→ Every node other than the root must have at least $(t-1)$ keys. Every internal node other than the root thus has at least t children.

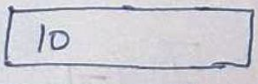
→ Every node can contain at most $(2t-1)$ keys. Therefore, an internal node can have at most $2t$ children.

Q. Let us insert element 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 in an initial empty B-Tree. Minimum degree t as 3.

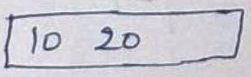
Soln: Maximum number of keys a node can accommodate is

$2t-1 \Rightarrow (2*3-1) \Rightarrow 5$.

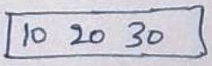
Insert 10



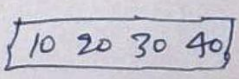
Insert 20



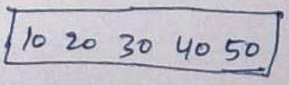
Insert 30



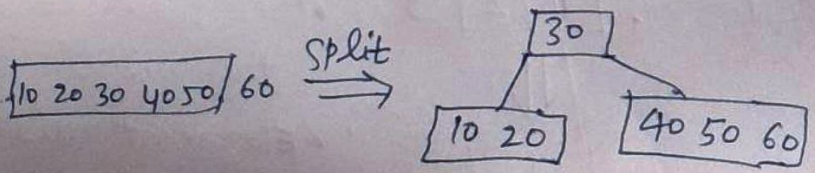
Insert 40



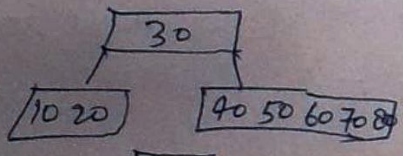
Insert 50



Insert 60



Insert 70, 80



Insert 90