Q.1)>

```
# include <iostream>
using namespace std;
int main()
{
  int a,b,sum;
  cout << "Enter the value of a & b:";
  cin >> a >>b;
  sum = a+b;
  cout << "sum = "<<sum;
  return 0;
```

• adput:-

```
Enter the value of a & b: 3
                          6

sum = 9.
```

Q.2)>

```
# include <iostream>
using namespace std;
int main()

{
   int a,b;
   char AO;
   Cout << "Enter any operator (+,-,/,*):";
   Cin >> AO;
   cout<<" Enter values of a & b:" ;
   cin >> a >> b;
   switch (AO)
   {
      case '+';
      cout << "Result = " <<a+b;
      break;
      case '-';
      cout << "Result = " <<a-b;
      break;
      case '/';
         if (b!=0)
         {
           cout<<" Result" <<a/b;
         }
         else
         {
           cout <<" Error division by 0";
         }
         ~~brea~~break;
default:
cout <<" Operator unknown";
}
return 0;
}
```

* output:-

```
Enter any operator to be used (+,-,/,*):
 *
Enter value of a & b: 9
                      5

Result - 45.
```

Q.3) →

```
# include <iostream>
using namespace std;
int main()

{
  int n;
  cout <<" Enter the value to be checked : ";
  cin >>n;
  if (n%2==0)
  {
   cout <<" number is even";
  }
   else
   {
    cout <<" Number is odd";
   }
    return 0;
```

* Output:-

```
Enter the value to be checked : 9
Numbe is odd
```

Q.4>>

```
# include <iostream>
using namespace std;
int main()

{
  int i;
  for (i=1; i<11; i++)
  {
   cout << "\n" <<i;
  }
  return 0;
}
```

- Output: 1

```
2
3
4
5
6
7
8
9
10
```

Q.5>>

```
# include <iostream>
using namespace std;
int main()

{
   int i = 1;
   while (i<= 10)
   {
     cout <<" \n" <<i;
     i++;
   }
   return 0;
}
```

- output :- 1

```
2
3
4
5
6
7
8
9
10
```

a 6) ~~sb~~

```
# include <iostream>
using namespace std;
in main ()

{
  int i,j;
  for (i=1; i<6; i++)
  {
    for (j=1; j<=i ;j++)
    {
      cout <<j<< " ";
    }
    cout<<"\n";
  }
  return 0;
}
```

• Output :-

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5.
```

a7)

```
#~~iostream~~ include <iostream>
using namespace std;
int main()

{
  int i,j,k;
  for (i= 1; i<=3; i++)
  {
   for (j=1; j<=3-i; j++)
   {
    cout <<" ";
   }
   for (k=1; k<=i ; k++)
   {
    cout <<"*";
   }
    if (k<i).
    {
     cout <<" ";
    }
    cout << "\n";
  }
  return 0;
}
```

* Output :-

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

```
c) →  #include <iostream>
      using namespace std;
      int main()

      {
        int i,j;
        for (i=1;i<6; i++)
        {
          for (j=1; j<=i;j++)
          {
            cout <<i<< " ";
          }
        Cout << "\n";
        }
       return 0;
      }
```

• Output :-

```
  1
  2 2
  3 3 3
  4 4 4 4
  5 5 5 5 5.
```

Experiment - 1

```
i) #include <iostream.h>
   using namespace std;
   Class student
   {
     int roll;
     string name;
     Public:
     void details()
     {
       Cout <<"enter your name and roll no: ";
       cin >> name >> roll;
       cout << "name is"<< name <<endl << "roll is "<< roll;
     }
   };

   int main()
   {
     student s1;
     s1.details();
   }
```

* output:-

```
Enter your name & roll no: Mayuresh
                            04

Name is Mayuresh
Roll is 04.
```

```
2) #include <iostream.h>
using namespace std;
Class student
 {
   int page,page2 ,price ,price2,1;
   string name ,name 2;
   public:
   void details()
   {
     cout << " Enter the name of 2 books,no pages
     and price: " <<end1;
     cout <<"Book 1 ";
     cin ~~<< "Book 2";~~ >> name >> page>> price;
     cout << "Book 2";
     cin << name 2 >> page 2 >>price2';
   }
   if ( price>price 2 )
   {
     cout << " " << name;
   }
   else
   {
     cout << " " << name 2;
   }
 };

 int main()
 {
   student s1;
   s1.details();
   s1.comp ();
```

* Output:-

```
Enter the name of 2 books,no pages and price
Book 1 name
123
22

Book 2 namee
123
23

namee.
```

```
ii) #include <iostream>
using namespace std;
class times
 {
   int h,m,s,total;
   public:
   void details ()
   {
    cout <<"Enter your time in hour min & sec: ";
    cin >> hour >> min >sec;
   }
   void convert()
   {
    total=sec +(m*60) + ((hour*60)*60);
    cout <<" your time in sec" <<total;
   }
 };

int main()
 {
   times s1;
   s1.details();
   s1.convert();
 }
```

* output:-

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```
Enter your time in hour min & sec: 3
                                   46
                                   11

Youre time in sec; 13571.
```

Experiment:-2.

```
i) #include <iostream>
using namespace std;
class city
{
 public:
 string name;
 int population;
 void details()
  {
   cout <<"Enter city name:";
   cin >> name;
   cout <<"Enter population of the city: ";
   cin >> population;
  }
 };

 int main()
 {
   city [5];
   int i, max pop = c [0].populati= 0;
   for (i=0; i< 5 ; i++)
   {
     c[i].details();
   }
   cout <<"The accounts which received interest are:";
   for (i=0;i<2;i++)
    {
     if (a [i].balance>= 5000)
      {
       b=a[i].balance+ (0.1* a[i].balance);
       cout <<b <<;
      }
}
 return 0;
}
```

* output -

```
Enter account no & balance:10
300
Enter account no & balance:11
400
Enter account no& balane:12
600
Enter account no & balance:12
600
Enter account no & balane:14
700
Enter account no & balance:15
800
Enter account no & balance:16
400
Enter account no & balance:17
8000
Enter acount no & balane: 15
5000
Enter account no & balance:14.
2000
Enter account no & balance:20
1500
The accounts which received intrst are:-
5500
```

iii>

```
#include<string>
# include <iostream>
using namespace std;
class staff
{
 public:
 string name;
 string post;
 ~~wo~~void accept ()
 {
   cout<< Enter your name& post:";
   cin >> name >>post;
 }
};

 int main ()
 {
  staff s[5];
  int i ,M = 0;
  for (i=0;i<5; i++)
  {
   s[i].accept ();
  }
  for (i=0; i<5 ; i++)
  {
   if post == "HOD")
   {
     cout <<s[i]. name; cout <<" is HOD";
     M = i;
   }
}
 if (m==0)
 {
   cout <<"There is no HOD";
 }
 return 0;
}
```

* Output:-

```
Enter your name & post:- Mayuresh
Manager
Enter your name & post :-Athama
Manager
Enter your name & post :-Ayush
HOD

Ayush is HOD
```

```
2> #include <iostream>
using namespace std;
class city
{
  public:
  string name;
  int population;
  void details()
  {
   cout <<" Enter city name ";
   cin >> name;
    cout <<" Enter population of the city:";
    cin >> population;
   }
 };

int main()
{
  city c[5];
  int i; maxpop= c[0].population;
  for(i=0;i<5;i++)
  {
   c[i].details ();
  }
  for (i=0;i<5;i++)
  {
   if (c[i].population> maxpop)
  {
   maxpop = i;
   }
}
cout<<"The city with the highest population is: "<<
c[maxpop].name;

return 0;
}
```

* output:

```
Enter city name: Pune
Enter population of the city: 10000
Enter city name: Mumbai
Enter population of the city: 20,000

The city with the highest population is:- Mumbai
```

```
i:> #include <iostream>
using namespace std;
class account
 {
   public:
   int acc_no;
   int balance;

   void accept()
   {
    cout<<"Enter account no & balance: ";
    cin>> acc_no >> balance;
   }
 };
int main()
{
  account a[10];
  int i,b;
  for(i=0;i<10;i++)
  {
   a[i].accept();
  }
  cout<<"The accounts which received interest are: ";
  for (i=0;i<2;i++)
  {
   if (a[i].balance>=5000)
   {
    b=a[i].balance+ 0.0.f* a[i].balance;
    cout<<b<<;
   }
 }
 return 0;
```

* output:

```
Enter account no & balance:10
300
Enter account no & balance:11
400
Enter account no & balance:12
500
Enter account no & balance:13
100
Enter account no & balance:14
3000
Enter account no & balance:15.
700.
The accounts which received interest are:-
5000.
```

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Experiment-3

```
i) #include <iostream>
using namespace std;
class Book
{
    int price;
    ~~string namespace std;~~
    ~~class Book~~
    string author_name;
    public:

    void accept()
    {
      cout << "Enter book title, author name & price of your book: ";
      cin >> book_title >> author _name >> price;
    }
    void display()
    {
      cout<<"In Book title is: "<< book_title;
      cout << "In Name is: "<< author_name;
      cout<< "In Price is: " << price;
    }
};
int main()
{
    Book b1;
    Book *p = &b1;
    p-> accept ();
    p -> display ();
    return 0;
}.
```

* Output:-

```
Enter book title, author name and price of your book: Harrypotter
JK Rowling
4500

Book title is: HarryPotter
Name is JK rowling
Price is: 4500
```

ii)

```
#include<iostream>
using namespace std;
class student
{
 int roll_no;
 string name;
 public:
 void accept (int roll_no, string name )
 {
  this -> roll_no = roll no;
  this -> name =name;
 }
 void display()
 {
 cout << " Roll no is: "<<this -> roll_no;
 cout << " Name is: " << this -> name;
 }
};
```

```
int main()
{
 student s1;
 s1.accept (4, "Mayuresh");
 s1.display ();
 return 0;
}
```

* Output:-

```
Roll no is: 4
Name is: Mayuresh.
```

iii)

```
#include <iostream>
using namespace std;
class student
{ int roll_no;
  string name;
  public:
  void accept ()
 { cout <<"Enter roll-no and name of student: ";
   cin >> roll-no >> name; }
   class marks
 { int cpp-marks
   int c-marks;
   float Percentage;
   int add;
   float d;
   public:
   void accept()
 { cout <<"Enter C and C++ mark: ";
   cin >> c-Marks >> cpp-marks; }
void display()
{  cout <<" in C, marks are:  "<<c_marks;
   cout <<"In c++, marks are:  "<<cpp_marks;
   add = c_marks + cpp_marks;
   d = (float )add /200;
   percentage =d* 100;
   cout <<" In Percentage is:   "<<percentage<<" %";
 }
};
};
int main()
{ student s1:
  s1.accept();
  student :: marks m1;
  m1.display();
  return 0;
}.
```

* Output:-

```
Enter roll no. and name of student :4
Mayuresh
Enter C and c++ marks: 85
86
C mark are : 85
C++ marks are : 87
percentage is : 86 :-
```

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Experiment-4

```
1) #include <iostream>
using namespace std;
class student{
public:
int a,b,temp;
void accept()
{
   cout<<"Enter values: ";
   cin>>a>>b;}

   void display()
   {
     temp=a;
     a=b;
     b=temp;
     cout<<"The values after swapping: "<<a<<b;}};

 int main()
 {
   student obj;
   obj.accept();
   obj.display();
   return 0;}
```

* Output:- Enter values: 12

```
                 13

 The values after swapping : 13
                             12.
```

```
i) #include <iostream>
   using namespace std;
   class A
   {
    public
    void accept()
    {
     cout<<"Enter values of a& b: ";
     cin >>a>>b;

    friend void swap ( obj 1, obj 2);
    }
   };
   void swap(a obj1 b obj2)
   {
     int temp= obj1.a;
     obj1.a=obj2.b;
     obj2.b= temp;
     cout<<"values after swap: ";
   }

   int main()
   {
    A obj1, obj2;
     obj1.accept;
     obj2.accept;
    swap(obj1, obj2);
    return 0;
   }
```

```
* output #

Enter values:- 12
               13
After swap:- 13
             12.
```

```
ii) #include <iostream>
    using namespace std;
    class B;
    Class A
    {
     public:
     int a;
     void accept ()
     {
      cout<<"Enter values of a: ";
      cin>>a;
     }
     friend void swap(A obj1, B obj2);
    };

    class B
    {
     public
     int b;
     void accept()
     {
      cout <<"values of b= ";
      cin >>b;
     }
     friend void swap (A obj1, B obj2);
    };
    void swap (A obj1, B obj2)
    {
       int temp;
```

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```
temp=obj1.a;
obj1.a= obj2.b;
obj2.b= temp;
cout <<"Value after swap" << obj1 << obj 2;
}

int main()
{
 A.obj1;
 A. obj2;
 obj1.accept();
 obj2.accept();
 swap (obj1, obj2)
 return 0;
}.
```

* output

```
Enter value of a: 13

Enter value of b: 12

After swap :- 12
              13
```

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```
N> #include <iostream>
using namespace std;
class ~~#~~result 2;
class result 1{
 public:
 int o;
 void accept()
 {
   cout<< Enter values of o: ";
   cin >>o;
 }
 friend void avg (result 1 r1, result2 r2);
};
class result 2{
  public:
  int i;
  void accept()
  {
    cout << Enter values of i: ";
    cin >>i;
  }
  friend void avg (result1 r1, result2 r2);
};
~~float~~ void avg ( result 1 r1, result 2 r2)
 {
   float avg;
   avg =(float)(r1.o +r2.i)/2;
   cout << "average of two results: "<<avg;
 }
```

```
int main()
{
  result 1 r1;
  result 2 r2;
  r1 accept();
  r2 accept();
  avg(r1,r2);
  return 0;
}
```

* Output:-

```
Values of 0: 85
values of i; 86
Avg :- 85.5
```

2.
```
#include <iostream>
using namespace std;
class B;
class A {
 public:
 int a;
 void accept (int x)
  {
    a= x;
  }
  friend void greatest (A obj1, B obj2);
 };
 Class B
 {
   public:
   int b;
   void accept (int y
  3{
   b= y.
  }
  friend void greater (A obj 1, B obj 2);
 };
 void greatest (A obj1, B obj2).
  {
   int a,b;
   if (obj 1.a> obj.b)
   {
    cout << "Greatest is a:  "<<obj 1.a;}
   else
   { cout << "Greatest is b:  "<<obj 2.b;}
  }.
```

```
int main()
{
 A obj 1;
 B obj 2;
obj1.accept (4);
obj2.accept (9);
greatest (obj1,obj2);
 return 0;
```

* output :-

Greatest is b : 9

Practice questions

```
1) #include <iostream>
using namespace std;
class B;
class A{
int a;
public:
 void info() {
  cout <<"Enter a value ";
  cin >>a;
 }
 friend void sum (A a1, B b1);
 };
 Class B{
 int b;
 public
 void [illegible]
  cout<<"Enter a value: ";
  cin>>b;
 }
 friend void sum (A a1, B b1);
 };
 void sum (A a1, B b1) {
  cout << "sum:   "<< a1.a + b1.b;
  }
 int main()
 { A x;
     B y;
     x.info();
      y.info();
      sum (x,y);
     }.
```

* output:-

```
Enter a value: 5
Enter a value: 5
 sum:10.
```

```
ii) #include <iostream>
using namespace std;
class Number{
int a;
public:
void info(){
cout <<"Enter a value ";
cin >>a
}
friend void swapNumber (Numbe &n1, Number &n2);
}
};
void swap Numbers (Number &n1, Number &n2)
{ int temp = n1.a;
        n1.a = n2.a;
        n2.a= n1.a;
}       cout <<"swapped values: "<<n1.a << n1.b; }

int main()
{ Number x;
  Number y;
  swapNumbers(x,y);
}
```

Output:-

```
Enter a value :5
Enter a value:6
Swapped value:6 5.
```

```
iii) #include <iostream>
using namespace std;
class cube;
class box{
int side, volume;
public:
void info() {
cout<<"Enter the side : ";
cin >> side;
volume = side*side*side;
cout <<"volume: "<<volume;
}.
friend void greater (cube c, Box b);
};
class cube {
 int side, volume;
  void #info() {
  cout <<"Enter the side: ";
   cin >> side;
   volume = side* side* side;
   cout <<"Volume: " <<volume;
   }.
 friend void greater (cube c, Box b);
 }.
```

```
void greater (cube c, Box b) {
 if (c.volume > b.volume) {
 cout << "Cube has greater volume" ;
 }
 else if (c.volume < b.volume)
 {  cout << "Box has greater volume";
 }
 else {
  cout << "both have equal volume ";
 }
}
int main()
{  cube c1;
   Box b1;
   c1.info();
   b1.info();
   greater (c1,b1);
}.
```

Output:-
Enter the side : 4
volume :- 64
Enter the side : 5
volume:- 125
Box has greater volume.

```
iv) #include <iostream>
 using namespace std;
 class complex
  int r,i;
  public:
  void  info ()
 { cout<<" Enter the real and imaginary part of the number ";
   cin >> r >> i;  }
   void disp()
  {
   cout<<"Number: "<<r<< " + "<< i<<"i";
  }
  friend void sum complex &d, complex &(c);
  };
  void sum (complex &d, complex &c2){
   int sum1 = c1.r + c2.r;
   int sum2= c1.i + c2.r;
   cout<<"Sum= " <<sum1 << " + " <<sum2<< "i";
   }.
  int main ()
  {
   complex d;
   complex c;
   d.info(); d.display();
   c.info(); c.display ();
   sum(d,c);
```

*Output:-

Enter the r & i part of the No. 2
3

Number: 2+3i

Enter the real and i part of the number : 5
6

Number : 5+6i

Sum= 7+9i

```
v) #include <iostream>
using namespace std;
class student
{
 string name;
 float a,b,c;
 public :
  void info()
  {
   cout<<"Enter your name & marks of 3 subjects: ";
   cin >> name >> a >>b>>c;
  }.
 friend void avg (student s);
};
void avg (student s)
{ float avg= (float) (s.a +s.b+ s.c)/3;
  cout <<" avg= "<<avg;
 }.
int main ()
{ student s1;
  s1.info ();
  avg(s1);
}
```

Output:-

```
Enter your name ~~&~~and marks of 3 subjects:- Mayuresh
                                                27
                                                28
                                                29.
avg:- 28
```

```
vi) #include <iostream>
using namespace std;
class Gama;
class Beta;
class Alpha{
 int a;
 public:
 void info1 (){
 cout <<"Enter a number: ";
 cin>>a
 }. friend void ~~sum~~sum(Alpha a1, beta b1, Gama g1);
 };
Class Beta{
 int b;
 public:
 void info 2()
 {
  cout <<"Enter a number: ";
  cin >>b;
 }
 friend void sum (Alpha a1, Beta b1, Gama g1);
 };
Class Gama{
 int cg;
 public:
 void ~~accept~~ info 3 (){
  cout <<"Enter a value: ";
  cin >>c; }.
  friend void sum (Alpha a1, Beta b1, Gama g1);
  }; ~~frien~~
```

```
void sum (Alpha a1, Beta b1, Gama g1)
{
  int s = a1.a + b1.b + g1.c;
  cout <<"sum: "<<s;
}
int main()
{
  Alpha a;
  Beta b;
  Gama g;
  a.info 1();
  b.info 2();
  g.info 3();
  sum (a,b,g);
}
```

Output :-

```
Enter a value:- 5
Enter a value:- 7
Enter a value:- 2
sum:- 14.
```

viii)

```
#include <iostrean>
#include <cmath>
using namespace std;
class point {
int x,y;
public:
void info ()
{ cout <<"Enter valu of x&y: ";
   cin >>x>>y;
}
friend void dist (Point p1, point p2);
};
void dist (point p1, point p2)
{
 float d = (float) (sqrt (pow(p2.x - p1.x ,2 )+ pow(
              p2.y - p1.y, 2 )});
  cout << "Distance between points: "<<d<<"units";
}.
int main()
{
  point p1;
  point p2;
  p1.accept();
  p2.accept();
  distance (p1,p2);
}.
```

```
vii) #include <iostream>
using namespace std;
class audit;
class Bank account {
  float balance;
  public:
   void info (){
   cout <<"Enter your balance: ";
    cin >>balanie;
   }
   friend void and (Bank Account ba ,Audit a);
   };
  class Audit
  {
  friend void and (Bank account ba ,Audit a);
  }.
  void and (Bank account ba ,Audit a)
  {
   cout <<" balance for audit, " <<ba.balance;
  }.
int main.
  ba.info;
 and (ba, a);
}.
```

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* Experiment-5.

i).
```
#include <iostream>
using namespace std;
class Number
{
  int a,b,sum;
  public:
  Number ()
  { a=10
     b=20; }
 void display ()
 {
  sum =a+b;
  cout <<"sum= "<<sum;
 }
};
int main()
{
 Number n1;
 n1.display();
 return0;
```

* Output:-

```
Sum=30.
```

ii).
```
#include <iostream>
using namespace std;
class Number {
int a,b,sum;
public:
Number (int x ,int y)
{
  a=x;
  b=y;
}
void display()
 {
  sum =a+b;
  cout<< "sum= "<<sum;
 }
};
int main ()
{
  Number n1 (100,200)
  n1 display();
  return0;
}
```

* Output:-

```
sum=300.
```

```
Q3> #include <iostream>
    using namespace std;
    class Number {
    int a,b,sum;
    public:
    Number()
    {
      a=10;
      b=20;
    }
    Number (Const Number &n1)
    {
      a=n1.a;
      b=n1.b;
    }
    void display ()
    { sum=a+b
        cout <<' \n sum=  ' <<sum; }
   };
   intmain() {
   Number n1;
   n1.display();
   Number n2(n1);
   n2.display();
   return 0;
   }
```

* Output.-

```
sum =30
sum= 30
```

```
Q>  #include <iostream>
    using namespace std
    class student {
    float percentage;
    string name;
    public:
    student (){
    name = "Mayuresh";
    percentage= "82";
    }
    void display(){
    cout << "Name = " << name << "\n
    percentage=  " << percentage;
    }
   };
   int main () {
   student s1;
   s1.display;
   return 0;
   }
```

* Output.-

```
Name = Mayuresh
Percentage= 82.
```

```
# #include <iostream>
  using namespace std;
  class student {
  float percentage;
  string name;
  public:
  student (string n,float p)
  {
    name = n;
    percentage =p;
  }.
  void display()
  {
    cout << "Name= "<<Name <<"Percentage= "<< percentage;
  }
 };
 int main()
 {
 student s1 ("Mayuresh",82);
 s1.display();
 return 0;
 }
```

* Output:-

```
Name = Mayuresh
Percentage = 82
```

```
# #include <iostream>
  using namespace std;
  class Num {
  int C ,num f=1;
  public:
  Num (){
   num5; }
  Num (int n){
    num=n; }
  Num (Num &a ){
    num = a.num }
   void display()
   { for (i=1 ; i<=num ; i++)
     {
       f=f*i;
     }
    cout<< "infact "<<f;
   }
  };
 int main (){
  Num n1;
  n1. display();
  Num n2 (7);
  n2. display ();
  Num n3 (n2);
  n3. display ();
 }
```

* Output:-

```
fact : 120
fact : 5040
fact : 5040
```

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*Experiment-6

```
i) #include <iostream>
using namespace std;
class person {
protected:
string name;
int age;
};
class student: protected person
{ int roll.no;
    public:
    void accept ()
    {
    cout << "\n Enter name, age and roll no ";
    ~~cout~~ cin>> name>> age>> roll.no;
    }
   void display()
   {
    cout <<\n Name is:" <<name;
    }
};
int main()
{ student s1;
   s1. accept();
   s1. display();
   return 0;
}.
```

*Out put:-

```
Enter name, age and roll.no:
Mayuresh
17
4
Name is: Mayuresh
~~Name~~ is:- 17
Roll no is:- 4.
```

```
ii) #include <iostream>
using namespace std;
class Academics {
protected:
int marks; };

class sports{
protected:
int score;
};
class Result : protected Academics;
  protected sports{
   public:
   int total;
   void accept ()
    {
     cout << " Enter marks & score:";
     cin >> marks >> score;
     }.
     void display ()
     {
      total = marks + score;
      cout << "Total: " << total;
     }};
int main ()
{
  Result r1;
  r1. accept ();
  r1. display ();
  return 0;
```

*Output:-

```
Enter marks and sports
are:100
   Total :220
```

3)
```
#include <iostream>
using namespace std;
class vehicle{
  protected
  string brand model;
 };
class car: protected vehicle {
 protected
 string type
 };
class electriccar : protected car {
 int capacity;
 public:
 void accept ()
 {
 cout << "\n Enter brand, model, type, and capacity: ";
 cin >> brand >> model >> type >> capacity;
 }.
 void display () {
 cout << "\n Brand is: " <<brand;
 cout << "\n model is: " <<model;
}};
int main(){
Electric e1;
e1. accept();
e1. display();
return 0;
}.
```

* Output

```
Enter brand, model, type and capacity
Mercedes
C-class
sedan
0

Brand is Mercedes
Model is c-class
Type is sedan
Capacity is 0.
```

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* Experiment-07

```
i) #include <iostream>
using namespace std;
class Area;
{
 public:
 void area (int a)
 {
  int r
  r= a*a;
 cout << " Area is:    "<<r;
 }
 void area (int l, int b)
 {
  int r;
   r= l*b;
  cout <<"\n Area is:   "<<r;
  }
 };
int main ()
{
Area a;
a area (9);
a. area (9, 9);
return 0;
}
```

#output:-

```
Area of the class: 81
Area of the lab:. 81.
```

```
ii) #include <iostream>
using namespace std;
class Num {
public:
  int a=5;
  void operator-(){
  a=-a;
  }.
  void display ()
  {
   cout <<"a:   " <<a;
  }
 };
 int main(){
  Num n;
   -n;
  n.display ();
 }.
```

* Output:-

```
a: -5.
```

```
iv) #include <iostream>
using namespace std;
class Num {
public:
int a =5;

void operator ++() {
  a= ++a; }
  void display () {
  cout << " a: " << a;
  }
};
int main () {
  Num n;
  ++n;
  n.display();
}
```

* Output:-

```
a: 6.
```

Experment - 8 & 9.

```
i) #include <iostream>
#include <string>
using namespace std;

class concat {
  string str;
  public:
  concat (string s)
  {
   str = s;
  }
  void operator+ (concat obj)
  {
   cout << " Concatenated string: " <<
   str + obj.str;
   }
};
int main()
{
  concat s1 ("xyz");
  concat s2 ("pqr");
  s1 + s2
  return 0;
}.
```

* output:-

```
Concatenated str: xyzpqr.
```

```
ii) #include <iostream>
    #include <fstream>
    using namespace std;
    int main()
    {
      ifstream fin;
      ifstream fout;

      fin.open ("Source file.txt", ios::in);
      if (fin)
      {
         cout << "No file "<< endl;
         return 1;
      }.
     else
    fout.open (" destination file.txt ", ios::out);
    if (!fout).
    { cout << "unable to create destination file " << endl;
    } return 1;
   }.
   char ch;
    while (fin get (ch))
    {
     fout .put (ch);
    }.
  cout <<" file copied successfully " <<endl;
   fin  close ();
   fout close ();
   }
   return 0;
 }.
```

```
iii) #include <iostream>
     #include <fstream>
     #include <string>
     using namespace std;
      int main()
      {
        ifstream fin;
        ofstream fout;
        fin.open ( "source file.txt", ios::in);
        if (!fin)
         {
          cout << " file not found "<<endl;
          return 1;
         }
         fout.open (&"destination file.text, ios::out);
         if (!fout) {
         cout << ("could not create file " << endl;
          fin. close ();
           return 1; }
           string word;
           int word_count = 0;
          while (fin >> word)
          {
           word_count ++;
          }.
          cout << "word count is: " << word_count << endl;
          fin. close ();
          fout. close ();
           return 0;
          }.
```

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Experment :- 10

```
1) #include <iostream>
using namespace std;
template<class T> T sum (T arr[], int no)
{
 int i;
 T s=0
 for (i=0; i<no; i++)
 {
  s=s+ arr [i];
 }
 return s;
}
int main()
{
 int b=5;
 int a[]={1,2,3,4,5}
 cout << "sum= "<<sum (a,b);
 return 0;
}
```

* output:-

```
sum = 15
```

```
2) #include <iostream>
using namespace std;
template<class T> T square (T a)
{
 T s =a* a;
 return s;
}
template <> string square <string>
 (string a)
 {
  retun (a+a);
 }
 int main()
 {
  int x=5;
  string y="abc";
  cout << "square = "<< square (x);
  cout << "\nsquare = "<< square (y);
  return 0;
 }
```

* output :-

```
square = 25
Square = abcabc.
```

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* Experiment - 11.

```
i> without iteration.
>#include <iostream>
#include <vector>
using namespace std;

int main()
{ vector <int> v= { 1, 2, 3, 4, 5 };
   int index= 2;
   int newvalue =10;
   v [index] - new value;
   int scalar=3;
   for (int i =0;i<v size ();i++){
     v [i] *= Scalar;
   for (int i=0; i<v.size() ; i++){
      cout << v[i];
   if (i' = v.size ()- 1) cout <<", ";

   }
   cout <<endl;
   return 0;
   }.
```

* output :-

```
3, 6, 30, 12, 15.
```

```
ii> with iteration:-
> #include <iostream>
 # include <vector>
using namespace std;
 int main(){
vector <int> v = {1, 2, 3, 4, 5 };
 int index= 2;
 int new value =10;
  vector <int >::iterator it modify= v.begin();
   it -modify += index;
   *it- modify = new value;
   int scalar= 3;
   for (vector <int> :: iterator it = v.begin;
   it != v.end(); it++ )
   { *it* = scalar ; }

for (vector <int>:: iterator it = v. begin;
 it! = v end (); it++ )
{ if (it != v.end()* - 1)
   { cout <<" "; } }
  cout <<endl;
  return 0;
```

* output:-

```
3, 6 , 30 , 12, 15
```

*Experiment :- 12.

```
i) #include <iostream>
#include <stack>
 #include <ctype>
using namespace std;
int main()
{  stack <int >v;
     v.push (1);
     v.push (2);
     v.push (3);
     v.push (4);
     v.push (5);

    if (v.empty()).
    {  cout<<"\n Empty stack "; }
    else
    { cout <<"\n stack is not empty"; }.
    cout   <<"\n stack: ";
    while (!v.empty ())
    { cout <<v.top()<<" "; v.pop }.
 cout <<  "\n size after popping): "<<v.size ();
}.
```

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```
ii) #include <iostream>
    #include <queue>
    #include <cctype>.
    using namespace std;
    int main()
    {
      queue <int>v;
      v.push (11);
      v.push (22);
      v.push (33);
      v.push (44);
      v.push (55);
       if (v.empty())
       { cout" \n queue empty";
       }
       else {
       cout <<" \queue is not empty";
        }.
      cout <<"\n size : " <<v.size ();
      cout <<" \ front: " <<v.front ();
      while (!v.empty())
       {.
        cout <<v.front ()<< " "; v.pop ();
       }.
       cout <<"\n size (afterpopping): " v.size ();
    }
```

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