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**School Of Information Technology**

**IT2553 DS & Algo**

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| --- | --- |
| **Admin No & Team Members Name:** | 201520M: Eden Will Sng Jin Xuan |
| **PEM Group:** | SF2102 |
| **Module:** | DSA |
| **Assignment:** | Tutorial 04 |

Question 1 A)  
Code is found in the Python Codes

Question 1 B)

Standard Bubble sort requires 4 passes

Optimized Bubble sort requires 2 passes

Question 1C)

1 Pass is required, this is because it still has to check whether any swapping has happen, if no swap has happened during the pass, then optimized bubble sort will assume that it is sorted already.

2)A

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pass | 12 | 7 | 9 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| 1 | 29 | 7 | 9 | 24 | 7 | 12 | 5 | 3 | 11 | 7 |
| 2 | 29 | 24 | 9 | 7 | 7 | 12 | 5 | 3 | 11 | 7 |
| 3 | 29 | 24 | 12 | 7 | 7 | 9 | 5 | 3 | 11 | 7 |
| 4 | 29 | 24 | 12 | 11 | 7 | 9 | 5 | 3 | 7 | 7 |
| 5 | 29 | 24 | 12 | 11 | 9 | 7 | 5 | 3 | 7 | 7 |
| 6 | 29 | 24 | 12 | 11 | 9 | 7 | 5 | 3 | 7 | 7 |
| 7 | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 3 | 5 | 7 |
| 8 | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 7 | 5 | 3 |
| 9 | 29 | 24 | 12 | 11 | 9 | 7 | 7 | 7 | 5 | 3 |

2)B

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Pass | 12 | 7 | 9 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| 1 | 7 | 12 | 9 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| 2 | 7 | 9 | 12 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| 3 | 7 | 9 | 12 | 24 | 7 | 29 | 5 | 3 | 11 | 7 |
| 4 | 7 | 7 | 9 | 12 | 24 | 29 | 5 | 3 | 11 | 7 |
| 5 | 7 | 7 | 9 | 12 | 24 | 29 | 5 | 3 | 11 | 7 |
| 6 | 5 | 7 | 7 | 9 | 12 | 24 | 29 | 3 | 11 | 7 |
| 7 | 3 | 5 | 7 | 7 | 9 | 12 | 24 | 29 | 11 | 7 |
| 8 | 3 | 5 | 7 | 7 | 9 | 11 | 12 | 24 | 29 | 7 |
| 9 | 3 | 5 | 7 | 7 | 7 | 9 | 11 | 12 | 24 | 29 |

3A) True  
3B) True

3C) True

3D) False (Not everything in the list have been compared yet)