Assignment 1:

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

start

declear arr[5]

call bubblesort(arr)

print arr

function bubblesort(arr)

for (int i = 0; i < n; i++) {

swapped = false;

for (int j = 1; j < n-i; j++) {

if (arr[j] < arr[j-1]){

temp = arr[j]

arr[j]= arr[j-1]

arr[j-1]=temp

swapped = true

if (!swapped)

break;

end loop

end loop

end

45 21 78 2 20 size of arr:5

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| i | currentelement=arr[j-1] | j=1 | arr[j] | arr[j]<currentelement | j<n-i | temp=arr[j] | arr[j]=arr[j-1] | arr[j-1]=temp |
| 0 | 45 | 1 | 21 | True | true | 21 | 45 | 21 |
| 0 | 45 | 2 | 78 | False |  |  |  |  |
| 0 | 78 | 3 | 2 | True | True | 2 | 78 | 2 |
| 0 | 78 | 4 | 20 | True | True | 20 | 78 | 20 |
| 1 | 21 | 1 | 45 | False |  |  |  |  |
| 1 | 45 | 2 | 2 | True | True | 2 | 45 | 2 |
| 1 | 45 | 3 | 20 | True | True | 20 | 45 | 20 |
| 2 | 21 | 1 | 2 | True | True | 2 | 21 | 2 |
| 2 | 21 | 2 | 20 | True | True | 20 | 21 | 20 |
| 3 | 2 | 1 | 20 | False |  |  |  |  |

Finally array is sorted : 2 20 21 45 78