Q1: (20%)

Given a sorted 2D matrix A (sorted in every coordinate in ascending order) and a target key, implement the binary search method to find and return the Element with the key that matches the target   within the range [minX, maxX]x[minY, maxY], otherwise return null.

You must use binary search with proper recursion in the columns and rows of A simultaneously.

Upload only "BinarySearch.java" to Code Submission on wattle for marking.
Note: Do not modify the code related to tracker class.

Q2 (20%)

You are required to implement the search and insert methods in the red-black tree, where the keys are Intervals.

You may add additional helper methods.

Upload only "RBTree.java" to Code Submission on wattle for marking.

Note that if a node with duplicate key is inserted into the red-black tree, it must replace the old node of the same key.

Q3 (25%)

The DNA sequence consists of possible characters from the set {'A', 'C', 'G', 'T'}.

You are required to implement the minDistance method by dynamic programming.

The character-dependent edit costs are defined in EditCost class. Note that we may change the edit costs in marking.

Upload only "EditDistance.java" to Code Submission on wattle for marking.