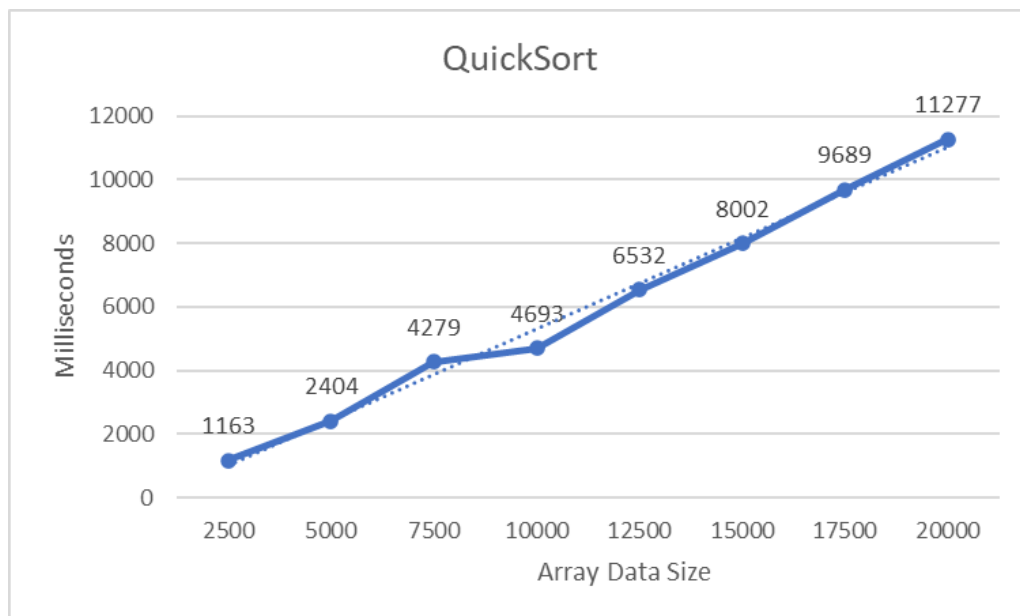
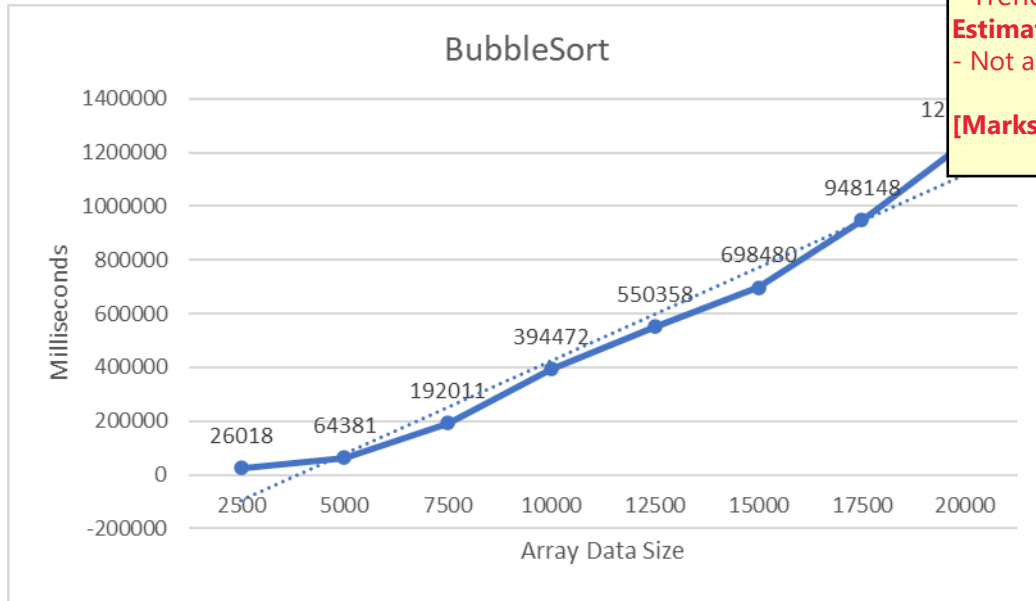


ASD Exam

Section A

Q1.

A)



Q1.a

Bubblesort Data

- Suitable Chart
- Correctly Labelled Y axis
- Correctly Labelled X axis
- Trend-line

Quicksort Data

- Suitable Chart
- Correctly Labelled Y axis
- Correctly Labelled X axis
- Trend-line

Estimated Big O

- Not answered

[Marks 8 from 10]

B)

Bubble Sort Algorithm: Unsure?

Quick Sort Partition Algorithm: Unsure?

Q1.b

Not answered

Quick Sort Algorithm: Unsure?

C)

Recursive algorithms call themselves with smaller input values, and then return the result for the current input by applying simple operations to the smaller input value.

In the Quicksort algorithm recursion occurs in the snippet below:

```
"quickSort(array, start, pivot -1)
```

```
quickSort(array, pivot + 1, end)"
```

Q1.c

Correct explanation of recursion given but a little brief.

Recursive code correctly identified

[Marks 5 from 7]

Section B

Q3.

A)

Pre-order: (77 is the first node) 77, 40, 39, 42, 86, 85, 90

Post order: (39 is the first node) 39, 42, 40, 85, 90, 86, 77

In order: (39 is the first node) 39, 40, 42, 77, 85, 86, 90

Q3.a

The order of nodes correctly identified for each traversal method.

[Marks 12 from 12]

B)

77, 40, 39, 42, 65, 86, 85, 90

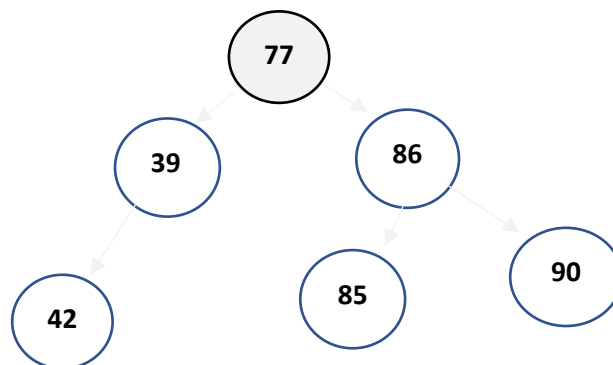
when adding 65 to the data tree you would place it in the left hand side of the root node as it is less than 77 and would be placed on the right hand side of 40 below 42 as 65 is larger than both nodes.

Q3.b

Correctly discussed the insert process; however, no analysis of the operation was given **[Marks 4 from 8]**

C)

When 40 is deleted from the search tree the node 39 will take its place from being the left sub tree left node to being the left sub tree root node as shown below.



Q3.c

Tree diagram reproduced and process explained; however, node value 42 would be right of 39.

[Marks 3 from 5]

Q4.

A)

Hashing is the process of converting a key into another value using a mathematical algorithm. In the context of referencing records in a table hashing is a method in which a hash table stores key and value pairs in a list that is accessible through its index.

B)

Not sure?

Q4.a

Good answer

[Marks 4 from 4]

C)

Not Sure?

Q4.b & c

No answer given

[Marks 0 from 14]

D)

Separate chaining is the process of using linked lists to resolve a collision in a hash table. To do this it uses said linked lists together with the table to resolve the collision. The advantage to using this method over the other is that it is very easy to implement in terms that input elements can just be added to the corresponding linked list that the input has been hashed to. The disadvantage to using this method however is that it needs a secondary data structure to store collisions as a single structure has insufficient memory as well as longer chains can create longer search times.

Q4.d

Good answer

[Marks 6 from 7]

Summary:

Question 1: 13

Question 2:

Question 3: 19

Question 4: 10

Total: 42 from 75 (56%)