timeRecursiveFieldCount Method

This method times the recursive report using fields.

timeRecursiveCount Method

Similar to timeRecursiveFieldCount, this method times the recursive report without using fields.

timeNonRecursiveCount Method

This method times the non-recursive report using an array-based approach.

stateArrayBuilder Method

The stateArrayBuilder method constructs an ArrayList of Report objects containing only reports from the specified state. It takes an array of all reports and the initials of a state as input and returns an ArrayList containing reports only from that state.

reportsOnAndAfterDate Method

This method counts the number of reports on or after a specified date for a given state using a non-recursive approach. It iterates through the array of reports, filters reports by state and start date, and returns the count of reports.

reportsOnAndAfterDateRecursive Method

reportsOnAndAfterDateRecursive recursively traverses a binary search tree to count the number of reports on or after a specified date for a given state. It takes a root node of the BST and a start date as input and returns the count of reports.

reportsOnAndAfterDateNoFields Method

This method counts the number of reports on or after a specified date for a given state using a recursive approach without using fields. It recursively traverses a binary search tree and counts the reports without relying on fields.

add Method

The add method adds a new accident report to the binary search tree based on the report's start time. It checks if the state exists in the dictionary, retrieves or creates the root node for that state, and updates the root node after adding the new report.

addHelp Method

A helper method for the add method, addHelp recursively inserts a report into the binary search tree. It takes the current node in the BST traversal and the accident report to be inserted as input and returns the updated root node of the subtree after insertion.

populateTrees Method

The populateTrees method constructs binary search trees for a given ArrayList of accident reports, representing reports from a single state. It iterates through the ArrayList and adds each report to the corresponding binary search tree.

Node Class

The Node class represents a node in the binary search tree. It contains fields for storing a report, the number of left children, the number of right children, and references to left and right child nodes.

timeRecursiveFieldCount Method, timeRecursiveCount Method, timeNonRecursiveCount Method

All three of these methods count the number of reports on or after a specified date for a given state and prints out the results along with the time taken to perform the operation.