

EXERCISES

Review Questions

1. Which technique of searching an element in an array would you prefer to use and in which situation?
2. Define sorting. What is the importance of sorting?
3. What are the different types of sorting techniques? Which sorting technique has the least worst case?
4. Explain the difference between bubble sort and quick sort. Which one is more efficient?
5. Sort the elements 77, 49, 25, 12, 9, 33, 56, 81 using
 - (a) insertion sort
 - (b) selection sort
 - (c) bubble sort
 - (d) merge sort
 - (e) quick sort
7. Quick sort shows quadratic behaviour in certain situations. Justify.
8. If the following sequence of numbers is to be sorted using quick sort, then show the iterations of the sorting process.
42, 34, 75, 23, 21, 18, 90, 67, 78

13. Write a recursive function to perform selection sort.
14. Compare the running time complexity of different sorting algorithms.
15. Discuss the advantages of insertion sort.

Programming Exercises

1. Write a program to implement bubble sort. Given the numbers 7, 1, 4, 12, 67, 33, and 45. How many swaps will be performed to sort these numbers using the bubble sort.
2. Write a program to implement a sort technique that works by repeatedly stepping through the list to be sorted.
3. Write a program to implement a sort technique in which the sorted array is built one entry at a time.
4. Write a program to implement an in-place comparison sort.
5. Write a program to implement a sort technique that works on the principle of divide and conquer strategy.
6. Write a program to implement partition-exchange sort.

Assignments

- Write a program to search an element in an array using linear search.
- Write a program to search an element in an array using binary search.
- Write a program to search an element in an array using interpolation search.

Sort-Assignments

- Write a program in C to sort an array using bubble sort algorithm.
- Write a program in C to sort an array using insertion sort algorithm.
- Write a program in C to sort an array using selection sort algorithm.
- Write a program in C to sort an array using quick sort algorithm.
- Write a program in C to sort an array using merge sort algorithm.