Algorithms Midterm Review:

Week 1:

Know doubling behavior for quadratic, linear, etc.

How many comparisons will insertion sort perform when sorting an array of size n?

Week 2:

Given two functions f and g, know that f is big O(g) or big theta, etc.

Know basics of logs, summations, and be familiar with data structures.

Proofs of O(): As discussed in lecture, f(n) is O(g(n)) if and only if there exist positive constants c and n0 such that 0 ≤ f(n) ≤ c g(n) for all n ≥ n0.

Amortized Analysis i.e. a+2r is average cost of AddLast operation.

Week 3:

Know Master Theorem

Be comfortable with Divide & Conquer algorithms and using Recursion

Week 4:

Big O cost for Adjacency Lists and Adjacency Matrix’s with respect to V and E

Pre and Post Times for a Graph using Depth First Search

Week 5:

Be able to identify strongly connected components

Know graph algorithms DFS, BFS, Reverse the DAG, etc.

BFS parents when navigating a graph

Week 6:

Know Dijkstra’s algorithm

Know Binary Heaps (Max/Min) how they work etc.

Modular Arithmetic