

LABORATORY WORK BOOK

Name of the Student								Roll Number							
Class CSD-B Semester Moid Semester								I) I I	umbe	"	*,			
Course Code: ACSDII								5	1	0	7	B	3		
Name of the Course Faculty Dr. 61. Suchari-Iba Reckly Faculty ID In PE 108													05		
		76.00 A													
	xercise iv	EXERCISE NAME	MARKS AWARDED												
S	S. Exercise		Aim/ Preparation	Algorithm			Program Execution			Viva - Voce	T	Total			
				Performan			Results and Error Analysis		T						
			4		4		4			4	2	20			
	5-1	Linear Search	4-4-7-4	Hg · L	(3) (Exis										
2	3.3	Binary Search		,	译在17 ₂ 11	MIYS	j	37	7						
3	3- 3	United Binary Search			teles.	na př	le:				7. T				
4	9·4	Interpolation Search			()	بروا -	a j g				46	-			
5	3. 5	Fibonacci Search							"5 P			77	Ţ		
6	Tal .		17.54		1		%	11/	~)));	7.1		ŀ		
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N. Ravi chandrika Signature of the Student

Signature of the Faculty

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-Aim: Linear scarch is defined as searching algorithm where the list
9.1
   phodata is traversed from one end to find the destreed value. Give
   an array of netements, write a recursive function to search a given
   eliment on in anci.
   Code:
    imposit java. util. Scannes;
   class Marns
       public static int linear Search (int[] array, intx) &
          boolean istrue = true;
          int cresult = 0:
         for (int i=0; i Larray. length; i+1) §
            if (x==array(i)) $
                istrue = false;
                 result += ?;
        it (istrue) à
             return -1;
        Clse &
            return result;
     z
    public Static void main (string[]args) {
         Scanner sc=new Scanner (system-in);
         int nesc. next anto;
         String m=sc. nextlinecs;
```

```
String[] inputA = sc-rentLine(). split(" ");
      int[] anay = new int(n);
     for (int 1=0; 12n; 1+1){
         array[i] = Integer. parse Int (input A[i]);
      int x=sc.nentant();
      system. out. print in (linear Search Cartay in));
      z
                             Palapan a (talent ma) E
                                the lating with
   Input: arre] = $10,20,80,30,60,50,110,100,130,170 %
                             Albumi edderiaddi:
          2=110;
                               ir bibar diff
  Output: 6
     Element a is present at index 6.
 Aim: Brinary Search is defined as a searching algorithm wed in
a souted array by prepeatedly dividing the search interval in
hay. The idea of binary search is to we the information that the
array is sorted and reduce the complexity to O(logn).
                            () million be and prine
Code:
import java. util. Scanner;
empart java- util. Arrays;
                             dollar come in [7 hi
class Marn &
        public static int Binary Search (int( ) arr, int target) &
```

```
Anays-sout (arr):
       int low=0;
       int high=am.length-1;
       while Clow/= high) &
           int mid = (Lowthigh)/2;
           it (arr[mid]) == target) {
           outun mid;
         of (arr [mid] & target)?
              low=mid+1:
       Topic : topic
          if (arrimid) > target) }
              high = mid-1;
          4
                                           : hugher
                  themself a far properly at transmit
     Howtun phinon is an insular at come yourself the
public static void main (String [jargs) {
    Scanner sc = new Scanner (System . PD);
                             are papers of hamily
      First D = SC. next(Int();
      String m = scineatline();
      String[] in put = sc. next Lineco. split(" ");
      int[]arr = new int[n]; it is the file that
      tor (int i=0; izn; i++)$
                                        frankt and
            art (i) = Integer. Parse Int (input (i));
```

```
"int target = sc-neart Int();
             System-out print In (binary Search (arritarget));
      3.
     Popul: alt = [2,5,8,12,16,23,38,56,72,91]
                                            7 (4)
           x= 23
    Output: target = 23 mm months of the
            Flement 23 is present at index 5.
2.3 Aim: Uniform Binary Search is an optimization of Binary
    search algorithm when many searches are made on same
   array of many analys of some size.
   Code:
    imposit java. util. Scanner;
                     · ) Inti sull - un dat.
    class Main?
         public State Port binary Search (Int C) arr, Port *) {
            int low=0;
            int high = array. length-13 of
            while (Law = high) &
                int mid = (Low thigh) /a;
                it (arr(mid) = = x) &
                    outun mid; (minin in mid) italian
               it (an (mid) LX) f
```

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ROLL NUMBER
                                                                                       low midtle
                                                                                                                                          and the first of the first of
                                                                             A Con Chard >x> {
                                                                                          high = mid - 1;
                                                                                                                                             ووالمناف الماد الأكامة الارتورسي والم
                                                       Julium -1;
                                     public state void main (strong argues) &
                                                      Scanner scanner Scanner (System. in);
                                               int n= sc-neatanto;
                                                                                                                                                          and through the foreign
                                                  String m= sc. nextline();
                                               String[] input = sc. nextline(). &plit(" ");
                                              int[]air = new int [n];
                                          tor (Pot 1=0; ren; P++) &
                                                              arrCi)=Integer. ParseInt (Popul (1)):
                                                                                                                                                                                                                           Fillers Lut-
                                        2 - The state of t
                                            Int x = sc. next2n+();
                                          system. out. println(binary search (arr, x)):
                                  B
Input: array = $1,3,5,6,7,8,9%, V=3
```

Output: Position of array = 200

KIN War Land

ROLL NUMBER: 2.4 Am: Interpolation search works better than Binary search for a souted & uniformly distributed dray. Binary Search gold to maddle element to check, irrespective of search key. While interpolation goes to different locations was to search key. Code: import java. util. scanner; public class maring public Static int interpolation Search (inti)am, int n, inta){ "int low = 0, high=n-1; While (lowc=high & & n>= arr [law] & & x = arr (hgh))? it (iau = = high) & it (arrElow) == (arolarr) ti oreturn -i; 4 Pot pos= low + ((2-arrolow) *(high-low)) (arrChigh] -arr[low]); if (arr(pos) == 2) actum pos; (+ (ari (pos) /n) low = posti; else high = pos-1; Colone : testing

public state void main (string () aigs) & Scanner Sc=new Scanner (System-in);

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Pot n'= scanner. next 2nt();
        scanna. nextline();
        PotClair = newPot (n);
        for (int 1=0; 12n; 1++)&
            anci) = scanner-newtontc);
        4
        ant target = scanner · nextantos;
        Port Ender = Enterpolation Search (arr, n, target);
        it (index 1= -1) &
           (System. out. prentln (inden);
        Belse Entre (4 . 1 in 18 1 18 1
            System. aut. prentin ("-1");
    sanner closeco;
the literacy
           in white ( con for ship) if
```

an = [1,2,3,4,5,6,7,8,9]

Output: Target = 5.

Asim: Girven a souted array array of sizer and an element 2 to be scarched in it. Return index of a ij. it is The William State of the Williams poresent: my horación a man de man

H-307 & Will belg

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Code:
Empartjava. Wil. Scanner;
public class Main &
       public static void main (string args()) §
            Scanner Scanners new Scanner Courtemains.
            System-out-print("Enter the no- of fibonacci");
            Put n= scanner nent 2ntc);
           System. out-print ("Sequence upto" + n" terms:").
           int d = 0, b=1;
           tor(int P=0; 12=n; 1+1) &
                System. out. print (a +" ");
                Pot next = a+b;
                a = b;
                be neat.
           P
           Scanner. Close (7;
  જુ.
```

Popul: arrc] = & 2,3,4,10,407, 7=40 Output: Element on is present at Prodem 3.