Computing Fundamentals using Python

SUBJECT CODE : UQ25CA151A

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Computer Applications

Sorting Algorithm

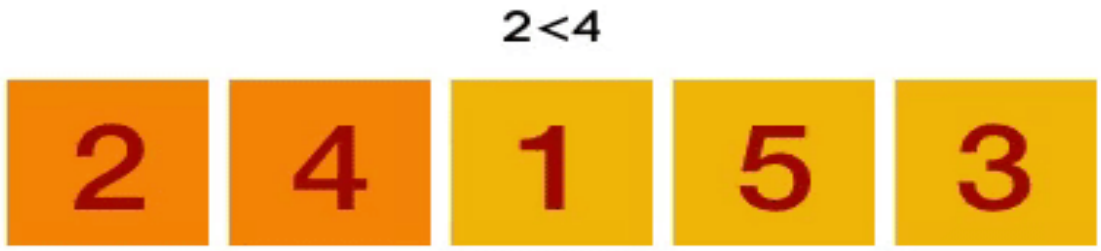
Sorting means arranging data (numbers, strings, etc.) in a specific order — either ascending (small → large) or descending (large → small).

1. **Bubble Sort**
2. **Insertion Sort**
3. **Merge Sort**

Sorting Algorithm

Bubble Sort

Bubble Sort is a simple comparison-based sorting algorithm where each pair of adjacent elements is compared, and they are swapped if they are in the wrong order.



Sorting Algorithm

Bubble Sort

Bubble Sort is a simple comparison-based sorting algorithm where each pair of adjacent elements is compared, and they are swapped if they are in the wrong order.

Working Principle:

- In every pass, the largest (or smallest) element “bubbles up” to its correct position at the end of the list.
- The process repeats for all elements until the list is sorted.

Sorting Algorithm

Algorithm Steps:

1. Compare the first two elements.
2. Swap them if the first is greater than the second.
3. Move to the next pair and repeat.
4. After each pass, the largest element moves to the end.
5. Repeat the process for the remaining unsorted part.

Bubble sort program

```
arr = [5, 3, 8, 1, 2]     # or take input from user
for i in range(len(arr)):
    for j in range(0, len(arr) - i - 1):
        if arr[j] > arr[j + 1]:
            arr[j], arr[j + 1] = arr[j + 1], arr[j]
print(arr)
```

For list [5, 3, 8, 1, 2]

- Pass 1 → [3, 5, 1, 2, 8]
- Pass 2 → [3, 1, 2, 5, 8]
- Pass 3 → [1, 2, 3, 5, 8]

THANK YOU

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