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| **Data Structures & Algorithms**  Diploma in CSF, IT  Year 2/3 (2020/21) Semester 4/6 | **Week 8** |
| **1 Hour** |
| **Tutorial 8 – Searching** | |

1. Given an ***unsorted array*** of numbers below,

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48 | 25 | 95 | 76 | 57 | 12 | 33 | 88 | 63 | 82 |

1. How many comparisons are required to search for 57?
2. How many comparisons are required to search for 35?
3. Given a ***sorted array*** of numbers below,

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12 | 25 | 33 | 48 | 57 | 63 | 76 | 82 | 88 | 95 |

1. How many comparisons are required to search for 57 using sequential search ?
2. How many comparisons are required to search for 35 using sequential search ?
3. How many comparisons are required to search for 57 using binary search ?
4. How many comparisons are required to search for 35 using binary search ?
5. Write a ***recursive*** sequential search function to search for a target in a sorted array of integer numbers. The function header is given below.

int search (int dataArray[], int arraySize, int start, int target)

1. Write a ***recursive*** binary search function to search for a target in a sorted array of integer numbers. The function header is given below.

int binarySearch (int dataArray[], int first, int last, int target)

1. Discuss and compare the time efficiency between **sequential search** and **binary search** algorithm.