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Assignment 10

Part B

**disjointSets data structure:**

The disjointSets data structure(also called union-find data structure) is a data structure that keeps track of a set of elements partitioned into a number of disjoint(not overlapping) subsets. The structure offers two useful operations: Find and Union, the use of these two operations can join and structure sets to data to be used later. The implementation can vary, from linked lists to array but most commonly uses an array as a maximum number of sets is known before using a disjoinSet.

**Applications**

The disjointSet can be very useful as it models the partitioning of a set, so it can be used for keeping track of connected components for an undirected graph. It can also be used to create mazes as Assignment 10 showed, which can be very useful for possible game development where all portions of a map must be reachable for the player.

**Big-o operations**

List based disjoint sets:

Find – O(1)

Union – O(n)

Tree based disjoint sets:

Find – O(m) – M is depth

Union – O(1)