ECS122A Midterm II Review Checklist

*Here is a list of concepts, definitions and algorithms that you should know from lectures, discussions and homework assignments #4, #5 and #6. This is not meant to be comprehensive. It is merely a reminder of what we need to review for the upcoming midterm II.*

**Algorithms and case studies**

1. **Greedy Algorithms**
   - Activity selection problems
   - Huffman coding
   - 0-1 knapsack problem
2. **Dynamic Programming**
   - Rod cutting problem
   - Matrix-chain multiplication
   - Longest common subsequence/substring
   - Edit distance
   - 0-1 knapsack problem
3. **Elementary graph algorithms**
   - Breadth-first search (BFS)
   - Depth-first search (DFS)
   
   **Applications:**
   - Topological sort of a dag
   - Finding a sink
   - Finding the connected components of a undirected graph
   - Determining whether a graph contains a cycle

**Definitions, concepts and data structures**

1. **Elements of greedy algorithms**
2. **Elements of dynamics programming**
3. **Graph terminology:** graph, path, connected graph, cycle, acyclic, dag, tree, spanning tree ...
4. **Graph representations:** adjacency matrix, incidence matrix, adjacency list
5. **Data structures:**
   - FIFO queue
   - LIFO stack