ASSIGMENT-1

Q-wap to show call by value ?

Ans-

```
#include <iostream>
using namespace std;
void vswap(int c, int d) ;
int main()
{
  int a,b;
  cout<<"call by value\n";
  cout << "enter two digits" << '\n';
  cin>>a;
  cin>>b;
  vswap(a,b);
  cout << "outside function" <<"\t"<<"a="<<a<<"\t"<<"b="<<b<<"\n";
  return 0;
}
void vswap(int c, int d)
{
  int temp;
  temp=c;
  c=d;
  d=temp;
  cout<<"inside function"<<"\t"<<"a="<<c<<"\t"<<"b="<<d<<"\n";
}
```

```
as1_callbyvalue
call by value
enter two digits
20
40
inside function a=40    b=20
outside function        a=20    b=40

Press any key to continue . . .
```

Q-wap to show call by refrence

Ans-#include <iostream>

```
using namespace std;

void rswap(int &c, int &d) ;

int main()

{

  int a,b;

  cout<<"call by address\n";

  cout << "enter two digits" << '\n';

  cin>>a;

  cin>>b;

  rswap(a,b) ;

  cout << "outside function" << "\t" <<"a="<<a<<"\t"<<"b="<<b<<"\n";

  return 0;

}

void rswap(int &c, int &d)
```

```
{
  int temp;
  temp=c;
  c=d;
  d=temp;
  cout<<"inside function" << "\t" <<"a="<< c <<"\t"<<"b="<< d <<"\n";
}
```

```
as1_callbyrefrenca
call by address
enter two digits
50
60
inside function a=60    b=50
outside function        a=60    b=50

Press any key to continue . . .
```

Q- wap to show call by address

```
#include <iostream>

using namespace std;
```

```
void aswap(int *c, int *d) ;

int main()

{

  int a,b;

  cout<<"call by address\n";

  cout << "enter two digits" << '\n';

  cin>>a;

  cin>>b;

  aswap(&a,&b) ;

  cout << "outside function" << "\t" <<"a="<<a<<"\t"<<"b="<<b<<"\n";

  return 0;

}

void aswap(int *c, int *d)

{

  int temp;

  temp=*c;

  *c=*d;

  *d=temp;

  cout<<"inside function" << "\t" <<"a="<< *c <<"\t"<<"b="<< *d <<"\n";}
```

```
as1_callbyaddress
call by address
enter two digits
30
40
inside function a=40    b=30
outside function        a=40    b=30

Press any key to continue . . .
```

Q-wap to do bank operation calculate rate of interest on fixed amount balance and fixed account balance?

Ans-

```
#include<iostream>

using namespace std;

#define sar 4.3

#define fdr 6.9

void calculatesar();

void calculatefdr();

int main()

{

  int c;

  cout<<"WELCOME SIR \n";

  cout<<"press 1). to know your saving account balance after current financial year\n";

  cout<<"press 2). to know your fixed deposit balance after current financial year\n";

  cout<<"please enter your choice \n";

  cin>>c;

  switch (c) {

    case 1:

    cout<<"your saving acount balance before financial year is = 2,00,000\n";

    calculatesar();

    break;
```

```
    case 2:
    cout<<"your fixed deposit amount before financial year is = 3,00,000\n";
    calculatefdr();
    break;
  }
  return 0 ;
}
 void calculatesar()
{
  float si ;
  float amount;
  float sab=200000 ;
  si = ( sab*sar*1)/100;
  amount=sab+si;
  cout<<"after calculating intrest \n";
  cout << "your intrest is =\t"<<si<<'\n';
  cout << "your saving account balance is=\t" <<amount<< '\n';
}

void calculatefdr()
{
 float si ;
 float amount;
```

```
 float fdb=300000 ;

 si = ( fdb*sar*1)/100;

 amount=fdb+si;

 cout<<"after calculating intrest \n";

 cout << "your intrest is =\t"<<si<<'\n';

 cout << "your fixed amount balance is=\t" <<amount<< '\n';

}
```

```
as1_bank
WELCOME SIR
press 1). to know your saving account balance after current financial year
press 2). to know your fixed deposit balance after current financial year
please enter your choice
1
your saving acount balance before financial year is = 2,00,000
after calculating intrest
your intrest is =       8600
your saving account balance is= 208600

Press any key to continue . . .
```

```
as1_bank
WELCOME SIR
press 1). to know your saving account balance after current financial year
press 2). to know your fixed deposit balance after current financial year
please enter your choice
2
your fixed deposit amount before financial year is = 3,00,000
after calculating intrest
your intrest is =       12900
your fixed amount balance is=   312900

Press any key to continue . . .
```

ASSIGMENT-2

Q-wap to show buble short?

Ans-

```
#include<iostream>

using namespace std;

void insertion(int arr[],int n);

void sort(int arr[],int n);

void output(int arr[],int n);
```

```
int main()
{
  int array[100], n;

  cout<<"Enter number of elements\n";
  cin>>n;
  insertion(array,n);
  sort(array,n);
  output(array,n);
  return 0;
}


void insertion(int arr[],int n)
{
  int i;
  cout<<"enter the elements"<<'\n'<< endl ;

  for (i = 0; i< n; i++)
  {
    cout<<"enter the :"<<i+1<<"element :";
    cin>>arr[i];

  }
```

```
}


void sort(int arr[],int n)
{
  int i,j,temp;


   for (i = 0 ; i < n ; i++)
   {
     for (j = 0 ; j < n - i - 1; j++)
     {
       if (arr[j] > arr[j+1]) /* For decreasing order use < */
       {
         temp       = arr[j];
         arr[j]   = arr[j+1];
         arr[j+1] = temp;
       }
     }
   }
}


void output(int arr[],int n)
{
  int c;


   cout<<"Sorted list in ascending order:\n";
```

```
  for ( c = 0 ; c < n ; c++ )

  {

    cout<<arr[c];

  }

}
```

```
as2_bubblesort
Enter number of elements
5
enter the elements

enter the :1element :5
enter the :2element :1
enter the :3element :4
enter the :4element :2
enter the :5element :3
Sorted list in ascending order:
12345
Press any key to continue . . .
```

Q-wap to implement insertion sort

Ans-

```
#include<iostream>

using namespace std;

void  insertion(int arr[],int n)

{

  int i;

  cout<<"Enter %d integers\n"<<'\n';



  for (i = 0; i < n; i++)

  {

    std::cout << "enter the \t"<<i+1<<"   integer:";
```

```
    cin>>arr[i];
  }


}


void isort(int arr[],int n)
{
  int i,j,temp;
  for (i = 1 ; i <= n ; i++)
  {
    j = i;


    while ( j > 0 && arr[j-1] > arr[j])
    {
      temp = arr[j];
      arr[j] = arr[j-1];
      arr[j-1] = temp;


      j--;
    }
  }
}


void output(int arr[],int n)
{
```

```
  int c;
  cout<<"Sorted list in ascending order:\n";

  for (c = 0; c <n; c++)
  {
    cout<<arr[c];
  }



}

int main()
{
  int n, array[1000] ;

  cout<<"Enter number of elements\n";
  cin>>n;
  insertion(array,n);
  isort(array,n);
  output(array,n);
  return 0;
}
```

```
as2_insertionsort
Enter number of elements
4
Enter %d integers

enter the       1   integer:22
enter the       2   integer:99
enter the       3   integer:33
enter the       4   integer:88
Sorted list in ascending order:
22338899
Press any key to continue . . .
```

Q-wap o convert a string into upper case by taking array globally?

Ans-

```
#include<iostream>

#include<string.h>

#include <stdio.h>

using namespace std;

char array[50];

void insert();

void upper();

void show();

int main()

{
```

```
  cout << "welcome to the program \n to convert a  string into upper case" << '\n';

  insert();

  upper();

  show();


}

void insert()

{

  char ch ;

  int i=0;

  cout << "enter the string you want to convert" << '\n';

  do {

    ch=getchar();//or we can use gets() but thats dangereous

    array[i]=ch;

    i++;

  } while(ch!='\n');


  array[i+1]='\0';

}



void upper()

{

  int i;

  std::cout << "before conversion" << '\n';
```

```
  puts(array);

  for(i=0;array[i]!='\0';i++)

  {

    array[i]=toupper(array[i]);

  }

}



void show()

{

  cout << "after conversion" << '\n';

  puts(array);}
```

```
as2_toupper1
welcome to the program
 to convert a  string into upper case
enter the string you want to convert
kendric lamar
before conversion
kendric lamar

after conversion
KENDRIC LAMAR


Press any key to continue . . .
```

Q-wap to convert a string into upper case by taking array locally?

Ans-

```
#include<iostream>

#include<string.h>

#include <stdio.h>

using namespace std;

void insert(char array[]);
```

```
void upper(char array[]);

void show(char array[]);

int main()

{

  char arr[50];

  cout << "welcome to the program \n to convert a  string into upper case" << '\n';

  insert(arr);

  upper(arr);

  show(arr);


  return 0;

}

void insert(char array[])

{

  char ch ;

  int i=0;

  cout << "enter the string you want to convert" << '\n';

  do {

    ch=getchar();//or we can use gets() but thats dangereous

    array[i]=ch;

    i++;

  } while(ch!='\n');


  array[i+1]='\0';

}
```

```
void upper(char array[])
{
  int i;
  for(i=0;array[i]!='\0';i++)
  {
    array[i]=toupper(array[i]);
  }
}

void show(char array[])
{
  int i;
  cout<<"after conversion\n";
  for(i=0;i<strlen(array);i++)
  {
    cout << array[i];
  }

}
```

```
as2_toupper1
welcome to the program
 to convert a  string into upper case
enter the string you want to convert
kendric lamar
before conversion
kendric lamar

after conversion
KENDRIC LAMAR


Press any key to continue . . .
```

Q-wap to convert a string into upper case by accessing array through pointer?

Ans-

```
#include<iostream>

#include<string.h>

#include <stdio.h>

using namespace std;

void upper(char *a);

int main()

{

  char arr[50];

  cout << "welcome to tthe program \n to convert a  string into upper case" << '\n';

  cout<<"enter the string you want to convert\n";

  cin.getline(arr,50,'\n');

  upper(arr);



  return 0;

}




void upper(char *a)
```

```
{
 int i;


 for(i=0;*(a+i)!='\0';i++)
 {
  *(a+i)=toupper(*(a+i));
 }
 cout << "after conversion of string" << '\n';
 for(i=0;*(a+i);i++)
 {   cout << *(a+i);}}
```

```
as2_toupper1
welcome to the program
 to convert a  string into upper case
enter the string you want to convert
kendric lamar
before conversion
kendric lamar

after conversion
KENDRIC LAMAR


Press any key to continue . . .
```

Q-wap to convert a string into upper case by returning array from function?

Ans-

```
#include<iostream>
#include<string.h>
#include <stdio.h>
using namespace std;
char *upper(char *a);
int main()
{
 char arr[50];
```

```
  int i;
  cout << "welcome to tthe program \n to convert a  string into upper case" << '\n';
  cout<<"enter the string you want to convert\n";
  cin.getline(arr,50,'\n');
  char *ch=upper(arr);



  cout << "after the conversion of array" << '\n';
  for(i=0;i<strlen(arr);i++)
  {
    cout<<*(ch+i);
  }

  return 0;
}

char *upper(char *a)
{
  static char output[50];
  int i;
  for(i=0;*(a+i)!='\0';i++)
  {
    output[i]=toupper(*(a+i));
  }
  return output;
```

}

```
as2_toupper1
welcome to the program
 to convert a  string into upper case
enter the string you want to convert
kendric lamar
before conversion
kendric lamar

after conversion
KENDRIC LAMAR


Press any key to continue . . .
```

ASSIGMENT-3

Q-wap to create a point class and show the functioning of different constructors, access modifiers, copy constructor

ANS-

```
#include <iostream>

using namespace std;

class tpoint

{

private:

  int x;

  int y;

public:

  int getx();//t1 getx

  int gety();//t1 gety

  void print();

  void modify(int a,int b);//t1 modify

  tpoint();//t1 user defined defualt constructor with 0 parameters

  tpoint(int a,int b);//c1 user defined defualt constructor with 2 parameters

  tpoint(const tpoint &c)//c2 user defined copy constructor with copy value of c0;
```

```
  {
    cout << "inside copy constructor" << '\n';
    x=c.x;
    y=c.y;

    cout << "value of x:  "<< x << '\n';
    cout << "value of y:  "<< y << '\n';
  }
};
int tpoint::getx()
{
  cout << "enter the value of x" << '\n';
  cin>>x;
  return x;
}

int tpoint::gety()
{
  cout << "enter the value of y" << '\n';
  cin>>y;
  return y;
}
void tpoint::print()
{
  cout << "printing of values" << '\n';
  cout << "x:  "<< x << '\n';
  cout << "y:  "<< y << '\n';
```

```
}
void tpoint::modify(int a, int b)
{
  cout << "modifying of the cordinates\n";
  x+=a;
  y+=b;
}

tpoint::tpoint()
{
  cout << "inside user defined defualt constructor with 0 parameters" << '\n';
  x=0;
  y=0;
  print();
}
tpoint::tpoint(int a,int b)
{
  cout << "inside user defined defualt constructor with 2 parameters" << '\n';
  x=a;
  y=b;
  print();
}

int main()
{
  int p,q,a,b;
  tpoint t1;//calling of default constructor
```

```
  tpoint c1(20,40);//call to user defined defualt constructor with 2 parameters

  p=t1.getx();

  cout <<"value of x set to x: "<< p << '\n';

  q=t1.gety();

  cout <<"value of y set to y:"<< q << '\n';

  cout<<"modifying value of cordinates\n";

  cout << "increase the value of x by" << '\n';

  cin>>a;

  cout << "increase the value of y by" << '\n';

  cin>>b;

  t1.modify(a,b);

  t1.print();

  tpoint c2(t1);//call to user defined copy constructor to copy t1 object

return 0;

}
```

```
as3_point_class
inside user defined defualt constructor with 0 parameters
printing of values
x:  0
y:  0
inside user defined defualt constructor with 2 parameters
printing of values
x:  20
y:  40
enter the value of x
50
value of x set to x: 50
enter the value of y
60
value of y set to y:60
modifying value of cordinates
increase the value of x by
5
increase the value of y by
5
modifying of the cordinates
printing of values
x:  55
y:  65
inside copy constructor
value of x:  55
value of y:  65

Press any key to continue . . .
```

Q-wap to create a employee class that takes employee id, name, department name and show the functioning of different constructors, access modifiers, copy constructor

Ans-

```
#include <iostream>

#include <stdlib.h>

#include <string.h>

#include <cstring>

using namespace std;

class emp

{

private:

  int eid;
```

```
  char ename[30];

  char edept[10];

public:

  void setvalues();//set employee value

  void print();

  emp();//e user defined defualt constructor setting defualt employee data

  emp(int id, char name[30], char dept[10] );// e1 user defined default constructor to set employee id
name deprtment;

  emp(const emp &e0)

  {

    cout<<"inside copy constructor to copy employee\n";

    eid=e0.eid;

    strcpy(ename,e0.ename);

    strcpy(edept,e0.edept);

    print();

  }

};


void emp::setvalues()

{

  cout<<"enter employee id:";

  cin>>eid;

  cout<<"enter emplyee name:";

  cin.getline(ename,30,'\n');

  cout<<"enter employee department name:";

  cin.getline(edept,10,'\n');

}
```

```
void emp::print()
{
  cout<<"eployee id:  "<<eid<<"\n";
  cout << "employee name:  "<<ename<< '\n';
  cout << "employee department no:  "<<edept<< '\n';
}

emp::emp()
{
  cout << "user defined defualt constructor setting defualt employee data" << '\n';
  eid=0;
  strcpy(ename,"NULL");
  strcpy(edept,"NULL");
  print();
}

emp::emp(int id, char name[30], char dept[10] )
{
  cout << "parameterised user defined default constructor to set employee id name deprtment" << '\n';
  eid=id;
  strcpy(ename,name);
  strcpy(edept,dept);
  print();
}

int main()
```

```
{
  //int id;
  //string name;
  //float dept_no;
  emp e;
  emp e1(39,"peter","IT");
  e.setvalues();
  e.print();
  emp e2(e);return 0;}
```

as3_employee_class

```
user defined defualt constructor setting defualt employee data
eployee id:  0
employee name:  NULL
employee department no:  NULL
parameterised user defined default constructor to set employee id name deprtment
eployee id:  39
employee name:  peter
employee department no:  IT
enter employee id:039
enter emplyee name:enter employee department name:IT
eployee id:  39
employee name:
employee department no:  IT
inside copy constructor to copy employee
eployee id:  39
employee name:
employee department no:  IT

Press any key to continue . . .
```

Lab ASSIGMENT-4

Q-wap to create class point and show the functioning of constructor parameterized constructor, passing object to a function, returning object from a function,

Ans-

```
#include <iostream>

#include<stdlib.h>

using namespace std;

class kpoint

{

 private:

  int x,y,z;

 public:

  kpoint();

  kpoint(int a,int b,int c);

  kpoint(const kpoint &k);

  void add(const kpoint &k);

  kpoint subtract(kpoint k);

  void setvalues();

  void print();

};

kpoint::kpoint()

{

  cout<<"inside system default constructor\n";

  x=0;

  y=0;

  z=0;

  print();
```

```
}
kpoint::kpoint(int a,int b,int c)
{
  cout<<"inside parameterized constructor\n";
  x=a;
  y=b;
  z=c;
  print();
}
kpoint::kpoint(const kpoint &k)
{
  cout<<"inside default copy constructor\n";
  x=k.x;
  y=k.y;
  z=k.z;
  print();
}
void kpoint::add(const kpoint &k)
{
  cout << "inside add function" << '\n';
  cout<<"taking object as parameter\n";
  x=x+k.x;
  y=y+k.y;
  z=z+k.z;
  print();
}
kpoint kpoint::subtract(kpoint k)
```

```
{
  cout << "inside subtract function" << '\n';
  cout<<"taking object as parameter and returning object\n";
  kpoint temp;
  temp.x=x-k.x;
  temp.y=y-k.y;
  temp.z=z-k.z;
  return temp;
}
void kpoint::setvalues()
{
  cout << "enter the values of x: ";
  cin>>x;
  cout << "enter the values of y: ";
  cin>>y;
  cout << "enter the values of z: ";
  cin>>z;
}
void kpoint::print()
{
  cout << "printing of values" << '\n';
  cout << "x:"<<x<<"\n";
  cout << "y:"<<y<<"\n";
  cout << "z:"<<z<<"\n";

}
```

```
int main()
{
  kpoint k1;
  k1.setvalues();
  kpoint k2(10,20,30);
  k1.add(k2);
  k1.print();
  kpoint k3(k1);
  kpoint k4=k3.subtract(k2);
  k4.print();
  return 0;
}
```

```
as4_point
inside system default constructor
printing of values
x:0
y:0
z:0
enter the values of x: 2
enter the values of y: 4
enter the values of z: 6
inside parameterized constructor
printing of values
x:10
y:20
z:30
inside add function
taking object as parameter
printing of values
x:12
y:24
z:36
printing of values
x:12
y:24
z:36
inside default copy constructor
printing of values
x:12
y:24
z:36
inside default copy constructor
printing of values
```

```
x:10
y:20
z:30
inside subtract function
taking object as parameter and returning object
inside system default constructor
printing of values
x:0
y:0
z:0
printing of values
x:2
y:4
z:6

Press any key to continue . . .
```

Q-wap to create fraction class and show the addition of numerator & functioning of constructor parameterized constructor, passing object to a function, returning object from a function

Ans-

```
#include <iostream>

#include<stdlib.h>

using namespace std;

class kpoint

{

 private:

  int x,y,z;

 public:

  kpoint();

  kpoint(int a,int b,int c);

  kpoint(const kpoint &k);

  void add(const kpoint &k);

  kpoint subtract(kpoint k);

  void setvalues();
```

```
  void print();
};
kpoint::kpoint()
{
  cout<<"inside system default constructor\n";
  x=0;
  y=0;
  z=0;
  print();
}
kpoint::kpoint(int a,int b,int c)
{
  cout<<"inside parameterized constructor\n";
  x=a;
  y=b;
  z=c;
  print();
}
kpoint::kpoint(const kpoint &k)
{
  cout<<"inside default copy constructor\n";
  x=k.x;
  y=k.y;
  z=k.z;
  print();
}
void kpoint::add(const kpoint &k)
{
```

```
  cout << "inside add function" << '\n';
  cout<<"taking object as parameter\n";
  x=x+k.x;
  y=y+k.y;
  z=z+k.z;
  print();
}
kpoint kpoint::subtract(kpoint k)
{
  cout << "inside subtract function" << '\n';
  cout<<"taking object as parameter and returning object\n";
  kpoint temp;
  temp.x=x-k.x;
  temp.y=y-k.y;
  temp.z=z-k.z;
  return temp;
}
void kpoint::setvalues()
{
  cout << "enter the values of x: ";
  cin>>x;
  cout << "enter the values of y: ";
  cin>>y;
  cout << "enter the values of z: ";
  cin>>z;
}
void kpoint::print()
{
```

```
  cout << "printing of values" << '\n';

  cout << "x:"<<x<<"\n";

  cout << "y:"<<y<<"\n";

  cout << "z:"<<z<<"\n";


}


int main()

{

  kpoint k1;

  k1.setvalues();

  kpoint k2(10,20,30);

  k1.add(k2);

  k1.print();

  kpoint k3(k1);

  kpoint k4=k3.subtract(k2);

  k4.print();

  return 0;

}
```

```
as4_numerator
inside defult constructor
printing values
N/M : 0/1
inside defult parameterized constructor
printing values
N/M : 7/2
enter the value of numerator   n:8
enter the value of denominator d:2
inside add function
printing values
N/M : 15/4
inside copy constructor
printing values
N/M : 15/4
inside defult constructor
printing values
N/M : 0/1
inside subtract function
inside defult constructor
printing values
N/M : 0/1
printing values
N/M : 8/2

Press any key to continue . . .
```

Lab Assignment-5

Q-wap to create a car class taking char pointers as a class members. Show the functioning of default constructor, parameterized constructor.

Ans-

```
#include<iostream>

using namespace std;

#include<cstring>

#include<string.h>

class car

{

private:

  int id;

  char *man;

  char *mod;

public:

  car()

  {

    cout<<"inside defualt constructor\n";

    id=0;

    man=new char[strlen("unknown")+1];

    strcpy(man,"unknown");

    mod=new char[strlen("unknown")+1];

    strcpy(mod,"unknown");

    print();

  }
```

```
  car(int i,char ma[],char mo[])
  {
    cout<<"inside parameterised defualt constructor\n";
    id=i;
    man=new char[strlen(ma)];
    strcpy(man,ma);
    mod=new char[strlen(mo)];
    strcpy(mod,mo);
    print();
  }

  void print()
  {
    cout<<"car id is: "<<id<<"\n";
    cout<<"manufacturer of car is: "<<man<<"\n";
    cout << "car model is :" <<mod<< '\n';
  }
};
int main()
{
  car c1;
  car c2(03,"BMW","ZED");
  return 0;
}
```

```
as5_car_class
inside defualt constructor
car id is: 0
manufacturer of car is: unknown
car model is :unknown
inside parameterised defualt constructor
car id is: 3
manufacturer of car is: BMW
car model is :ZED

Press any key to continue . . .
```

Q- Wap to create a student class taking char & int pointers as class members.show the functioning of default constructor, parameterized constructor,destructor.

Ans-

```
#include<iostream>

using namespace std;

#include<cstring>

#include<string.h>

class student

{

private:

  int rollno;

  char *name;

  int *marks;

public:

  student()

  {

    cout<<"inside defualt constructor\n";

    rollno=0;

    name=new char[strlen("unknown")+1];
```

```
  strcpy(name,"unknown");
  marks=new int(-1);
  print();
  cout<<"student marks: "<<*marks<<"";
}
student(int r,char n[],int *m)
{
  //int *p;
  rollno=r;
  name=new char[strlen(n)];
  strcpy(name,n);
  marks=new int[5];
  print();
  cout << "student marks: ";
  for(int i=0;i<5;i++)
  {
    *(marks+i)=*(m+i);
    cout<<*(marks+i)<<"  ";
  }



}
~ student()
  {
    cout<<"\n destructor called haha\n";
    delete name;
    delete marks;
```

```
  }
 void print()
 {
   cout<<"student roll no.: "<<rollno<<endl;
   cout <<"student name :"<<name<< '\n';
 }
};


int main()
{
  student s1;
  int m[]={90,80,81,93};
  s1.~ student();
  cout<<"\n\n";
  student s2(3,"jhon",m);
  s2.~ student();
  return 0;
}
```

as5_student_class

```
inside defualt constructor
student roll no.: 0
student name :unknown
student marks: -1
 destructor called haha


student roll no.: 3
student name :jhon
student marks: 90  80  81  93  0
 destructor called haha

 destructor called haha

Press any key to continue . . .
```

Lab assignment-6

Q- wap to show the functioning of container class and component class. By creating two classes point class (component class) circle class (container class)

Ans-

```
#include<stdio.h>

#include<iostream>

using namespace std;

class point //COMPONENT CLASS

{

//private:

public:

  int x,y;

  point()

  {

    cout<<"COMPONENT CLASS default constructor\n";

    x=0;

    y=0;

    print();

  }


  point(int a,int b)

  {

    cout<<"COMPONENT CLASS parameterised default constructor\n";

    x=a;

    y=b;
```

```
    print();
  }

  point(const point &p)
  {
    cout<<"COMPONENT CLASS copy constructor\n";
    x=p.x;
    y=p.y;
    print();
  }

  void print()
  {
    //cout<<"POINT COMPONENT CLASS\n";
    cout<<"point x: "<<x<<"\n";
    cout<<"point y: "<<y<<"\n";
  }
  /*void hello()
  {
    cout<<"hello from container class\n";
  }*/
};

class circle
{
private:
  int radius;
```

```
  point center;
public:
  circle()
  :center()
  {
    radius=0;
    cout<<"CONTAINER CLASS default constructor\n";
    cprint();
  }



  circle(int x,int y,int z)
  :center(y,z)
  {
    cout<<"CONTAINER CLASS parameterized constructor\n";
    radius=x;
    cprint();
  }

  circle(point &p,int r)
  :center(p)
  {
    cout<<"CONTAINER CLASS constructor\n";
    radius=r;
    cprint();
  }
```

```
  void cprint()
  {
    cout <<"radius of circle: "<<radius<< '\n';
    cout <<"center of circle: "<<center.x<<" "<<center.y<< '\n';
  }

};

int main()
{
  circle c1;
  cout<<"\n\n";
  circle c2(10,2,2);
  cout<<"\n\n";
  point p1(4,4);
  circle c3(p1,6);
  return 0;
}
```

as6_container_class

```
COMPONENT CLASS default constructor
point x: 0
point y: 0
CONTAINER CLASS default constructor
radius of circle: 0
center of circle: 0 0


COMPONENT CLASS parameterised default constructor
point x: 2
point y: 2
CONTAINER CLASS parameterized constructor
radius of circle: 10
center of circle: 2 2


COMPONENT CLASS parameterised default constructor
point x: 4
point y: 4
COMPONENT CLASS copy constructor
point x: 4
point y: 4
CONTAINER CLASS constructor
radius of circle: 6
center of circle: 4 4

Press any key to continue . . .
```

Q- wap to show the functioning of container class and component class and working of system defined constructor to print garbage value . By creating two classes point class (component class) circle class (container class)

Ans-

```
#include <iostream>

#include<stdio.h>

using namespace std;

class point

{



        public:

        int x,y;

        void print()

         {

                cout<<"point x: "<<x<<"\n";

   cout<<"point y: "<<y<<"\n";

         }

};

class circle

{

        int radius;

        point center;

        public:

        void print()

        {
```

```
                    cout <<"radius of circle: "<<radius<< '\n';

   cout <<"center of circle: "<<center.x<<" "<<center.y<< '\n';

          }

};



int main()

{

          cout << "calling of system default constructor of component & container class" << '\n';

          cout <<"printing of garbage value\n";

  circle c1;

          c1.print();

          return 0;

}
```

```
as6_container_class1
calling of system default constructor of component & container class
printing of garbage value
radius of circle: 0
center of circle: 4124672 4194432

Press any key to continue . . .
```

Q- wap to show the functioning of container class and component class also take pointers as class members . By creating three classes author class, publisher class (component class) book class (container class) also create default constructor, parameterized constructor, copy constructor.

Ans-

```
#include<stdio.h>

#include<cstring>

#include<iostream>

using namespace std;

class author

{

private:

  char *aname;

  char *aadd;

public:

  author()

  {

    cout<<"default constructor author class\n";

    aname=new char[strlen("unknown")+1];

    aadd=new char[strlen("unknown")+1];

    strcpy(aname,"unlnown");

    strcpy(aadd,"unknown");

    aprint();

  }

  author(char an[],char ad[])
```

```
  {
    cout<<"parameterised constructor author class\n";
    aname=new char[strlen(an)];
    aadd=new char[strlen(ad)];
    strcpy(aname,an);
    strcpy(aadd,ad);
    aprint();
  }
  author(const author &a)
  {
    cout<<"default copy constructor author class\n";
    aname=a.aname;
    aadd=a.aadd;
    aprint();
  }
  void aprint()
  {
    cout<<"author name: "<<aname<<endl;
    cout<<"author address: "<<aadd<<endl;

  }

};

class publisher
{
private:
```

```
  char *pname;
  char *padd;
public:
  publisher()
  {
    cout<<"default constructor publisher class\n";
    pname=new char[strlen("unknown")+1];
    padd=new char[strlen("unknown")+1];
    strcpy(pname,"unknown");
    strcpy(padd,"unknown");
    pprint();
  }
  publisher(char pn[],char pa[])
  {
    cout<<"parameterised constructor publisher class\n";
    pname=new char[strlen(pn)];
    padd=new char[strlen(pa)+1];
    strcpy(pname,pn);
    strcpy(padd,pa);
    pprint();
  }
  publisher(const publisher &p)
  {
    cout<<"copy constructor publisher class\n";
    pname=p.pname;
    padd=p.padd;
    pprint();
```

```
  }
  void pprint()
  {
    cout<<"publisher name: "<<pname<<endl;
    cout<<"publisher address: "<<padd<<endl;
  }

};

class book
{
private:
  int bid;
  char *bname;
  author a1;
  publisher p1;
public:
  book():
  a1(),p1()
  {
    cout<<"default constructor book class\n";
    bid=0;
    bname=new char[strlen("unknown"+1)];
    strcpy(bname,"unknown");
    bprint();
  }
```

```
  book(char an[],char ad[],char pn[],char pd[],char bn[],int id):
  a1(an,ad),p1(pn,pd)
  {
    cout<<"parameterised constructor book class\n";
    bid=id;
    bname=new char[strlen(bn)];
    strcpy(bname,bn);
    bprint();
  }

  book(author &a,publisher &p,char bn[],int id):
  a1(a),p1(p)
  {
    cout<<"copy constructor book class\n";
    bid=id;
    bname=new char[strlen(bn)];
    strcpy(bname,bn);
    bprint();
  }

  void bprint()
  {
    cout<<"book id: "<<bid<<endl;
    cout<<"book name: "<<bname<<endl;
  }
};
int main()
```

```
{
cout<<"\n\n";
cout<<"calling parameterized component class constructor\n";
author a("sgt price","los angeles");
publisher p("lootcrate","miami");
cout<<"\n\n";
cout<<"calling default component class constructor from container class\n";
book b1;
cout<<"\n\n";
cout<<"calling parameterized component class constructor from container class\n";
book b2("weekend","denver","lady","colarado","monster",96);
cout<<"calling component class copy constructor from container class\n";
cout<<"\n\n";
book b3(a,p,"modercombat",420);
return 0;
}
```

as6_container_class2

```
calling parameterized component class constructor from container class
parameterised constructor author class
author name: weekend
author address: denver
parameterised constructor publisher class
publisher name: lady
publisher address: colarado
parameterised constructor book class
book id: 96
book name: monster
calling component class copy constructor from container class


default copy constructor author class
author name: sgt price
author address: los angeles
copy constructor publisher class
publisher name: lootcrate
publisher address: miami
copy constructor book class
book id: 420
book name: modercombat

Press any key to continue . . .
```

as6_container_class2

```
calling parameterized component class constructor
parameterised constructor author class
author name: sgt price
author address: los angeles
parameterised constructor publisher class
publisher name: lootcrate
publisher address: miami


calling default component class constructor from container class
default constructor author class
author name: unlnown
author address: unknown
default constructor publisher class
publisher name: unknown
publisher address: unknown
default constructor book class
book id: 0
book name: unknown
```

Lab assignment-7

Q- wap to show the functioning of dynamic object by creation of container class and component class.

Ans-

```
#include<iostream>

#include<stdio.h>

#include<cstring>

using namespace std;


class rider

{

private:

  char *rname;

  char *rcity;

  int rage;

public:

  rider()

  {

    cout<<"rider default constructor\n";

    rname=new char[strlen("unknown")+1];

    rcity=new char[strlen("unknown")+1];

    strcpy(rname,"unknown");

    strcpy(rcity,"unknown");

    rage=0;

  }

  rider(char name[],char city[],int age)
```

```
  {
    cout<<"rider parameterized constructor\n";
    rname=new char[strlen(name)];
    rcity=new char[strlen(city)];
    strcpy(rname,name);
    strcpy(rcity,city);
    rage=age;
  }
  rider(const rider &r)
  {
    cout<<"rider copy constructor\n";
    rname=r.rname;
    rcity=r.rcity;
    rage=r.rage;
  }

  void rprint()
  {
    cout<<"rider name is: "<<rname<<endl;
    cout<<"rider age is: "<<rage<<endl;
    cout<<"rider city is: "<<rcity<<endl;
  }

};

class wheel
{
```

```
private:
  int wid;
  char *wname;
public:
  wheel()
  {
    cout<<"wheel class default constructor\n";
    wname=new char [strlen("unknown")+1];
    strcpy(wname,"unknown");
    wid=0;
  }

  wheel(int id,char name[])
  {
    cout<<"wheel class parameterized constructor\n";
    wid=id;
    wname=new char [strlen(name)+1];
    strcpy(wname,name);
  }

  wheel(const wheel &w)
  {
    cout<<"wheel class copy constructor\n";
    wid=w.wid;
    wname=w.wname;
  }
```

```
  void wprint()
  {
    cout<<"wheels id: "<<wid<<endl;
    cout<<"wheel manufacturer is:"<<wname<<endl;
  }

};


class bike
{
private:
  char *bname;
  int bid;
  wheel *wo;
  rider *ro;
public:
bike(char name[],int id,wheel &wc,rider &rc)
{
  cout<<"inside bike container class\n";
  cout<<"complete information\n";
  ro=new rider(rc);
  bname=new char[strlen(name)];
  strcpy(bname,name);
  bid=id;
  wo=new wheel(wc);
```

```
}
void bprint()
{
  ro->rprint();
  cout<<"bike id is: "<<bid<<endl;
  cout<<"riders bike name: "<<bname<<endl;
  wo->wprint();
  delete wo;
  delete ro;
}

};

int main()
{
  wheel *w1=new wheel(39,"ceat");
  w1->wprint();
  cout<<"\n\n";
  rider *r1=new rider("xenos","nirvana",18);
  r1->rprint();
  cout<<"\n\n";
  bike *b1=new bike("FURY",20,*w1,*r1);
  b1->bprint();
  delete b1;
  delete w1;
  delete r1;
}
```

as7_container_pobject

```
wheel class parameterized constructor
wheels id: 39
wheel manufacturer is:ceat


rider parameterized constructor
rider name is: xenos
rider age is: 18
rider city is: nirvana


inside bike container class
complete information
rider copy constructor
wheel class copy constructor
rider name is: xenos
rider age is: 18
rider city is: nirvana
bike id is: 20
riders bike name: FURY
wheels id: 39
wheel manufacturer is:ceat

Press any key to continue . . .
```

Q- wap to show the functioning of dynamic object by creation of bike wheel and rider class where rider class has a dynamic object .

```
#include<iostream>

using namespace std;

#include <cstring>

#include <stdio.h>

class rider

{

private:

  char *rname;

  int rage;

  char *rcity;

public:

  rider()

  {

    rname=new char[strlen("empty")+1];

    strcpy(rname,"empty");

    rage=0;

    rcity=new char[strlen("NULL")+1];

    strcpy(rcity,"NULL");

    rprint();

  }


  rider(char rn[],int ra,char rc[])

  {

    rname=new char[strlen(rn)];

    strcpy(rname,rn);

    rage=ra;

    rcity=new char[strlen(rc)];
```

```
    strcpy(rcity,rc);
    rprint();
  }

  rider(const rider &ro)
  {
    rname=new char[strlen(ro.rname)];
    strcpy(rname,ro.rname);
    rage=ro.rage;
    rcity=new char[strlen(ro.rcity)];
    strcpy(rcity,ro.rcity);
    rprint();
  }

  void rprint()
  {
    cout<<"riders name:"<<rname<<endl;
    cout<<"riders age:"<<rage<<endl;
    cout<<"riders city:"<<rcity<<endl;
  }
};

class wheel
{
private:
  char *wman;
  int wprice;
public:
  wheel()
  {
    wman=new char[strlen("NULL")+1];
    strcpy(wman,"NULL");
```

```
    wprice=0;
    wprint();
  }
  wheel(char wm[],int wp)
  {
    wman=new char[strlen(wm)+1];
    strcpy(wman,wm);
    wprice=wp;
  }
  wheel(const wheel &wo)
  {
    wman=new char[strlen(wo.wman)];
    strcpy(wman,wo.wman);
    wprice=wo.wprice;
    wprint();
  }
  void wprint()
  {
    cout<<"wheels manufacturer:  "<<wman<<endl;
    cout<<"wheels price:  "<<wprice<<endl;
  }
};


class bike
{
private:
  int bikeid;
  char *bname;
  wheel w1;
  rider *r1;
public:
  bike()
```

```
:w1()
{
  bname=new char[strlen("no bike")+1];
  strcpy(bname,"no bike");
  bikeid=0;
  bprint();
}
bike(int bi,char bn[],char wn[],int wp)
:w1(wn,wp)
{
  bname=new char[strlen(bn)+1];
  strcpy(bname,bn);
  bikeid=bi;
  bprint();
}
void bprint()
{
  cout<<"bike name: "<<bname<<endl;
  cout<<"bike id: "<<bikeid<<endl;
  w1.wprint();
}
void rideron()
{
  char rn[10];
  int ra=0;
  char rc[10];
  cout<<"eneter riders name: ";
  cin>>rn;
  cout<<"enter riders age:";
  cin>>ra;
  cout<<"enter riders city:";
  cin>>rc;
```

```
    cout<<"\n\n\n";
    r1=new rider(rn,ra,rc);
  }
  void riderof()
  {
    delete r1;
    r1=new rider();
  }
};
int main()
{
  char ch='y';
  bike b1(39,"pulsar","mrf",2000);
  cout<<"assign bike to rider\n";
  while(ch=='y')
  {
    cout<<"press y to assign & n to dismount rider\n";
    cin>>ch;
    if(ch=='y'||ch=='Y')
    {
      b1.rideron();
      b1.bprint();
    }
    else
    {
      b1.riderof();
      b1.bprint();
    }
    cout<<"do you want to change rider or dismount rider"<<endl;
  }

}
```

as7_bikeproject

```
wheels price:  2000
assign bike to rider
press y to assign & n to dismount rider
y
eneter riders name: erik
enter riders age:21
enter riders city:paramount



riders name:erik
riders age:21
riders city:paramount
bike name: pulsar
bike id: 39
wheels manufacturer:  mrf
wheels price:  2000
do you want to change rider or dismount rider
press y to assign & n to dismount rider
n
riders name:empty
riders age:0
riders city:NULL
bike name: pulsar
bike id: 39
wheels manufacturer:  mrf
wheels price:  2000
do you want to change rider or dismount rider

Press any key to continue . . .
```

Lab assignment-8

Q- wap to show the functioning of operator overloading, show addition subtraction and printing of object with the help of operator.

```
#include<iostream>

#include<cstring>

using namespace std;

class fraction

{

  private :

   int nem;

   int dem;

  public :

      fraction()

      {

         cout<<"setting of default values\n";

         nem=0;

         dem=0;

      }

      fraction(int a, int b)

      {
```

```
    cout<<"setting of values\n";
    nem=a;
    dem=b;
    fprint();
}
void operator ==(fraction &f)
{
    if(nem==f.nem&&dem==f.dem)
    {
        cout<<"fractions are equal\n";
    }
    else
    {
        cout<<"fraction are not equal\n";

    }


    if(dem==f.dem)
     {
            cout<<"they are like fraction \n";
     }
    else
```

```
    {
        cout<<"they are unlike fraction";
    }


}
void operator <<(ostream &out)
{
   out<<nem<<"/"<<dem;
}
void operator <(fraction &f)
{
   float r1,r2;
   r1=nem/dem;
   r2=f.nem/f.dem;
   if(r1<r2)
   {
      cout<<nem<<"/"<<dem<<": is smaller than"<<f.nem<<"/"<<f.dem<<endl;
   }
   else
   {
      cout<<nem<<"/"<<dem<<": is greater than"<<f.nem<<"/"<<f.dem<<endl;
   }
}
```

```
    fprint()
    {
        cout<<"="<<nem<<"/"<<dem<<endl;


    }
};
int main()
{
  cout<<"f1:";
  fraction f1(2,7);
  cout<<"f2:";
  fraction f2(2,8);
  f1==f2;
  f1<f2;
  cout<<"printing of object\n";
  f1<<cout;
  cout<<endl;
  f2<<cout;
  return 0;
}
```

as8_operator_overloading

```
f1:setting of values
=2/7
f2:setting of values
=2/8
fraction are not equal
they are unlike fraction2/7: is greater than2/8
printing of object
2/7
2/8
Press any key to continue . . .
```

Q- wap to show the functioning of operator overloading ?

```
#include<iostream>

using namespace std;

#include<stdio.h>

#include<stdlib.h>



class point

{

private:

  int x,y;

public:

  point()

  {



    x=y=0;

  }

  point(int a,int b)

  {

    cout<<"creating the point\n";

    x=a;

    y=b;

    display();

  }



  istream& operator>>(istream &in)

  {

    cout<<"cin operation\n";

    in>>x;
```

```
  if(in.ios::bad()!=0)
  {
    return in;
  }
  in>>y;
  if(in.ios::bad()!=0)
  {
    return in;
  }

  return in;
}

point& operator=(point &p)
{
  cout<<"assigment operator\n";
  x=p.x;
  y=p.y;
  return *this;
}

void operator ++()
{
  cout<<"post increment operator\n";
  x=x+1;
  y=y+1;
}
```

```
  point operator ++(int)
  {
    cout << "post increment operator" << '\n';
    point temp;
    temp.x=x+1;
    temp.y=y+1;
    return temp;
  }

  void display()
  {
    cout<<"the 2 points are"<<endl;
    cout<<"x: "<<x<<endl;
    cout<<"y: "<<y<<endl;
  }
};

int main()
{
  int ch;

  cout<<"1. cin >> operator"<<endl;
  cout<<"2. = assigment operator"<<endl;
  cout<<"3. ++o pre increment operator "<<endl;
  cout<<"4. o++ post increment operator "<<endl;
  cout<<"5. exit "<<endl;
  while(1)
  {
```

```
cout << "select your option\n" <<endl;

cin>>ch;


  switch (ch)

  {

    case 1:

    {

      point p1;

      point p2;

      p1>>(p2>>cin);

      p1.display();

      p2.display();

      break;


    }




    case 2:

    {

      point p3(3,4);

      point p4(1,2);

      p3=p4;

      p3.display();

      p4.display();

      break;

    }


    case 3:
```

```
      {
        point p3(1,2);
        ++p3;
        p3.display();
        break;
      }

      case 4:
      {
        point p3(1,2);
        p3++;
        p3.display();
        break;
      }

      case 5:
      {
        exit(0);
      }
    }
  }
  return 0;
}
```

as8_operator_overloading1

```
1. cin >> operator
2. = assigment operator
3. ++o pre increment operator
4. o++ post increment operator
5. exit
select your option

1
cin operation
2 3
cin operation
4 5
the 2 points are
x: 4
y: 5
the 2 points are
x: 2
y: 3
select your option
```

```
2
creating the point
the 2 points are
x: 3
y: 4
creating the point
the 2 points are
x: 1
y: 2
assigment operator
the 2 points are
x: 1
y: 2
the 2 points are
x: 1
y: 2
```

```
3
creating the point
the 2 points are
x: 1
y: 2
post increment operator
the 2 points are
x: 2
y: 3
```

```
4
creating the point
the 2 points are
x: 1
y: 2
post increment operator
the 2 points are
x: 1
y: 2
select your option
```

Q- wap to show the functioning of stack ?

```
#include"iostream"

#include<conio.h>

#define size 5

using namespace std;



class stack

{

        int *a;

        int top;

public:

        stack()

        {

         top=-1;

         a=new int[size];

  }

        int isFull()

        {

        if(top==size-1)

          return 1;

        else

                return 0;

        }

        int isEmpty()

        {

        if(top==-1)

                return 1;

        else

                return 0;

  }
```

```
        void push(int value)
        {
                cout<<"Value inserted in Stack :"<<value<<"\n";
        if(this->isFull())
                cout<<"Stack is Full\n";
        else
                a[++top]=value;
    }
        void pop()
        {
                cout<<"\nValue deleted from Stack :";
        if(this->isEmpty())
          cout<<"Stack is Empty\n";
        else
        {
                cout<<a[top--];
                cout<<endl;
        }
    }
        void display()
        {
                cout<<"\nStack : ";
                for(int i=top;i>=0;i--)
                        cout<<a[i]<<"\t";
        }
};
int main()
{
        stack s;
        s.push(6);
        s.push(3);
        s.push(4);
```

```
        s.display();

        s.pop();

        s.display();

        getch();

        return 0;

}
```

```
as9_stack1
Value inserted in Stack :6
Value inserted in Stack :3
Value inserted in Stack :4

Stack : 4       3       6
Value deleted from Stack :4

Stack : 3       6
```

Lab Assigment-9

Q- wap to show the operator overloading of sub-script operator and generate random numbers ?

```
#include<iostream>

using namespace std;

#include<cstdlib>



class inset

{

private:

  int size;

  int *value;

public:

  inset(int s)

  {

    size=s;

    value=new int[4];

  }


  int& operator[] (int index)

  {

    if(index>size)

    {

      cout<<"index out of bound\n";

    }
```

```
    return value[index];


  }


};
void display(inset &is,int size)
{
  for(int i=0; i<size; i++)
  {
    cout << is[i] <<endl;
  }
}


int main()
{
  int s;
  cout<<"program to print random no.\n";
  cout<<"enter the no. of random no. you want to genrate"<<endl;
  cin>>s;
  inset i1(s);
  for(int i=0; i<s; i++)
  {
    int num=rand();
    i1[i]=num;


  }
```

```
 display(i1,s);

}
```

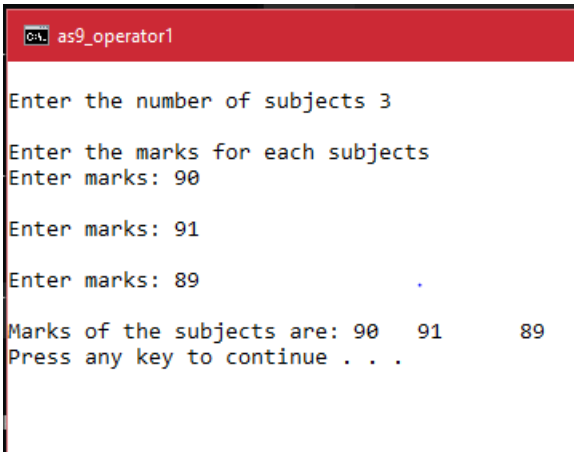
```
as9_operator
program to print random no.
enter the no. of random no. you want to genrate
5
41
18467
6334
26500
19169

Press any key to continue . . .
```

Q- wap to show the operator overloading of sub-script operator and add student marks to an array ?

```
#include<iostream>


using namespace std;


class Intset{

int Size, *value;

public:

   Intset(){

   Size=0;

   value=NULL;

   }


   Intset(int s)

   {

      Size = s;
```

```
    value = new int[Size];
    }

    int& operator[](int index)
    {
    return value[index];
    }

    void display(){
    cout<<"\nMarks of the subjects are: ";
    for(int i=0; i<Size; i++)
    {
        cout<<*(value+i)<<"\t";
    }
    }
};

int main(void){
    cout<<"\nEnter the number of subjects";
    int subs;
    cin>>subs;
    Intset i1(subs);
    cout<<"\nEnter the marks for each subjects";
    int marks;
    for(int i=0;i<subs;i++){
            cout<<"\nEnter marks: ";
            cin>>marks;
            i1[i] = marks;
```

```
    }

    i1.display();

return 0;

}
```



Lab Assigment-10

Q- wap to create currency converter and convert INR currency to USD currency and vice versa ?

Ans-

```
#include <iostream>

using namespace std;

#include <stdlib.h>


void check(int &dr,int &pc)

{

  while(pc>=100)

  {

    dr=dr+1;

    pc=pc-100;

  }

}




class usa

{

private:

  int dollar;

  int cents;


public:

  usa()

  {
```

```
  dollar=cents=0;
}
usa(int d,int c)
{
  dollar=d;
  cents=c;
}

int get_dollar()
{
  return dollar;
}

int get_cents()
{
  return  cents;
}

void set_uvalues(int d, int c)
{
  check(d,c);
  dollar=d;
  cents=c;
}

void udisplay()
{
  cout<<dollar<<": dollar "<<cents<<": cents"<<endl;
```

```
  }

};


class india
{
private:
  int rupees;
  int paisa;

public:
  india()
  {
    rupees=paisa=0;
  }
  india(int r,int p)
  {
    rupees=r;
    paisa=p;
  }


  int get_rupees()
  {
    return rupees;
  }
```

```
  int get_paisa()
  {
    return  paisa;
  }



  void set_ivalues(int r,int p)
  {
    check(r,p);
    rupees=r;
    paisa=p;
  }

  void idisplay()
  {
    cout<<rupees<<":rupees  "<<paisa<<":paisa  "<<endl;
  }
};

void convert2r(india &ic, usa &uc)
{
  int nr,np;
  nr=64*uc.get_dollar();
  np=64*uc.get_cents();
  ic.set_ivalues(nr,np);
  ic.idisplay();
}
```

```
void convert2d(india &ic, usa &uc)
{
  int nd,nc;
  nd=ic.get_rupees()/64;
  nc=ic.get_paisa()/64;
  uc.set_uvalues(nd,nc);
  uc.udisplay();
}


int main()
{
  int ch;
  cout<<"welcome to curency converter\n";
  while (1) {
    cout<<"1. convert INR to USD"<<endl;
    cout<<"2. convert USD to INR"<<endl;
    cout<<"3.exit\n";
    cout<<"enter your choice\n";
    cin>>ch;
    switch (ch) {
      case 1:
      {
        int rs,ps;
        cout<<"INR TO USD\n";
        cout<<"enter rupees you want to convert\n";
        cin>>rs;
        cout<<"enter the paisa you want to convert\n";
        cin>>ps;
```

```
    india i(rs,ps);
    i.idisplay();
    usa u;
    convert2d(i,u);
    cout << "\n\n";
    break;
  }
  case 2:
  {
    int ds,cs;
    cout<<"USD TO INR\n";
    cout<<"enter dollars you want to convert\n";
    cin>>ds;
    cout<<"enter the cents you want to convert\n";
    cin>>cs;
    usa u(ds,cs);
    u.udisplay();
    india i;
    convert2r(i,u);
    cout << "\n\n";
    break;
  }

  case 3:
  {
    exit(0);
  }
}
```

```
 }

}
```

```
as10_convertorv1
welcome to curency converter
1. convert INR to USD
2. convert USD to INR
3.exit
enter your choice
1
INR TO USD
enter rupees you want to convert
64
enter the paisa you want to convert
128
64:rupees  128:paisa
1: dollar 2: cents
```

```
as10_convertorv1
welcome to curency converter
1. convert INR to USD
2. convert USD to INR
3.exit
enter your choice
2
USD TO INR
enter dollars you want to convert
1
enter the cents you want to convert
1
1: dollar 1: cents
64:rupees  64:paisa
```

Q- wap to create metric converter and convert foot/inches to meter/centimeter and vice versa ?

```
#include<iostream>

using namespace std;

#include <stdlib.h>

class FI

{

private:

  float foot;

  float inches;

public:

  FI()

  {

    foot=0.0;

    inches=0.0;
```

```
}

FI(float f, float i)
{
  foot=f;
  inches=i;
}

float get_foot()
{
  return foot;
}

float get_inches()
{
  return inches;
}

void set_fivalues(float f,float i)
{
  foot=f;
  inches=i;
}

void fidisplay()
{
  cout<<foot<<":foot  "<<inches<<":inches  "<<endl;
  cout<<"\n";
```

```
  }

};


class MC
{
private:
  float meter;
  float centimeter;
public:
  MC()
  {
    meter=0;
    centimeter=0;
  }

  MC(float m, float c)
  {
    meter=m;
    centimeter=c;
  }

  float get_meter()
  {
    return meter;
  }
```

```
  int get_centimeter()
  {
    return centimeter;
  }

  void set_mcvalues(float m,float c)
  {
    meter=m;
    centimeter=c;
  }

  void mcdisplay()
  {
    cout<<meter<<":meter  "<<centimeter<<":in  "<<endl;
    cout<<"\n";
  }

};

void fi2mc(FI &f1)
{
  float m,c;
  m=f1.get_foot()*0.30;
  c=f1.get_inches()*2.45;
  while(c>=100)
  {
    m+=1;
    c=c-100;
```

```
  }
  MC m1(m,c);
  m1.mcdisplay();
}

void mc2fi(MC &m1)
{
  float f,i;
  f=m1.get_meter()*3.2;
  i=m1.get_centimeter()*0.30;
  while(i>=12)
  {
    f+=1;
    i=i-12;
  }
  FI f1(f,i);
  f1.fidisplay();
}

int main()
{
cout<<"1 foot = 12 inches"<<endl;
cout<<"1 foot = 0.30 meter"<<endl;
cout<<"1 meter = 100 cm "<<endl;
cout<<"1 meter = 3.2 feet"<<endl;
cout<<"1 centimeter=0.30 inches"<<endl;
cout<<"1 inches=2.45 centimeter"<<endl;
int ch;
```

```
cout<<"welcome to metric conversion\n";
while (1) {
  cout<<"1. convert foot/inches to meter/centimeter"<<endl;
  cout<<"2. convert meter/centimeter to foot/inches"<<endl;
  cout<<"3.exit\n";
  cout<<"enter your choice\n";
  cin>>ch;
  switch (ch) {
    case 1:
    {
      float f,i;
      cout<<"foot/inches to meter/centimeter\n";
      cout<<"enter foot you want to convert\n";
      cin>>f;
      cout<<"enter the inches you want to convert\n";
      cin>>i;
      FI fi(f,i);
      fi.fidisplay();
      fi2mc(fi);
      cout << "\n\n";
      break;
    }
    case 2:
    {
      float m,c;
      cout<<"meter/centimeter to foot/inches\n";
      cout<<"enter meter you want to convert\n";
      cin>>m;
```

```
      cout<<"enter the centimeter\n";

      cin>>c;

      MC mc(m,c);

      mc.mcdisplay();

      mc2fi(mc);

      cout << "\n\n";

      break;    }


    case 3:

    {

      exit(0);

    }

  }

}


}
```

Q- wap to create a employee class and manager class and show the basic functioning of inheritance

Ans-

```
#include<iostream>

#include<cstring>

#include<stdlib.h>

using namespace std;

class employee

{

private:

   char *ename;

   int eno;


public:

   employee()

   {

      cout<<"default constructor\n";

      ename=new char[strlen("newbie")+1];

      strcpy(ename,"newbie");

      eno=0;

      eprint();

   }

   employee(char name[10],int eid)

   {

      cout<<"parameterized constructor\n";

      ename=new char[strlen(name)+1];
```

```
        strcpy(ename,name);
        eno=eid;
        eprint();
    }
    employee(const employee &e1)
    {
        cout<<"copy constructor\n";
        ename=new char[strlen(e1.ename)+1];
        strcpy(ename,e1.ename);
        eno=e1.eno;
        eprint();
    }
    void eprint()
    {
        cout<<"employee name:"<<ename<<endl;
        cout<<"employee id:"<<eno<<endl;
    }
};

class manager:public employee
{
private:
    int dno;
public:
    manager():employee()
    {
        dno=0;
        mprint();
```

```
    }
    manager(char name[],int eid,int did):employee(name,eid)
    {
        dno=did;
        mprint();
    }
    manager(const manager &m1):employee(m1)
    {
        dno=m1.dno;
        mprint();
    }
    void mprint()
    {
        cout<<"department id:"<<dno<<endl;
    }
};
int main()
{
    manager m;
    manager m0("udit",39,10);
    manager m2=m0;
    return 0;
}
```

```
as11_employee
default constructor
employee name:newbie
employee id:0
department id:0
parameterized constructor
employee name:udit
employee id:39
department id:10
copy constructor
employee name:udit
employee id:39
department id:10

Press any key to continue . . .
```

Q- wap to create a 2point class and 3point class and show the basic functioning of inheritance

Ans-

```
#include<iostream>

using namespace std;

class point

{

private:

   int a,b;

public:

   point()

   {

      cout<<"default constructor\n";

      a=0;

      b=0;

      ppoint();
```

```
    }
    point(int x, int y)
    {
        cout<<"parameterized constructor\n";
        a=x;
        b=y;
        ppoint();
    }
    point(const point &p1)
    {
        cout<<"copy constructor\n";
        a=p1.a;
        b=p1.b;
        ppoint();
    }
    void ppoint()
    {
        cout<<"a:"<<a<<endl<<"b:"<<b<<endl;
    }
};


class tdpoint:public point
{
    private:
        int c;
```

```
    public:
        tdpoint():point()
        {
            c=0;
            ttdpoint();
        }
        tdpoint(int x, int y, int z):point(x,y)
        {
            c=z;
            ttdpoint();
        }
        tdpoint(const tdpoint &t1):point(t1)
        {
            c=t1.c;
            ttdpoint();
        }
        void ttdpoint()
        {
            cout<<"c:"<<c<<endl;
        }
};
int main()
{
    tdpoint t1 ;
    tdpoint t2(10,20,30);
```

```
    tdpoint t3=t2;

    return 0;


}
```

as11_3dpoint

```
default constructor
a:0
b:0
c:0
parameterized constructor
a:10
b:20
c:30
copy constructor
a:10
b:20
c:30

Press any key to continue . . .
```

Q- wap to show the basic functioning of Access Specifier

Ans-

```
#include"iostream"

#include<conio.h>

using namespace std;

class A

{

public: int a;

                A()

                {

                        a=10;

                  b=6;

                  c=8;

                }

                void print()

                {

                        cout<<a<<"\t"<<b<<"\t"<<c<<endl;

                }

protected: int b;

private: int c;

};

class B:public A

{

public:void bprint()

                {
```

```
                        cout<<a<<"\t"<<b<<"\t"<<endl;
                        //cout<<"c is not accesible \n";
            }
};
class C:protected A
{
public:void cprint()
                {
                        cout<<a<<"\t"<<b<<"\t"<<endl;
            }
};
class D:private A
{
        public:void dprint()
                {
                        cout<<a<<"\t"<<b<<"\t"<<endl;
            }
};
int main()
{
        A a1;
        B b1;
        C c1;
        D d1;
        a1.print();
        b1.bprint();
        c1.cprint();
```

```
        d1.dprint();

  cout<<a1.a<<"\t";

        return 0;



        getch();

}
```

```
as11_accessspecifier
10      6       8
10      6
10      6
10      6
10
Press any key to continue . . .
```

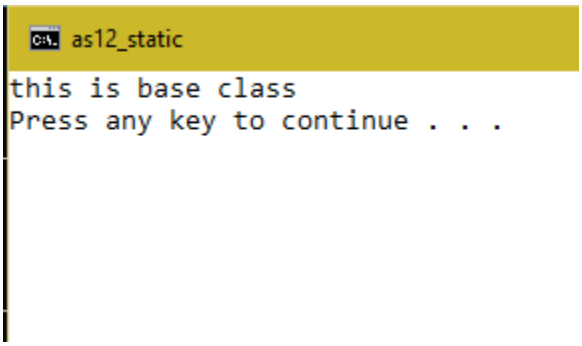
Lab Assigment-12

Q- wap to show the basic functioning of calling of function by reference to an Object.

Ans-

```
#include<iostream>

using namespace std;

#include<cstring>

class base

{

public:

    void show()

   {

       cout<<"this is base class";

   }




};

class derive: public base

{

public:

   void show()

   {

       cout<<"this is derive class";

   }


};

int main()

{
```

```
    base *b;

    derive d;

    b=&d;

    b->show();

    return 0;

}
```

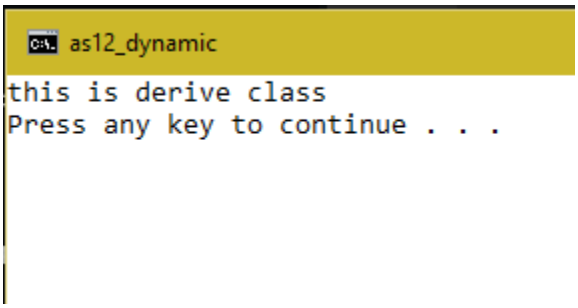


Q- wap to show the basic functioning of Virtual Function.

Ans-

```
#include<iostream>

using namespace std;

#include<cstring>

class base

{

public:

    virtual void show()

   {

      cout<<"this is base class";

   }
```

```
};

class derive: public base

{

public:

   void show()

   {

      cout<<"this is derive class";

   }



};

int main()

{

   base *b;

   derive d;

   b=&d;

   b->show();

   return 0;

}
```



Q- wap to show the functioning of Hybrid Inheritance.

Ans-

```
#include<iostream>

using namespace std;

#include<string.h>




class person

 {

 protected:

   char *pname;

   int age;

 public:

    person(char name[],int a)

    {

        pname=new char[strlen(name)+1];

        strcpy(pname,name);

        age=a;

    }

    void print()

    {

        cout<<"name: "<<pname<<endl;

        cout<<"age: "<<age<<endl;

    }

 };



class teacher :  virtual public person

{

protected:
```

```
    char *tcourse;
public:
    teacher(char name[], int a,char course[]):person(name,a)
    {
        tcourse=new char[strlen(course)+1];
        strcpy(tcourse,course);
    }
    void print()
    {
        cout<<"teaches: "<<tcourse<<endl;
    }
};


class student: virtual public person
{
protected:
    char *ssubject;
public:
    student(char name[], int a,char subject[]):person(name,a)
    {
        ssubject= new char[strlen(subject)+1];
        strcpy(ssubject,subject);
    }

    void print()
    {
        cout<<"studies:"<<ssubject<<endl;
    }
};
```

```
class phd: public teacher, public student

{

private:

   char *spec;

public:

   phd(char name[], int a,char course[],char subject[],char speca[])

   :person(name,a),teacher(name,a,course),student(name,a,subject)

   {

      spec=new char[strlen(speca)+1];

      strcpy(spec,speca);

   }


   void print()

   {

      person::print();

      teacher::print();

      student::print();

      cout<<"specalization:"<<spec;


   }


} ;


int main()

{

   phd p1("udit",23,"xyz","mno","data science");

   p1.print();

   return 0;

}
```

```
as12_multipleinheritance
name: udit
age: 23
teaches: cooking
studies:cutting
specalization:data science
Press any key to continue . .
```

Q- wap to show the functioning Virtual Function.

Ans-

```
#include<iostream>

using namespace std;

#include<cstring>


class gfigure

{

protected:

   int gside;

public:

   gfigure(int s)

   {

      gside=s;

   }

   virtual int area()=0;

   virtual int perimeter()=0;

};


class rectangle: public gfigure
```

```
{
private:
   int rside;
public:
   rectangle(int l ,int b):gfigure(l)
   {
      rside=b;
   }
   int area()
   {
      int a=rside*gside;
      return a;
   }
   int perimeter()
   {
      int p=2*(rside+gside);
      return p;
   }
};


int main()
{
   int length,breadth,ar=0,pr=0;
   cout<<"enter the length of rectangle \n";
   cin>>length;
   cout<<"enter the breadth of rectangle \n";
   cin>>breadth;
   gfigure *g1;
   rectangle r1(length,breadth);
   g1=&r1;
   ar=g1->area();
   cout<<"area of rectangle with length: "<<length<<"  breadth: "<<breadth<<"  is:"<<ar<<endl;
```

```
   pr=g1->perimeter();

   cout<<"perimeter of rectangle with length: "<<length<<"  breadth: "<<breadth<<"  is:"<<pr<<endl;

}
```

```
as12_figure
enter the length of rectangle
5
enter the breadth of rectangle
10
area of rectangle with length: 5  breadth: 10  is:50
perimeter of rectangle with length: 5  breadth: 10  is:30

Press any key to continue . . .
```

Q- wap to show the functioning Exception Handling.

Ans-

```
#include<iostream>

#include<stdlib.h>

using namespace std;

#define min 500

class account

{

private:

   int balance;

public:

   class low{};

   account(int b)

   {
```

```
        cout<<"minimum balance should be: "<< min <<endl;
        balance=b;
        print();
    }
    void dep(int amount)
    {
        balance=balance+amount;
    }
    void wid(int amount)
    {
        int b=balance-amount;
        if(b<min)
        {
            throw low();
        }
        else
        {
            balance=balance-amount;
        }
        print();
    }

    void print()
    {
        cout<<"current balance is:"<<balance<<endl;
    }

};
int main()
{
    account a1(600);
    cout<<"enter the amount to withdraw\n";
```

```
    int amount;

    cin>>amount;

    try

    {

        a1.wid(amount);

    }

    catch (account::low)

    {

        cout<<"cannot withdraw that much amount \n";

    }

    return 0;

}
```

```
as12_exception
minimum balance should be: 500
current balance is:600
enter the amount to withdraw
50
current balance is:550

Press any key to continue . . .
```

```
as12_exception
minimum balance should be: 500
current balance is:600
enter the amount to withdraw
250
cannot withdraw that much amount

Press any key to continue . . .
```

Lab Assigment-13

Q-wap to show the functioning of standard library function(stl-0) ?

Ans-

```
#include<iostream>

using namespace std;

#include <algorithm>

#include <bits/stdc++.h>

void my_fun(int a)

{

  cout<<"element:"<<a*10<<endl;

}

int my_fun1(int a)

{

  return (a*100) ;

}

int main()

{

  int arr[5]={10,11,22,11,40};

  int *p;

  int n= sizeof(arr)/sizeof(arr[0]);

  cout<<"first array\n";

  for(int i=0; i<n; i++)

  {

    cout<<*(arr+i)<<"\t";

  }
```

```
  cout<<endl;

  cout<<endl;

  cout<<"find() stl function \n";

  p=find(arr,arr+n,22);

  cout<<"element 22 found at:"<<(p)-(arr)<<endl;

  cout<<endl;

  cout<<"count() stl function \n";

  cout<<"no. of times 11 apear in array:"<<count(arr,arr+n,11)<<endl;

  cout<<endl;

  cout<<"for_each() stl function // access each element of array for some operation pass each element to
defined function \n";

  for_each(arr,arr+n,my_fun);

  cout<<endl;

  cout<<"transform() stl function // access each element of array for some operation pass each element to
defined function store modified value on new array\n";

  int arr1[n];

  std::transform(arr,arr+n,arr1,my_fun1);

  cout<<"second array after transform stl function \n";

  for(int i=0; i<n; i++)

  {

    cout<<*(arr1+i)<<"\t";

  }

  cout<<endl;

  cout<<"sort() & merge() stl function"<<endl;

  int arr2[2*n];

  sort(arr,arr+n);

  sort(arr1,arr1+n);

  merge(arr,arr+n,arr1,arr1+n,arr2);
```

```
  cout<<endl;

  for(int i=0; i<n; i++)

  {

    cout<<*(arr2+i)<<endl;

  }


}
```

```
as13_stl0
first array
10      11      22      11      40

find() stl function
element 22 found at:2

count() stl function
no. of times 11 apear in array:2

for_each() stl function // access each element of array for some operation pass each element to defined function
element:100
element:110
element:220
element:110
element:400

transform() stl function // access each element of array for some operation pass each element to defined function store
modified value on new array
second array after transform stl function
1000    1100    2200    1100    4000
sort() & merge() stl function

10
11
11
22
40

Press any key to continue . . .
```

Q- Q-wap to show the functioning of standard library function(stl-1) list/vector/deque ?

Ans-

```
#include<iostream>

#include<list>

#include<vector>

#include<deque>

#include<algorithm>

#include "conio.h"

using namespace std;

int main()

{

  int i;

  while(1)

  {

    cout<<endl;

    cout<<"1. vector operation\n";

    cout<<"2. list operation\n";

    cout<<"3. deque operation\n";

    cout<<"4. more list operation\n";

    cout<<"5. exit\n";

    cin>>i;

    switch(i)

    {

      case 1:

      {

        cout<<"vector operation\n";

        cout<<"swap of two vector \n";

        cout<<"traverse using pop_back() \n";
```

```
  double arr[]={10.1,10.2,10.3,10.4,10.5};
  int n=sizeof(arr)/sizeof(arr[0]);
  vector<double> v1(arr,arr+n);
  cout<<"size of vector v1 is:"<<v1.size()<<endl;
  cout<<"elements of vector v1 is:"<<endl;
  for(int i=0;i<n;i++)
  {
    cout<<v1[i]<<"\t";
  }
  cout<<endl;
  vector<double> v2(n);
  cout<<"swap(),pop_back(),push_back(),back(),size() stl vector function"<<endl;
  v1.swap(v2);
  cout<<"size of vector v2 is:"<<v2.size()<<endl;
  cout<<"elements of vector v1 is:"<<endl;
  while(!v2.empty())
  {
    cout<<v2.back()<<"\t";
    v2.pop_back();
  }
  cout<<endl;
  cout<<endl;
 }
break;



case 2:
 {
  cout<<"list operation\n";
```

```
  cout<<"push_front(),front(),pop_front(),size() stl list functions\n";
  int a[]={10,20,30,40,50};
  int n=sizeof(a)/sizeof(a[0]);
  list<int> li;
  for(int i=0;i<n;i++)
  {
    li.push_front(a[i]);
  }
  cout<<"size of list li is:"<<li.size()<<endl;
  while(!li.empty())
  {
    cout<<li.front()<<"\t";
    li.pop_front();
  }
  cout<<endl;
 }
break;


case 3:
{
  cout<<"deque operation\n";
  cout<<"pop_back(),push_back(),back(),push_front(),front(),pop_front(),size(),empty stl list functions\n";
  deque <int> de;
            de.push_back(30);
            de.push_back(40);
            de.push_back(50);
            de.push_front(20);
            de.push_front(10);
```

```
  int q=de.size();
            cout<<"Size of dequeue :"<<q<<endl;
             for(int i=0; i<q; i++)
   {
     cout<<de[i]<<"\t";
     cout<<endl;
   }
            de[2]=33;
            while(!de.empty())
  {
    cout<<de.front()<<"\t";
    de.pop_front();
  }
  cout<<endl;
}
break;
case 4:
{
  cout<<"more list operation\n";
  cout<<"reverse(),merge(),unique() stl list functions\n";
  int a[]={10,20,30,40,50};
  int n=sizeof(a)/sizeof(a[0]);
  list<int> li;
  for(int i=0;i<n;i++)
  {
    li.push_front(a[i]);
  }
  cout<<"before merging \n";
  cout<<"size of list li is:"<<li.size()<<endl;
```

```
        list<int> l1;
        l1.push_front(35);
                l1.push_front(30);
                l1.push_front(25);
                l1.push_front(20);
                l1.push_front(15);
        l1.reverse();
        li.merge(l1);
        li.unique();
        while(!li.empty())
        {
          cout<<li.front()<<"\t";
          li.pop_front();
        }
        cout<<"\n";
        cout<<"before merging \n";
        cout<<"size of list li is:"<<li.size()<<endl;
      }
      break;
      case 5:
      {
        exit(0);
      }
    }
  }
  return 0;
}
```

as13_stl1

```
1. vector operation
2. list operation
3. deque operation
4. more list operation
5. exit
1
vector operation
swap of two vector
traverse using pop_back()
size of vector v1 is:5
elements of vector v1 is:
10.1    10.2    10.3    10.4    10.5
swap(),pop_back(),push_back(),back(),size() stl vector function
size of vector v2 is:5
elements of vector v1 is:
10.5    10.4    10.3    10.2    10.1
```

```
2
list operation
push_front(),front(),pop_front(),size() stl list functions
size of list li is:5
50      40      30      20      10
```

```
deque operation
pop_back(),push_back(),back(),push_front(),front(),pop_front(),size(),empty stl list functions
Size of dequeue :5
10
20
30
40
50
10      20      33      40      50
```

```
more list operation
reverse(),merge(),unique() stl list functions
before merging
size of list li is:5
35      30      25      20      15      50      40      30      20      10
```

Q-wap to show the functioning of standard library function(stl-2) list/vector/deque with iterator?

Ans-

```
#include<iostream>

#include<list>

#include<algorithm>

using namespace std;

int main()

{

  int arr[]={1,2,3,4};

  list<int> li;

  int n=sizeof(arr)/sizeof(arr[0]);

  cout<<"array of integers: is\n";

  for(int i=0;i<n;i++)

  {

    cout<<arr[i]<<"\t";

    li.push_back(arr[i]);

  }

  cout<<'\n';

  cout<<"no. of elements in list\n"<<n<<endl;

  cout<<"size oflist li:"<<sizeof(li)<<endl;

  list<int>::iterator it;

  cout<<"printing of list 1 using iterator \n";

  for(it=li.begin();it!=li.end();it++)

  {

    cout<< *it<<"\t";

  }

  cout<<"\n \n";
```

```
  list<int> li1(4);

  static int data=1;

  cout<<"inserting data into list 2 using iterator\n";

  for(it=li1.begin();it!=li1.end();it++)

  {

    data*=2;

    *it=data;

  }

  cout<<"printing of list 2 using iterator\n";

  for(it=li1.begin();it!=li1.end();it++)

  {

    cout<< *it<<"\t";

  }


  cout<<"\n \n";

  cout<<"special list iterator  revesre function\n";

  list<int>::reverse_iterator ti;

  cout<<"reversing the elements of list 1\n";

  for(ti=li.rbegin();ti!=li.rend();ti++)

  {

    cout<<*ti<<"\t";

  }


  return 0;

}
```

```
as13_stl2
array of integers: is
1       2       3       4
no. of elements in list
4
size oflist li:12
printing of list 1 using iterator
1       2       3       4

inserting data into list 2 using iterator
printing of list 2 using iterator
2       4       8       16

special list iterator  revesre function
reversing the elements of list 1
4       3       2       1
Press any key to continue . . .
```

Q-wap to show the functioning of standard library function (stl_ac) list with iterator?

```
#include<iostream>

#include<list>

#include<algorithm>

using namespace std;

class person

{

private:

  string fname;

  string lname;

  int age;

public:

  person(string l,string f,int a)

  {

    fname=f;

    lname=l;
```

```
    age=a;
  }
  void display()
  {
    cout<<"person name:  "<<fname <<lname<<endl;
    cout<<"person age is: "<<age<<endl;
  }
  void operator << (ostream &out)
  {
    out<<"neme of person"<<fname <<lname <<endl;
    out<<"person age is:"<<age<<endl;
  }
};
int main()
{
  person p1("jhon","doe",18);
  person p2("captain","clove",18);
  list<person> li;
  li.push_back(p1);
  li.push_back(p2);
  list<person>::iterator it;
  for(it=li.begin();it!=li.end();it++)
  {
    *it<<cout;
    cout<<"\n";
  }
  return 0;
}
```

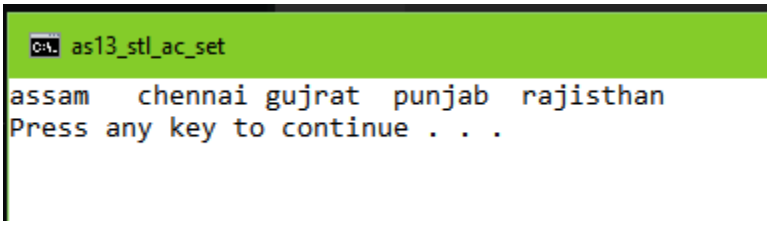
```
as13_stl_ac
neme of persondoejhon
person.age is:18

neme of personclovecaptain
person age is:18


Press any key to continue . . .
```

Q-wap to show the functioning of standard library function (stl_ac_set) SET with iterator?

Ans-

```
#include<iostream>

#include<list>

#include<set>

#include<algorithm>

using namespace std;

int main()

{

  string state[]={"punjab","gujrat","rajisthan","assam","chennai"};

  int n=sizeof(state)/sizeof(state[0]);

  set<string,less<string> >states;

  for(int i=0;i<n;i++)

  {

    states.insert(state[i]);

  }

  set<string,less<string> >::iterator it;

  for(it=states.begin();it!=states.end();it++)
```

```
 {
   cout<<*it<<"\t";
 }
 return 0;
}
```



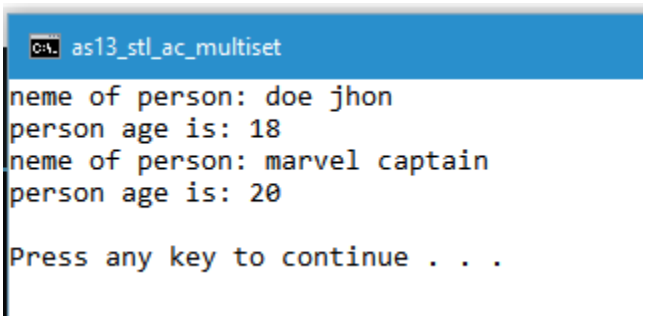
Q-wap to show the functioning of standard library function (stl_ac_multiset) MULTI_SET with iterator?

Ans-

```
#include<iostream>
#include<list>
#include<set>
#include<algorithm>
#include <iterator>
using namespace std;
class person
{
private:
  string fname;
  string lname;
  int age;
public:
  person(string l,string f,int a)
```

```
  {
    fname=f;
    lname=l;
    age=a;
  }
  bool operator < (const person &p) const
  {
      return(age<p.age);
  }
  ostream& operator << (ostream &out) const
  {
    out<<"name of the person"<<fname<<lname<<endl;
    out<<"age of person"<<age<<endl;
    return out;
  }
  void display() const
  {
    cout<<"neme of person: "<<fname<<" "<<lname <<endl;
    cout<<"person age is: "<<age<<endl;
  }
};
int main()
{
  person p1("jhon","doe",18);
  person p2("captain","marvel",20);
  multiset <person, less <person> > mu;
  mu.insert(p1);
  mu.insert(p2);
  multiset <person, less <person> > :: iterator it;
```

```
  for(it=mu.begin(); it!=mu.end(); it++)
  {
     it->display();
  }
  return 0;
}
```



Q-wap to show the functioning of standard library function (stl_ac_map) MAP with iterator?

```
#include<iostream>
#include<list>
#include<set>
#include<algorithm>
#include <iterator>
using namespace std;
class person
{
private:
  string fname;
  string lname;
  int age;
```

```
public:
  person(string l,string f,int a)
  {
    fname=f;
    lname=l;
    age=a;
  }
  bool operator < (const person &p) const
  {
      return(age<p.age);
  }
  ostream& operator << (ostream &out) const
  {
    out<<"name of the person"<<fname<<lname<<endl;
    out<<"age of person"<<age<<endl;
    return out;
  }
  void display() const
  {
    cout<<"neme of person: "<<fname<<" "<<lname <<endl;
    cout<<"person age is: "<<age<<endl;
  }
};
int main()
{
  person p1("jhon","doe",18);
  person p2("captain","marvel",20);
  multiset <person, less <person> > mu;
  mu.insert(p1);
```

```
  mu.insert(p2);

  multiset <person, less <person> > :: iterator it;

  for(it=mu.begin(); it!=mu.end(); it++)

  {

     it->display();

  }

  return 0;

}
```

```
as13_stl_ac_map
searching the population of a state
enter state name
gujrat
population of gujrat is:200

Press any key to continue . . .
```

Lab Assigment-14

Q-wap in c to show functionality of static data member &member function

ANS-

```
#include<iostream>

using namespace std;

class point

{

private:

   int x,y;

   static int cnt;

public:

   point()

   {   ++cnt;

       x=y=0;



   }

   point(int a, int b)

   {

       ++cnt;

       x=a;

       y=b;



   }

   point(const point &p0)
```

```
    {
        ++cnt;
        x=p0.x;
        y=p0.y;

    }
    static int get_cnt()
    {
        return cnt;
    }

};
int point::cnt=0;
int main()
{
    point p1;
    point p2(10,20);
    point p3(p2);
    int c=point::get_cnt();
    cout<<"no. of objects created\n"<<c<<endl;
    return 0;
}
```

```
as14_static_member
no. of objects created
3

Press any key to continue . . .
```

Q-wap in c to show the functionality of friend function in c++

```
#include<iostream>

using namespace std;

class point

{

private:

  int x,y;

public:

  friend void func(point &po);

  point(int a,int b)

  {

    cout<<"settting of points through parameterized constructor\n";

    x=a;

    y=b;

  }

};


void func(point &po)

{

  cout<<"accessing private data memmbers through friend function";

  cout<<"x: "<<po.x<<endl;

  cout << "y: "<<po.y<<endl;

}


int main()
```

```
{

  point p1(10,20);

  func(p1);

}
```

```
as14_friend_func
settting of points through parameterized constructor
accessing private data memmbers through friend function
x: 10
y: 20

Press any key to continue . . .
```

Q-wap in c to show file stream operation by writing and reading from a file

```
#include <iostream>

#include <fstream>


using namespace std;


int main()

{

   fstream st;

   char text[50];

   st.open("file_stream.txt",ios::out);

   if(!st)

   {

      cout<<"File creation failed\n";

   }

   else

   {

      cout<<"Creation of file and Writing to file\n";

      cout<<"write content to file\n";

      cin.getline(text,50);

      st<<text;

      st.close();

   }

   st.open("file_stream.txt",ios::in);

   if(!st)
```

```
    {
        cout<<"No such file\n";
    }
    else
    {
        cout<<"Opening file and Reading from a file\n";
        char ch;
        while (!st.eof())
        {
            st >>ch;
            cout << ch;
        }
        st.close();
    }
    return 0;
}
```