**1} Perform Binary search operation**

**Binary search:**

**package** com.labexam.entity;

**public** **class** BinarySearch

{

**public** **int** search(**int** arr[],**int** start,**int** end,**int** element)

{

**if**(start==end)

{

**if**(arr[start]==element)

{

**return** start;

}

**else**

**return** -1;

}

**int** mid= (start+end)/2;

**if**(element == arr[mid])

**return** mid;

**if**(element > arr[mid])

**return** search( arr,(mid+1), end, element);

**else**

**return** search(arr,0, (mid-1),element);

}

}

Binary search Main:

**package** com.labexam.entity;

**import** java.util.Scanner;

**public** **class** BinarySearchMain

{

**public** **static** **void** main(String[] args)

{

BinarySearch obj= **new** BinarySearch();

**int** arr[]= { 15 , 32 , 24, 67 ,49,10};

**int** end,element;

end= arr.length-1;

Scanner sc= **new** Scanner (System.***in***);

System.***out***.println("enter element to search=");

**int** num= sc.nextInt();

//int x= obj.search(arr, 0, end, num);

//int x= obj.search(arr, 0, end,num);

**int** x= obj.search(arr, 0, end, num);

System.***out***.println("index="+x);

**if**(x>=0)

{

System.***out***.println("element at position="+(x+1));

}

**else**

{

System.***out***.println("element not found");

}

}

}

OUTPUT:

enter element to search=

44

index=-1

element not found

enter element to search=

15

index=0

element at position=1

**2} Implement stack using array concepts**

**Stack:**

**package** com.labexam.entity;

**import** java.util.Scanner;

**public** **class** Stack

{

Scanner sc= **new** Scanner(System.***in***);

**int** top=-1;

**int** n=10;

**int** a[]= **new** **int**[n];

**void** push()

{

**if**(top==(n-1))

{

System.***out***.println("overflow");

}

**else**

{

System.***out***.println("Enter items");

**int** i=sc.nextInt();

top=top+1;

a[top]=i;

}

}

**void** pop()

{

**if**(top==-1)

{

System.***out***.println("undeflow");

}

**else**

{

top=top-1;

System.***out***.println("Item deleted is="+a[top+1]);

}

}

**void** display()

{

System.***out***.println("items are");

**for**(**int** j=top; j>=0;j--)

{

System.***out***.println(a[j]);

}

}

}

**Stack Main:**

**package** com.labexam.entity;

**public** **class** Stack\_array

{

**public** **static** **void** main(String args[])

{

Stack s= **new** Stack();

s.push();

s.push();

s.push();

s.push();

System.***out***.println("All items inserted");

System.***out***.println();

s.pop();

s.pop();

//System.out.println("Item deleted");

System.***out***.println();

s.display();

}

}

**OUTPUT:**

Enter items

10

Enter items

20

Enter items

30

Enter items

40

All items inserted

Item deleted is=40

Item deleted is=30

items are

20

10