



## **CSC 2302-01, Data Structures – Summer 2019**

### **Final Exam Review**

#### **1) Trees**

- Binary Tree
  - Complete binary tree.
  - Preorder, inorder, and postorder traversal
  - Insert a node
  - Delete a node
  - Represent an infix expression in a binary tree
  - Evaluate an expression tree
- Binary Search Tree
  - Preorder, inorder, and postorder traversal
  - Insert a node in a BST.
  - Delete a node from a BST

#### **2) Graphs**

- Main elements of a graph
- Definition of: path, undirected graph, directed graph, in-degree, out-degree, cycle, and acycle graph.
- Calculate: in-degree, out-degree, the number of edges.
- Adjacency matrix
- Adjacency lists
- List of a traversal graph using DFS and BFS.

#### **3) Priority Queue and Heaps**

- Definition of a heap
- Calculate: the position of left child, the position of right child, and the position of the parent
- Insert a node
- Delete a node
- Transform an array into a heap
- Sort an array using the heapsort technique.

#### **4) Coding**

- Two or Three coding implementations of the algorithms and the exercises that are in the slides
  - Preorder Implementation

- Post-order Implementation
- Searching for smallest node in a BST
- Searching for largest node in a BST
- Searching of requested node in a BST
- BST Insertion Implementation
- BST Deletion Implementation
- DFS Traversal Implementation
- BFS Traversal Implementation
- Building a heap from an array
- Heap Insertion Implementation
- Heap Deletion Implementation