INTRODUCTION

This report will provide an in-depth explanation of each implemented data structure, its role and contribution to the efficiency of the “Service Request Status” feature.

IMPLENENTED DATA STRUCTURES

The data structures that were used to complete the Services Request Status were both a Binary Search Tree and a heap.

BINARY SEARCH TREE:

The main purpose of the Binary Search Tree is to effectively organise and retrieve service request information. The reason why this data was selected to complete this purpose was because it fit the use case effectively. A binary search tree is one of the best structures to use in terms of iterating through for deletion, insertion or finding a value, in comparison to the other trees because it does not shift values in memory. With its very efficient, linear way to search for a value, it is also not as hard as the other trees to implement in the Windows Form application. (W3schools.com n.d)

HEAP:

The main purpose of the heap data structure, in the implementation of the Windows Form application, is to manage complex relationships and optimise the display of service request status. The heap is used to display the details of each service request with their name, status and description. It is also used for tracking those service requests as well. The reason why I thought the heap would be better suited for the use case is because there can be associated priorities in terms of status. In the web application, there are three statuses for each service request, and they are "Completed", "In Progress" and "Pending"

and the tree can prioritize based of the most desired being "In Progress" tasks and the least priority being "Completed" which would make searching more efficient. Heaps are dynamic, which would be convenient for when users track different service requests. Each user can track a different amount of service requests so it can handle that. (Advantages and disadvantages of Heap 2024)

CONCLUSION

Therefore, the report has provided an in-depth explanation of each implemented data structure, its role and contribution to the efficiency of the “Service Request Status” feature.

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