Review for Final

Final Exam Schedule

- Date 12/14/2019 (8:00 A.M.~ 10:30 A.M.)
- Comprehensive test
- Similar format with two midterm exams
  - Write functions
  - Simple description
  - Tracing programs for output

Review for Final

- Pointer variables
- Relation between a Pointer and a Name of Array
- Pointer and Array
  - Pointer and Integer Array
  - Pointer and Character Array
- Array of Pointer to Character String

Review for Final

- Structured Data Types
  - How to define a structured Data Type
  - Memory Allocation of Structured Data Type
    - Static Memory allocation by declaration
    - Dynamic Memory Allocation by new
  - Accessing a Members in a Structured Data Type
  - A structured Data type as a member of other Structured Data Type
  - Passing a Structured Data Type as a Parameter
  - Initializing members in a Structured Data Type
  - Array of an Structured Data Type

Review for Final

- Linked List (single linked list)
  - Insert
    - Sorted List
    - Insert as a Last element always
  - Delete
  - Search

Review for Final

- Object Oriented Program with C++
- Class Declarations in C++
- Class Member Types
  - Private, Public, Protected
- Inline Function vs. Regular Function
- Constructor & Destructor
- Assessing a Class Member
- Initializing class Objects with constructor
  - With default argument
  - Without Default argument

Review for Final

- Separating Interface from Implementation
- Scope of Member
- Utility Functions
- When Constructor and Destructor is called?
- Insecure Public Function

Review for Final

- Algorithm & Analyzing Algorithm
- Asymptotic Notation
  - Big Θ Notation
  - Big O Notation
  - Big Ω Notation

Review for Final

- Constant Object and Constant Functions
- Composition: Object as Member of Classes
- Friend functions
- The Use of Friend Functions
- Friend Classes

Review for Final

- What is Template?
- Function Template.
- Function Template Specialization
- Class Template

Review for Final

- What is a Stack
- Functions for managing a Stack
  - Push
  - Pop
  - IsEmpty
  - IsFull
  - Top
- A Stack Implementation with Linked List

Review for Final

- What is a Queue
- Functions for managing a Queue
  - EnQueue
  - DeQueue
  - EmptyQ
  - FullQ
  - FrontQ
- A Queue Implementation with a Linked List

Review for Final

- Static Member in a class
  - Static variables
  - Static Functions
- Recursion
  - Memory allocation
  - Solving problem with Recursion
  - Recursion Examples
    - Factorial
    - Quick Sort
    - Fibonacci number
    - Palindrome
    - C-string functions: compare, count, …
    - Sum of Range
    - Greatest Common Devisor
    - Binary Search

Review for Final

- Operator Overloading
  - As a member function
  - As a Friend function
- Copy Constructor
  - Default copy constructor
  - How to define a copy constructor
- Graph
- Tree
- Binary Tree
- Binary Search Tree

Review for Final

- Binary Search Tree
  - Binary Search Tree Property
  - Binary Search Tree Operations
    - Inorder walk
    - Preorder walk
    - Postorder walk
    - Search Tree
    - Insert a element to the Tree
    - Delete a element form the Tree

Review for Final

- Inheritance
  - Type of Inheritance
  - Syntax for Derived Class
  - Overriding Member Function in the Base Class
  - Using Member Functions
  - Casting Base-Class Pointers to Derived-class pointer
  - Using constructor and destructors in derived classes
  - Virtual function

Review for Final

- Virtual Function and Polymorphism
- Heap & Priority Queue & HeapSort
  - Heap Properties
  - Heap functions
  - Heapify
  - Leftchild, RightChild, Parent
  - Build Heap
  - Insert
  - Heap Sort
  - Extract Max

Review for Final

- Sorting
  - Bubble Sort,
  - Insertion Sort,
  - Selection Sort,
  - Shell Sort
  - Quick Sort
  - Heap Sort

Review for Final

- Standard Template Library
  - What is STL
  - Containers
  - Iterators
- STL's
  - <vector>
  - <list>
  - <queue>
  - <stack>
  - <deque>