

Future Work

The tables below outline the user stories not implemented by the current team due to a time constraint. Additionally, it also documents the changes requested by the clients which could not be implemented due to limitation on time.

Unfinished User Stories

Story ID	Tag	Task	Reason for not being able to implement	Scope for improvement
15	US_15_ADD_POINTERS_QS	Highlight elements 'i' and 'j' in different colors in the array of Quicksort	<ul style="list-style-type: none"> The visit() and select() functions were applied to 'i' and 'j' to highlight them in blue however the array renderer throws errors. The errors cannot be rectified as the current 1D renderer does not allow to use these functions on elements 'i' and 'j'. 	<ul style="list-style-type: none"> A new 1D array renderer or array tracer must be written such that it allows for using functions on 'i' and 'j'. If the new renderer is written to comply with the above functionality, it would be possible to highlight 'i' and 'j'.

Changes requested by clients

Algorithm	Task	Problems identified	Approach
Quicksort	<ul style="list-style-type: none"> Highlight 'i' and 'j' in the array. 	<ul style="list-style-type: none"> The visit() and select() functions were applied to 'i' and 'j' to highlight them in blue however the array renderer throws errors. The errors cannot be rectified as the current 1D renderer does not allow to use these functions on elements 'i' and 'j'. 	<ul style="list-style-type: none"> A new 1D array renderer or array tracer must be written such that it allows for using functions on 'i' and 'j'. If the new renderer is written to comply with the above functionality, it would be possible to highlight 'i' and 'j'.
Quicksort Median of Three	<ul style="list-style-type: none"> Add animation to "Choose pivot" (sortLMR function) in the algorithm. Highlight the pivot chosen. Instead of having it as a separate algorithm, add on click events to the checkboxes such that only the pseudocode changes. 	<ul style="list-style-type: none"> The current animation skips the "Choose pivot" code block because no animation has been added to the sortLMR function in the controller file of the algorithm. As no animation is added, highlighting could not be done for the pivot chosen. Could not resolve errors with on click events for checkboxes and hence, added "Median of Three" as a separate algorithm. 	<ul style="list-style-type: none"> Add chunker.add() functions to sortLMR function in the controller file to add animation for "Choose pivot". Add select() and deselect() functions once the pivot is chosen to highlight it in blue. Add event handlers for checkboxes such that when they are clicked the corresponding pseudocode is rendered.
Heapsort	<ul style="list-style-type: none"> Highlight 'i' and 'j' in the array view as well as tree view. 	<ul style="list-style-type: none"> Same as above. 	<ul style="list-style-type: none"> Same as above.
Prim's	<ul style="list-style-type: none"> Highlight 'i' and 'j' in the graph 	<ul style="list-style-type: none"> This was not implemented by the team as it was the least priority and there was a time constraint. 	<ul style="list-style-type: none"> Use functions visit() and leave() in prim's controller file to highlight 'i' and 'j' in the graph. Refer the branch and user story "US_23_ADD_POINTERS_TC" and replicate it as 'i' and 'j' are highlighted in Transitive Closure.
Prim's	<ul style="list-style-type: none"> Add two parallel arrays "Cost" and "Prev" to the Priority Queue with contents initialised to 0 and Inf. 	<ul style="list-style-type: none"> The team added a priority queue however, without the two parallel arrays. The two arrays were not added to the current priority queue due to a time constraint. 	<ul style="list-style-type: none"> Add two new arrays for "Cost" and "Prev" using the 1D array renderer in Prim's controller file. Add chunker.add() functions appropriately to add animation to the arrays.
Transitive Closure	<ul style="list-style-type: none"> Change values from 0 to 1 in the matrix when a path between (i,j) is found. Currently, the application simply highlights the element in blue in the matrix for which the path is found. 	<ul style="list-style-type: none"> Transitive Closure runs the complete algorithm in the background for the input entered by the user and generates the final graph as well as matrix. The controller functions simply highlight the edge found and the corresponding nodes. Thus, the values cannot not be changed from 0 to 1 due to the problems above. 	<ul style="list-style-type: none"> The code for Transitive Closure must be rewritten from scratch in a way that the initial graph and matrix is displayed. The controller functions must be changed to add a new path instead of highlighting it when a path is found. After making the above changes, it would be possible to change values from 0 to 1 in the matrix when a path between (i,j) is found.

Transitive Closure	<ul style="list-style-type: none"> Change the geometry to fix graph arrows. 	<ul style="list-style-type: none"> The graph in transitive closure does not represent the self-loop. The graph also has bidirectional arrows, so it is difficult to distinguish the path from A to B and B to A separately. 	<ul style="list-style-type: none"> Add appropriate geometry to represent a self-loop. Replace the bidirectional arrows with two separate arrows for representing path from A to B and B to A.
Transitive Closure	<ul style="list-style-type: none"> Indicate elements 'i' and 'j' along the rows and columns of the matrix. Move the pointers for 'i' and 'j' to coincide with the value being highlighted for which the path is found. 	<ul style="list-style-type: none"> The middle panel does not accept any extra input or text other than the data structures (array, graph) and the animation. Due to the limitation above, elements 'i' and 'j' cannot be added as text alongside the rows and columns of the matrix. Hence, they cannot be moved to coincide with the value being highlighted. 	<ul style="list-style-type: none"> The code corresponding to the middle panel must be tweaked such that it accepts extra input or text other than the data structures and animation. If the above issue is resolved, elements 'i' and 'j' can be added as text alongside the matrix. Additionally, animation can be added to the texts to move as the value is highlighted.
Brute Force String Search	<ul style="list-style-type: none"> Change element of the graph from circle to rectangle. 	<ul style="list-style-type: none"> The current element have a circle shape, instead of a rectangular shape. They should be similar to elements from array like other algorithms. 	<ul style="list-style-type: none"> The array string are implemented using Graph nodes, should change it into Graph array.
Brute Force String Search	<ul style="list-style-type: none"> Play previous animation 	<ul style="list-style-type: none"> When the previous button is clicked, an exception is thrown 	<ul style="list-style-type: none"> There is currently a conflict in the GraphTracer.js file which must be resolved to allow the algorithm to play back. Check User Guide for detail.
ALL	<ul style="list-style-type: none"> Increase the size of the circle representing nodes. 	<ul style="list-style-type: none"> This was not implemented by the team as it was the least priority and there was a time constraint. 	<ul style="list-style-type: none"> Edit the global styling file to increase the radius of the circle.
ALL	<ul style="list-style-type: none"> Animation must be executed in one step for parent code blocks when they are collapsed, for example - <i>BuildHeap(A, n)</i> in Heapsort must build the heap in one step when this block is collapsed. 	<ul style="list-style-type: none"> This was not implemented by the team as it was the least priority and there was a time constraint. 	<ul style="list-style-type: none"> Edit the collapse and expand functions to display animations of collapsed blocks in one step.

This document can be referred by the next team.