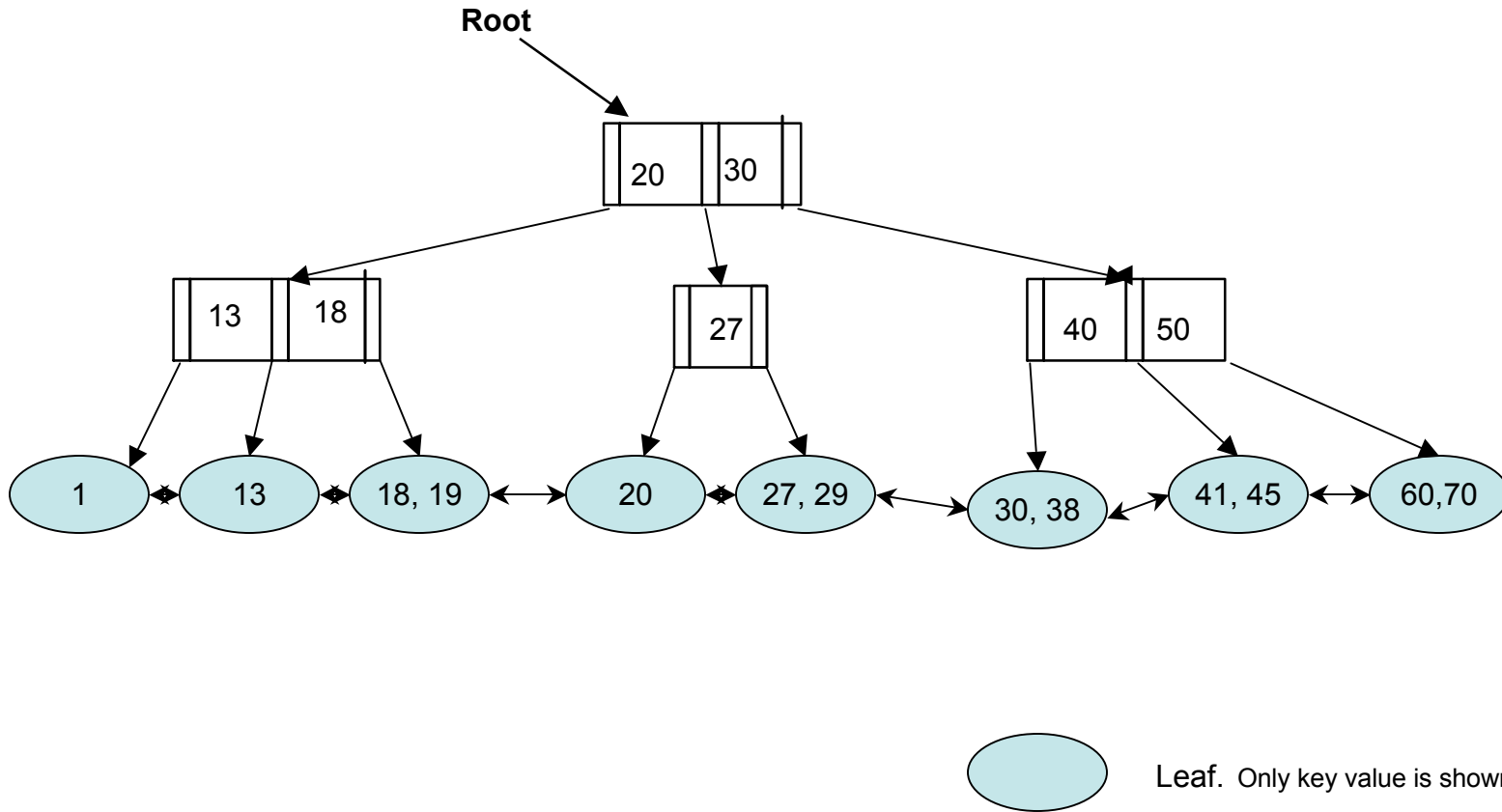


COS 597A, Fall 08: Problem Set 5, Problem 2 Solution

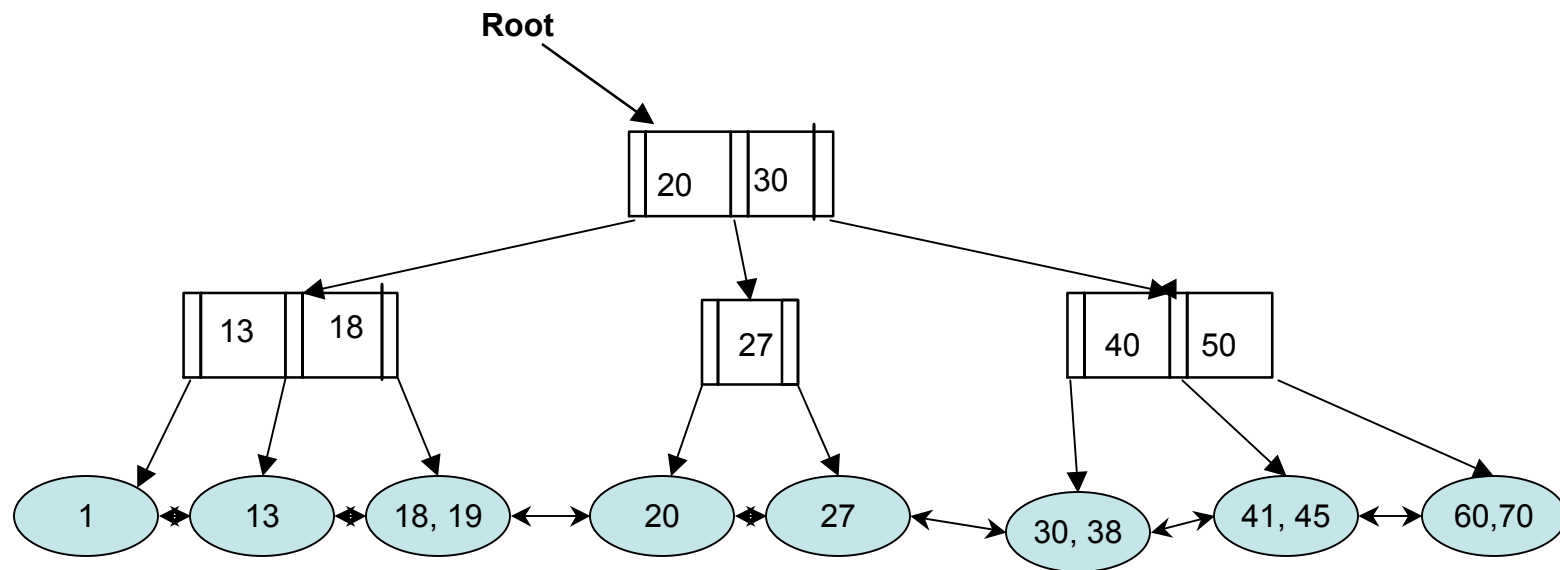
Initially:



Part A - Remove 29:

Follow root to interior node with key 27 to leaf containing 29

Remove 29 from leaf. B+ tree properties preserved. Done



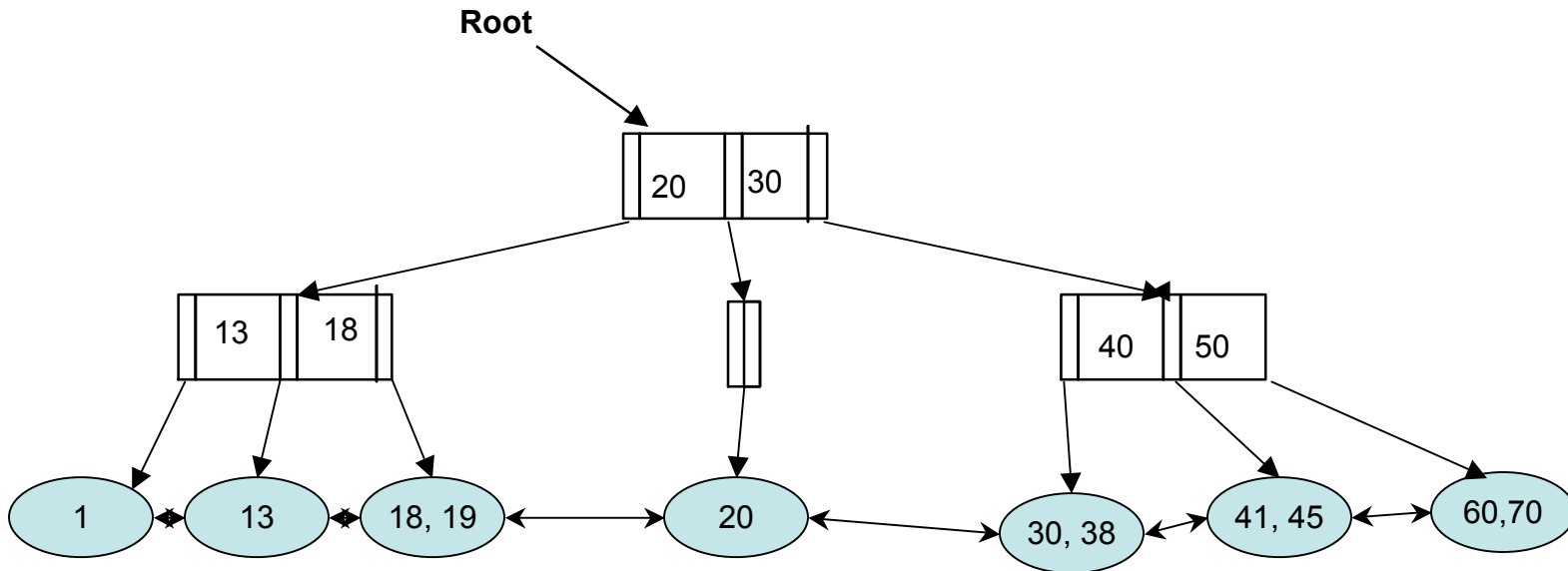
Part B- Remove 27:

Follow root to interior node with key 27 to leaf containing 27

Remove 27 from leaf. Leaf is too small.

Check sibling containing 20 for redistribution – sibling not full enough

Merge siblings, deleting parent key 27



Remove 27, continued:

Parent node P is too small after deletion of key 27

Check sibling for redistribution. Either sibling is full enough. This solution assumes check right sibling first and redistribute with it.

Redistribution:

key 30 moves from parent of P to P

leaf containing 30, 38 shifts from being child of right sibling to be child of P

Key 40 moves up from right sibling of P to parent

Done.

