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Tender Heart high School

Class: X

Date: 22.07.2024

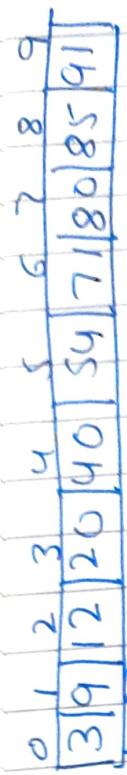
Topic: Array [Linear Search & Binary Search]

1. Input 10 numbers in a S.D.A. Now enter a number and search whether it is present in the given array or not using Linear search Technique/Sequential

```
import java.util.*;
Class LinearS
{
  public static void main()
  {  int n; f=0
    Scanner sc = new Scanner (System.in)
    int a[] = newint [10];
    System.out.println("Enter 10 numbers:");
    for(i=0; i<10; i++)
    {
      a[i]= sc.nextInt();
    }
  System.out.println("Enter the number to search");
        n = sc.nextInt();
  for(int i=0; i<10; i++)
    {
      if(a[i]==n)
        {
          f=1;
          break;
        }
    }
  if(f==1)
    System.out.println("search successful");
  else
    System.out.println("unsuccessful");
}
```

2. Input 10 numbers in a SDA. Now enter a number and search whether it is present in the given array or not using binary search.

```
import java.util.*;
class ls
{
public static void main(string args[])
{
  Scanner sc = new Scanner(system.in);
  int a[] = new int[10];
  System.out.println("Enter 10 numbers");
  for(int i=0; i<10; i++)
  {
    a[i] = sc.nextInt();
  }
  System.out.println("Enter the number
                      to search");
  int n = sc.nextInt();
  while(l<=u)
  {
   mid = (l+u)/2
   if(a[mid]>n)
     u = mid-1;
   if(a[mid]<n)
     l = mid+1;
   if(a[mid]==n)
   { f=1;
     break;
   }
  }
```



① $l = 0$, $u = 9$

$mid = (l+u)/2 = (0+9)/2 = 4$

$a[4] = 40$

②

$l = mid+1 = 4+1 = 5$

$mid = (5+9)/2 = 7$

$a[7] = 80$

(3)
l = mid-1
mid = (l+u)/2
= (5+6)/2
=>
a[5] = 54

(4) l = mid+1
mid = (l+u)/2
(6+6)/2
a[6] = 71

```
if (f==1)
System.out.println("search successful
    number is Present");
else
    system.out.println("search
unsuccessful number is not present");
}
}
```

Class: X — Tender Heart High School
Computer Application Prabhdeep kaur

Arrays [sorting]

Sorting // to arrange array in some particular order only for single dimensional array

Selection — Bubble

Selection → means - to arrange sort particular number

Eg. for logic

	0	1	2	3	4	5	6	7
	43	96	48	55	88	26	14	76

① min = 0 & 6

Compare value of 0th item and interchange with smallest like in 1st run 0th position value interchange with 6th

	0	1	2	3	4	5	6	7
② min = 1 & 5	14	96	48	55	88	26	43	76
③ min = 2 & 6	14	26	48	55	88	96	43	76
④ min = 3 & 6	14	26	43	55	88	96	48	76
⑤ min = 4 & 6	14	26	43	48	88	96	55	76
⑥ min = 5 & 7	14	26	43	48	55	96	88	76
⑦ min = 6 = 6	14	26	43	48	55	88	88	96
⑧ min 7 = 7	14	26	43	48	55	76	88	96

a = 5
b = 10

c = a
a = b
b = c

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Selection SORT

* Program: Sort 10 integers in ascending order

```
import java.util.*;
class select
{
  public static void main(String args[])
  {
    Scanner sc = new Scanner(System.in);
    int i,j,min,t;
    int a[]= new int[10];
    System.out.println("Enter numbers");
    for(i=0;i<10;i++)
    {
      a[i] = sc.nextInt();
    }
for(i=0;i<9;i++)
 {
    min = i;
 for(j=i+1;j<10;j++)
 {
   if(a[j]<a[min])
      min=j;
 }
     t = a[i];
    a[i] = a[min];
    a[min] = t;
 }
System.out.println("sorted array");
 for(i=0;i<10;i++)
System.out.println(a[i]);
}
```

Program to input 10 integers in a SDA. Sort the numbers in ascending order by using the 'Bubble Sort' technique. Display sorted array

```
import java.util.*;
class bubblesort
{
 public static void main(String args[])
 {
 Scanner sc = new Scanner(System.in);
 int i,j,t;
 int a[] = new int[10];
 System.out.println("Enter 10 numbers");
 for(i=0; i<10; i++)
 {
   a[i] = sc.nextInt();
 }
 for(i=0; i<9; i++)
 {
  for(j=0; j<(9-i); j++)
   {
      if(a[j] > a[j+1])
       {
          t = a[j];
          a[j] = a[j+1]
         a[j+1] = t;
       }
   }
  }
 System.out.println("The sorted array");
 for(i=0; i<10; i++)
  {System.out.println(a[i]);
  }
}
```