Marking Outline for Assignment 2

Implementation / Code (45 marks):

- Part 1: Correctly implement Binary Search Tree with Insert, Total_Depth and SearchPath functions: 10 marks

- Part 2: Correctly implement Red-Black Tree with Insert, Total_Depth and SearchPath functions: 30 marks

- Documentation/style is acceptable: 5 marks

Experiment 1 (20 marks):

- Effectively utilize a method for generating a permutation of the set \{1, 2, \ldots, n\}: 5 marks

- Correctly compute the number of rotations performed between checkpoints: 5 marks

- Effectively present experimental results in graphical or tabular form: 5 marks

- Discussion of whether the results confirmed the expectation: 5 marks

Experiment 2 (35 marks):

- Conduct the experiment as described in the assignment (using a good range of values for n and a suitable value for k): 5 marks

- Correctly collect the Total_Depth information and compute R for each permutation: 5 marks

- Summarize the results of the experiments in a readable form such as a graph or table: 10 marks

- Discuss the results of the experiments, responding to the two questions asked at the end of the Assignment:

  Do the results support the claim that Red-Black Trees are superior to un-modified Binary Search Trees? 10 marks

  Does the difference (if any) become more or less significant as n becomes larger? 5 marks