Bottom-Up Approach:

(2-3 tree)

- Insert M
- Insert N
- Insert A

(P.T.O)

- Insert B
Bottom-Up Insert:
1. Find the location to insert, and insert it.
2. If the number of keys is not exceed the limit, done!
3. If the number of keys > limit
   - consider rotation with sibling (left sibling, then right sibling) if sibling have space left.
   - If both sibling are full then do a split and carry one the fix-up start at the original parent.

Deletion:
- remove C
- remove F
- remove A
- remove B
- remove A
Bottom-Up-Delete:

1. Find the location to delete, and delete it.
2. If the location is a leaf:
   2-1. If # key > min keys, done.
   2-2. If # key < min key
        - Consider rotation with sibling (left then right),
          if sibling have > min keys
        - If both sibling have only min number of key,
          then do a merge with the sibling (left then right),
          then carry on fix-up start at the original parent.
3. If the location is not a leaf:
   - Find predecessor k' and replace k and delete k'
   - Find successor k'' and replace k and delete k''