# CS 212 MA #3

For this micro assignment, you will implement a Disjoint Set class that we will use in future micro assignments. I've supplied a sample main() for testing, but you will need to modify it to meet the requirements of HackerRank.

## Main.cpp

HackerRank will begin by suppling values to union, separated by a single space. For example, "A B" is telling your disjoint set to union the characters 'A' and 'B'. Continue to do this until you read a value of -1. After which, HackerRank will supply elements for find operations. Your program must output the Boolean result of these finds. For example, "A B" would output 1 because 'A' and 'B' are in the same set (as per the prior example). However, "A C" would return 0 because 'A' and 'C' are not in the same set.

## DisjointSet.h

Inside of the supplied DisjointSet class, you must implement the following two functions:

### union\_with(T &first, T &second)

Performs a union-by-size on the supplied parameters. Remember that in order to perform a union, you must first ***find*** the roots of each set.

### T \*find(T &start)

Performs a find operation on the disjoint set. Note that your find algorithm must also include path compression: On a given find operation, have all elements that don't point to the root point to the root.

## Grading

Your submission will be graded based on the following:

1. [50] Your solution builds, does not cause any runtime issues, and passes all test cases

## Due Date

This assignment must be submitted through HackerRank and Canvas no later than midnight on Wednesday, March 29, 2017.