algorithms

find in an undirected graph if there is there a cycle in O(E) time, we are creating for each vertex a set and looping over each edge and adding it to a set by union. And if the two elements already belong to the same set then there is a cycle O(V \* E). you can improve it by adding parameter end that will point to an object that will point to end object and time will be O(2\*E).

disjoint set:

Union\ Link – O(1)

Find – O(log n)

Master theorem

required - we need to calculate

Example: