Pune Vidyarthi Griha's

COLLEGE OF ENGINEERING, NASHIK – 4

COMPUTER ENGINEERING DEPARTMENT

Subject : FDS **ASSIGNMENT NO – 03** **Unit : III**

1. Explain **Linear search** and **binary search** with example. State its time complexity and **compare linear and binary search(time and space complexity).S**
2. Write an **algorithm** for searching an element using **binary search**. Discuss the time complexity of algorithm in best case and worst case.
3. Write an algorithm for **Fibonacci search** and find out its time complexity.
4. Explain **merge sort** algorithm using **divide and conquer strategy** with an example. State its time complexity and space complexity.
5. Explain the **algorithm of Quick sort** with suitable example. Discuss its time complexity and space complexity.
6. Write **short note on stability of sorting**. Compare bubble, insertion and selection sort with one example and discuss time complexity.
7. What is **heap** ? Explain **heap sort** with suitable example. State its complexity.
8. **Compare Heap sort and Quick sort** with one example and discuss time complexity.
9. Explain **insertion sort algorithm** and sort the given list using insertion sort :

    1) **List :** 7, 4, 10, 6, 3, 12, 1, 8, 2, 15, 9, 5

    2) **List :** 55, 85, 45, 11, 34, 05, 89, 99, 67

    Discuss its time complexity and space complexity.

10.Explain **quick sort** and Sort the following numbers using quick sort :

State its time complexity and space complexity.

1) **List :** 39, 09, 81, 45, 90, 27, 72, 18
2) **List :** 25, 82, 17, 23, 38, 7, 64, 86, 21
3) **List :** 15, 08, 20, -4, 16, 02, 01, 12, 21, -2

11.Explain **Merge sort**. Sort following example using Merge Sort :

1) **List :** 18, 13, 12, 22, 15, 24, 10, 16, 19, 14, 30.
2) **List :** 55, 85, 45, 11, 34, 05, 89, 99, 67

Discuss its time and space complexity.

12. Sort the given list using **heap sort**

1) **List :** 18, 13, 12, 22, 15, 24, 10, 16, 19, 14, 30.
2) **List :** 08, 03, 02, 11, 05, 14, 00, 02, 09, 04, 20.

13. Explain **shell sort**. Sort given list using **shell sort**.

08, 03, 02, 11, 05, 14, 00, 02, 09, 04, 20.

14.Write pseudo Python code for **Bubble sort.**

15. Write pseudo Python code to perform **shell sort**. State its complexity.

********** **Best of Luck** **********