**Assignment -1** DAY-2(10-04-2024)

**Problem statement**

Pserdocode and Flowchart for Sorting Algorithm- Write pseudocode and create a flowchart for a bubble sort alogorithm. Provide a brief explanation of how the alogorithm works and a simple array of integers to demonstrate a dry run of your alogorithm.

**Source Code:**

**Pseudocode:**

FUNCTION BubbleSort(arr[], n)

FOR i FROM 0 TO n-1

FOR j FROM 0 TO n-i-1

IF arr[j] > arr[j+1]

SWAP(arr[j], arr[j+1])

**Explanation:**

* Bubble Sort is a simple comparison-based sorting algorithm.
* It repeatedly compares adjacent elements in an array and swaps them if they are in the wrong order.
* The largest (or smallest, depending on the sorting order) element “bubbles up” to its correct position in each pass.
* The process continues until the entire array is sorted.

**FLOWCHART:**

Set N=length of Array

Array[j] > Array[j+1]

Swap

Array[j] and Array[j+1]

Increment j

(j++)

Increment i (i++)

Clear j (j=0)

j<N-i-1

i<N-1

Yes

NO

Yes

No

Yes

No

**Example:**

Let’s dry run Bubble Sort on the following array of integers:

[5, 2, 9, 1, 5]

First pass:

* Compare 5 and 2. Swap them.
* Compare 5 and 9. No swap.
* Compare 9 and 1. Swap them.
* Compare 9 and 5. Swap them.

Result: [2, 5, 1, 5, 9]

Second pass:

* Compare 2 and 5. No swap.
* Compare 5 and 1. Swap them.
* Compare 5 and 5. No swap.

Result: [2, 1, 5, 5, 9]

Third pass:

* Compare 2 and 1. Swap them.
* Compare 2 and 5. No swap.

Result: [1, 2, 5, 5, 9]

Fourth pass:

* Compare 1 and 2. No swap.

Result: [1, 2, 5, 5, 9]

The sorted array: [1, 2, 5, 5, 9]