

~~Quick find~~

→ Approaches to solve DEP:

① Quick find

② Quick union

↳ smart Union

→ Path Compression

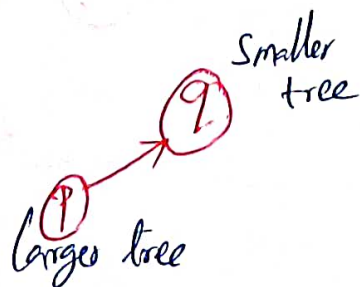
Smart Union: Algorithms:

→ Avoid tall trees.

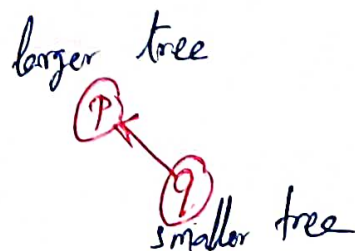
→ Keep track of the size (i.e. no. of objects) of each tree and always to link the root of smaller tree to root of larger tree, breaking ties by any method.

→ This approach is called **Union by size**.

Eg:



(or)



Union by height

which tracks the height instead size

Eg. 1

large heighted tree

(P) root

(9)

small tree

Eg. (e ∪ f)

(s4) root

(s1)

(s5)

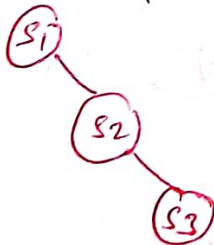
(s6)

(s7)

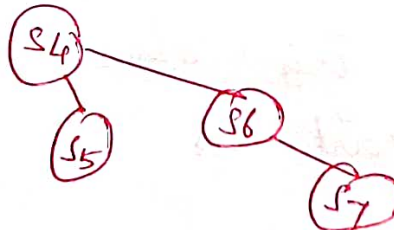
(s2)

(s3)

e



≠



In this above sets $e \neq f$, e is having 3 sets, f is having 4 sets, so 'f' is having highest height when comparing with 'e', so s_4 in set f is considered as root, and rest of the tree is connected with root ' s_4 '.