GROUP 32

Assignment #1

You have given been a dataset and you are required to find the range of the dataset.

(a) Describe in detail, the steps that you would use to get the job done [20 Marks]

(b) Draw a flowchart to implement your steps [15 Marks]

(c) Test your flowchart with an arbitrary 10-element dataset [5 Marks]

A. The steps that you would use to get the job done

Step 0: Problem well understood.

Step 1: Problem restatement; To determine the range of a given dataset

Step 2: Background support; data

Step 3: Knowns Vs. Unknowns

Knowns/Inputs: Data size(N), Dataset(data)

Unknowns/ Outputs: maximum value(max), minimum value(min), Range(range)

internal: counter (i, j), array[N]

Step 4: Book-keeping

|  |  |  |  |
| --- | --- | --- | --- |
| Variables | Name | Type | Validation |
| inputs | N  data | integer | >= 0 |
| internal | i  j  temp  array[N] | integer | >= 0 |
| output | min  max  range | integer | >= 1 |

Step 5: Algorithm/Pseudocode/Flowchart

0. Start/Begin

1. Declare Integer i, j, temp, N, data, min, max, range

2. Input N

3. Declare Integer Array array[N]

4. Repeat loop

5. For i = 0 to size(array)-1

6. Input data

7. Assign array[i] = data

8. End

9. Repeat another loop

10. For i = 0 to size(array)-1

11. For j = i to size(array)-1

12. If array[i]>array[j]

13. Assign temp = array[i]

14. Assign array[i] = array[j]

15. Assign array[j] = temp

16. End if

17. End loop

18. End loop

19. Run another loop

20. For i = 0 to size(array)-1

21. Output array[i] & " ,"

22. End loop

23. Assign max = array[N-1]

24. Assign min = array [0]

25. Assign range = max - min

26. Output Dataset Size = N, Maximum = max, Minimum = min, Range = range

26. End

B. Flowchart to implement the steps

Flowgorithm file

C. Testing the flowchart with an arbitrary 10-element dataset

Text file

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