

## Midterm Exam #2 – Recursion, Binary Trees, Binary Search Trees and Hash Tables

60min, 100 points, open book, open notes.

1. (15 points) – Recursion

Simple recursive algorithms – read and explain what it does (output)

Given a recursive algorithm, find the error(s)

2. (20 points) – Binary Trees

Terminology

Breadth-First Traversal

Depth-First Traversals (all 6)

3. (20 points) – Binary Search Trees

Definition

Basic BST operations, such as insert, delete, search

Build a BST

4. (15 points) – Hash Tables

Definition

Hash Methods

Hash Functions

Collision Resolution Methods

Basic hash table operations (insert, delete, search)

5. (30 points)

Write a C++ function or pseudocode to solve a problem with BSTs or Hash Tables.