

## LABORATORY WORK BOOK

Name of the Student: Racherla Santhosh	Roll Number									
Class II-B Semester 03  Course Code: AGSD11 Course Name DS Laboratory	2	3	9	5	1	A	1	2	G	3
Name of the Course Faculty Ms. K. Laxmunavayanamma  Exercise Number . 03 Week Number . 03			Faculty ID JARE 10033							

	Exercise Number EXERCISE NAME	And the second	MARKS AWARDED							
			* Aim/	Performance in the Lab Calculations and Graphs		Source Code	Program Execution	Viva -	Total	
		EXERCISE NAME	Preparation			Calculations and Graphs	Results and Error Analysis -	Voce		
	1		4				4	4	20	
1	3.1	Bubble Sort	oh .	- (0)	1	. Asto	i. jon			
2	3-2	Bubble Sort Selection Sort		2		,				
3	3.3	Insertion Sort	Surve	200	J J					
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Signature of the Student

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- 3. Sorting.
- 3.1 Bubble Sout: -

AIM: - Write a Program wring Bubble Sort, It is the Dimplest Dorting algorithm that works by repeatedly Dwapping the adjacent elements if they are in the wrong Order. This Algorithm is not Duitable for large data Dets as its average and worst-case time complexity is quite high.

PROGRAM : -

import java. util. Scanner;

Public class Bubble Sort {

Public Dtatic void bubble Sort (int [] avor) {
int n = avor. length;
boolean Swapped;

for (int 1=0; 1<n-1; 1++) {

Owapped = false;

```
for (int j=0; j+n-1-i; j++) (
      if ( aur [i] > aur [i+1]) {
    int temp = avoi [j];
        au [j] = au [j+1];
         av. [j+1.] = temp;
       Dwapped = true;
              elpotem. out. printly ("Original on
   if (! Swapped) break;
                         buble Sort (and);
Public Statie void print Array (int [] our)
   for (int i: our)
     System. out. print (i + "");
   elystem. out. printin();
                                     KLBULT !
Public Statie void main (String (7 augs)
  Scanner Dcanner = new Scanner (System. in);
  System. out. print ("Enter the no. of elements:");
```

```
int n = Decamnen next Int ();
     int () au = new int (n);
     System. out. pointly (" Enter the elements:");
     for (int i=0; i<n; i++) {
      au [i] = Ocamner. next Int();
    System. out. println (" Oviginal averay:");
    PrintArray (au);
                      3 Maryo (haggowill .)
    bubble Sout (avr);
   System. out. println (" Sorted array: ");
   Pount Array (avr);
   Ocanner. < lose ();
                        2 () alting . the . motoge
RESULT : -
INPUT: Enter the no. of elements: 4
       Enter the elements: 6 3 05
OUTPUT: 0 3 5 6 ... said ) faire at the medicine
```

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Selection : Sout o : 130 ) your of their sites sites sites
3.2
                          ( ruca ; i Jai ) roj
    AIM: - Write a Program to Sout the given
     list of elements using Selection Sort.
                            System. out, println();
    PROGRAM : -
     import java. util. Scanner; de Lier side.
    Public < lars Selection Sort &
      Public Static void Selection Sort (int [] aur) {
         int n = over length ; the many = ! the
         for (int i=0; i<n-1; i++)
          int minIdx = i still dising the material
          for (int i= i x 1; j=n; j++) {
             if (wor [i] < wor [min Idx]) {
               minIdx = j;
             elegen out printin ("Organal orong:");
         int temp = our [min Idx]:
          our [min Ida] = our [i];
          avi [i] = temp; i l'étiq . too most opé
```

```
Public Static void print Array (int [] aur) &
  for (int i: wu) {
  System. out. print (i + "").
    of dements using solution sont.
  System. out. println();
Public Static void main (String [] arys) {
  Scanner Doanner = new Scanner (System in);
 System. out. print ("Enter the no. of elements:");
 int [] our = new int [n];
 System. out. println ("Enter the elements:");
 for (int i=0; i=n; i++)
   our si] = Ocamner nextInt();
                  भागानिक कर्मा
System.out. println ("Oviginal avoisy:");
Print Array (avr);
Delection Sort (avr); [i] roce = [site in ] mo
System. out. println (" Sorted away:");
```

3.3

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Point Array (avr):
    Dramner. close ();
          ( usis [i] was as o == i) sline
             2 [ i ] row = [1+1] row
RESULT : -
INPUT: Enter the no. of elements: 5
       Enter the elements: 64 25 12 22 11
OUTPUT: Original away: 64 25 12 22 11
    Sorted array: 11 12 22 25 64.
                      ) ( 1000 : 1 thi ) rot
Invertion Sort: - (1 + i) take two motoris
AIM: - Write a Program to Sort the given
list of elements using Invertion Sort.
PROGRAM : - was 12 and to more bior salate silling
import java. util. Scanner,
Public < lass Insertion Sort : { ) ding . to . models
Public Static void Insertion Sort (int [] aur) 6
      int n = aux. length; as = aux [] to
```

```
int Key = our [i]; , our port thin!
   int j=i-1;
                    Decemen elevel);
   while ( i >= 0 && ovr [i] > key) 6
      aur [i+1] = aur [i];
      j = j - 1;
          INPUT: Enten the no. of elements: 5
g avr [i+1] = Key: atnomolo alt rotal
      OUTPUT: Original array: 64 25 12 22
Public Static void print Array (int (1 wor) {
  for (int i: over) (
   System. out. print (i + "");
 AIM: - White a program to sort the given
 System.out. println();
Public Static void man (String[] arys) {
  Scanner Deanner = new Scanner (System in);
 System. out. print ("Enter the no. of Elements:");
 int h = Ocamner. next Int();
  int [] our = new int [n] ; now = 1 + in
 System. out. print (" Enter the elements:");
```

```
for ( int i=0; i<n; i+1) { -: 200 AVIV
       over [i] = Scanner. next Int();
  System. out. println ("Oviginal away: ");
Paint Array (aur):
  Point Array (aur);
  insertion Sort (aur);
  System. out. printin ("Sorted array:");
    Pount Array (av); . privesass. Lano, prisplano
  ocamner. < lose(); ; too stand on total
It is the assupport disting algorithm that we
RESULT : Tools trospino get priggous ulbelages yo
INput: Enter the no. of elements: 8
      Enter the elements: 4 3 2 10 12 1 56
OUTPUT: Original averay:
      4 3 2 10 12 1 5 6
      Sorted array:
      1 2 3 4 5 6 10 12.
```

VIVA VOCE :-

- 1) What is Sorting?
- A) Sorting is the process of arranging elements

  (like numbers or words) in a specific order,

  typically in ascending or descending order. It

  helps in organizing data for easier searching,

  analyzing, and processing.
- 2) What is Bubble Sort?
- A) It is the Simplest Sorting Algorithm that Works by repeatedly swapping the adjacent elements if they are in wrong order.

Example: - (5/1 4 2 8)

First Pars:

Second pars:

Third pars:

What is Selection Sort?

a Comparison - based Dorting algorithm that works by iteratively Delecting the Smallest (or largest) Element from the unsorted portion. of the list & placing It into the coverect position in the Sorted Portion. This Process

3)

4)

is repeated until the entire list is souted,.

Example: - 20 12, 10 15 2,

20 12 10 15 2

20 12 10 15 2

20 12 10 15 2

20 12 10 15 2

2] 12, 10 15 20

2] 12 10 15 20

2] 12 10 15 20

2] 12 10 15 20

2 10 12 15: 20

2 10] 12 15 20-

2 10] 12 15 20 T

2	10	12]	15	20
2,	10	12	15	20
2,	10	12]	15	20
2	10	12	15]	20
2	10	12	15	20

4) What is Insertion Sout?

It is a Simple sorting algorithm that Works the way we sort playing cards in our Hands. The array is situally split into a sorted and an upsorted part. Values from the unsorted part are picked and placed at the Correct position in the sorted part.

Example: 
$$-4321012156$$
 $4321012156$ 
 $3421012156$ 

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12 1 5 6 2 10 3 12 1 5 6 3 4 10 2 10 12 1 5 2 3 5 6 10 12 1 2 3 4 5 10 12 6 3 4 1 2 2 3 6 10 [4] 5 Xoui de

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he way we cost playing cords in your on

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Note and on wood but, yest, yast, from

the unrouted part one quered and placed at

the somet position in the significal trees sit

Example: 4 3 2 10 12 11 5 6

6 6 1 31 01 2 2 4

3 4 2 10 82 10 8