

LAB 08

SUBMISSION INSTRUCTIONS

Type/write your answers on the document and submit it as a pdf file with the name **JaneDoe.pdf** (replace **JaneDoe** with your first and last name respectively).

QUESTIONS

1. Explain the best and the 2 worst-case scenarios of using a linear search?

Answer: Best case scenario is if the key you are looking for is in the beginning of the list (index 0) and the worst case scenario is if the key is at the end of the list OR not in the list.

2. Using a tracing table, show how 6 would be obtained using a binary search.

2 4 5 6 8 11 15

Index	0	1	2	3	4	5	6
1 st pass	2	4	5	6	8	11	15

low	mid = (low+hi)/2	hi	element[mid]
0	3	6	6

3. Using a tracing table, show how 2 would be obtained using a binary search.

2 4 5 6 8 11 15

Index	0	1	2	3	4	5	6
1 st pass	2	4	5	6	8	11	15
2 nd pass	2	4	5				
3 rd pass	2						

low	mid = (low+hi)/2	hi	element[mid]
0	3	6	6
0	1	2	4
0	0	0	2

4. Using a tracing table, show how 15 would be obtained using a binary search.

2 4 5 6 8 11 15

Index	0	1	2	3	4	5	6
1 st pass	2	4	5	6	8	11	15
2 nd pass					8	11	15
3 rd pass							15

low	mid = (low+hi)/2	hi	element[mid]
0	3	6	6
4	5	6	11
6	6	6	15

5. Sort the collection below in ascending order using the bubble sort.

2 9 5 4 8 1

2	9	5	4	8	1
2	9	5	4	8	1
2	5	9	4	8	1
2	5	4	9	8	1
2	5	4	8	9	1
2	5	4	8	1	9
2	5	4	8	1	9
2	4	5	8	1	9
2	4	5	8	1	9
2	4	5	1	8	9
2	4	5	1	8	9
2	4	5	1	8	9
2	4	1	5	8	9
2	4	1	5	8	9
2	1	4	5	8	9
1	2	4	5	8	9

Highlighted cells are the cells being compared.

6. Sort the collection below in descending order using the bubble sort.

2 9 5 4 8 1

2	9	5	4	8	1
9	2	5	4	8	1
9	5	2	4	8	1
9	5	4	2	8	1
9	5	4	8	2	1
9	5	4	8	2	1
9	5	4	8	2	1
9	5	4	8	2	1
9	5	4	8	2	1
9	5	8	4	2	1
9	5	8	4	2	1
9	5	8	4	2	1
9	8	5	4	2	1

9	8	5	4	2	1
9	8	5	4	2	1
9	8	5	4	2	1
9	8	5	4	2	1

7. Sort the collection below in ascending order using the selection sort.

2 9 5 4 8 1

2	9	5	4	8	1
1	9	5	4	8	2
1	2	5	4	8	9
1	2	4	5	8	9
1	2	4	5	8	9
1	2	4	5	8	9

8. Sort the collection below in descending order using the selection sort.

2 9 5 4 8 1

2	9	5	4	8	1
9	2	5	4	8	1
9	8	5	4	2	1
9	8	5	4	2	1
9	8	5	4	2	1
9	8	5	4	2	1

9. Sort the collection below in ascending order using the insertion sort.

2 9 5 4 8 1

2	9	5	4	8	1
2	9	5	4	8	1
2	5	9	4	8	1
2	4	5	9	8	1
2	4	5	8	9	1
1	2	4	5	8	9

10. Sort the collection below in descending order using the insertion sort.

2 9 5 4 8 1

2	9	5	4	8	1
9	2	5	4	8	1
9	5	2	4	8	1
9	5	4	2	8	1
9	8	5	4	2	1
9	5	2	4	8	1