: 4

3

2

1

The values are : 4

3

2

1

B) Aim: Write a program to demonstrate dynamic binding using virtual function

Code:

```
# include <iostream.h>
# include <conio.h>
class A
{
public:
    virtual void show()
    {
        cout << "In Base class";
    }
};
```

Class B: Public A

{

Public:

void show()

{

cout << "In Derived class";

}

};

void main()

{

clsx();

A * bpx;

B aa;

```
bptr = &aa;  
bptr->show();  
getch();  
}
```

Output:

F₁ OF Derived
F₂ OF Base

Practical No: 8

Q.8.

A) Aim: Write a program to demonstrate pure virtual Function.

code:

```
#include <iostream.h>
#include <conio.h>
class Base
{
public:
    int a, b;
public:
    virtual void xend()
    {
    }
    virtual void display() = 0;
};

class Sub : public Base
{
public:
    int c, d;
public:
    void read()
    {
        cout << "enter values: ";
        cin >> a >> b >> c >> d;
    }
}
```

FOR EDUCATIONAL USE

```
void display()
{
    cout << "The values are: " << a << "\n" << b << "\n" << c
        << "\n" << d;
}

void main()
{
    clrscr();
    Subs;
    Base & ptx;
    ptx = & s;
    ptx-> read();
    ptx-> display();
    getch();
}
```

~~output:~~
~~The values are:~~
~~4 5 6 7~~

B) Aim: Write a program to demonstrate virtual class or abstract class

code:

```
#include <iostream.h>
#include <conio.h>
class Base
{
public:
    int a,b;
public:
    void read()
    {
        cout << "Enter two values: ";
        cin >> a >> b;
    }
    void display()
    {
        cout << "The values are: " << a << "\n" << b;
    }
};

class Sub : public virtual Base
{
public:
    int c,d;
public:
    void read()
```

D.9
(A)

```
{  
    cout << "Enter 4 values:";  
    cin >> a >> b >> c >> d;  
}  
void display()  
{  
    cout << "The values are:" << a << "\n" << b << "\n" << c <<  
    "\n" << d;  
}  
void main()  
{  
    Class C;  
    Sub S;  
    S.read();  
    S.display();  
    getch();  
}
```

Output:

Enter 4 values: 4

3

2

1

The Values are: 4

3

2

1

Practical No : 9

Q.9.

(A) Aim: Write a program using referencing and Dereferencing operators of the pointers.

code:

```
# include <iostream.h>
# include <conio.h>
void main()
{
    clrscr();
    int a, *p;
    a = 125;
    p = &a;
    cout << a << endl;
    cout << p << endl;
    cout << *p << endl;
    getch();
}
```

Output:

125

Address of Variable a

125

B) Write a program for pointers to pointers
code:

```
#include<iostream.h>
#include<conio.h>
void main()
{
    clrscr();
    int a,*p,**p1;
    a = 125;
    p = &a;
    p1 = &p;
    cout << a << endl;
    cout << p << endl;
    cout << p1 << endl;
    cout << *p << endl;
    cout << *p1 << endl;
    cout << **p1 << endl;
    getch();
}
```

Output:

125

Address of variable a

Address of pointer variable p

125

Address of variable a

125

Practical No: 10

Q. 10.

(A.) Aim: Write a program using Friend Function

Code:

```
#include <iostream.h>
#include <conio.h>
class Example
{
    friend void display(Example);
public:
    int n, m;
public:
    void getdata()
    {
        cout << "\nEnter two numbers: ";
        cin >> n >> m;
    }
    void show()
    {
        cout << "\n N = " << n;
        cout << "\n M = " << m;
    }
};

void main()
{
    class Example;
}
```

```
ef.getdata();
cout << " Data displayed through member function : ";
ef.show();
cout << " Data displayed through Friend Function : ";
display(ef);
getch();
```

void display (Example e)

```
cout << "\n N= " << e.n ;
cout << "\n M= " << e.m ;
```

Output:

Enter two numbers: 4

5

Data displayed through Friend Function

N = 4

M = 5

XX

B.) Aim: Write a program to write and read a string
Exam 2 or 5.

code:

```
# include<iostream.h>
# include<fstream.h>
# include<conio.h>
void main()
{
    char msg[20];
    ofstream o;
    o.open ("test0", ios::in);
    o<<"Hello Friends!!" << endl;
    o<<"Bye!!" << endl;
    o.close();
    ifstream i;
    i.open ("test0", ios::out);
    i>>msg;
    cout<< msg << endl;
    i>>msg;
    cout<< msg << endl;
    getch();
}
```

Output :

HELLO Friends!!

Bye!!