# M- Way Search Tree:

The m-way search trees are multi-way trees which are generalised versions of binary trees where each node contains multiple keys (or data values).
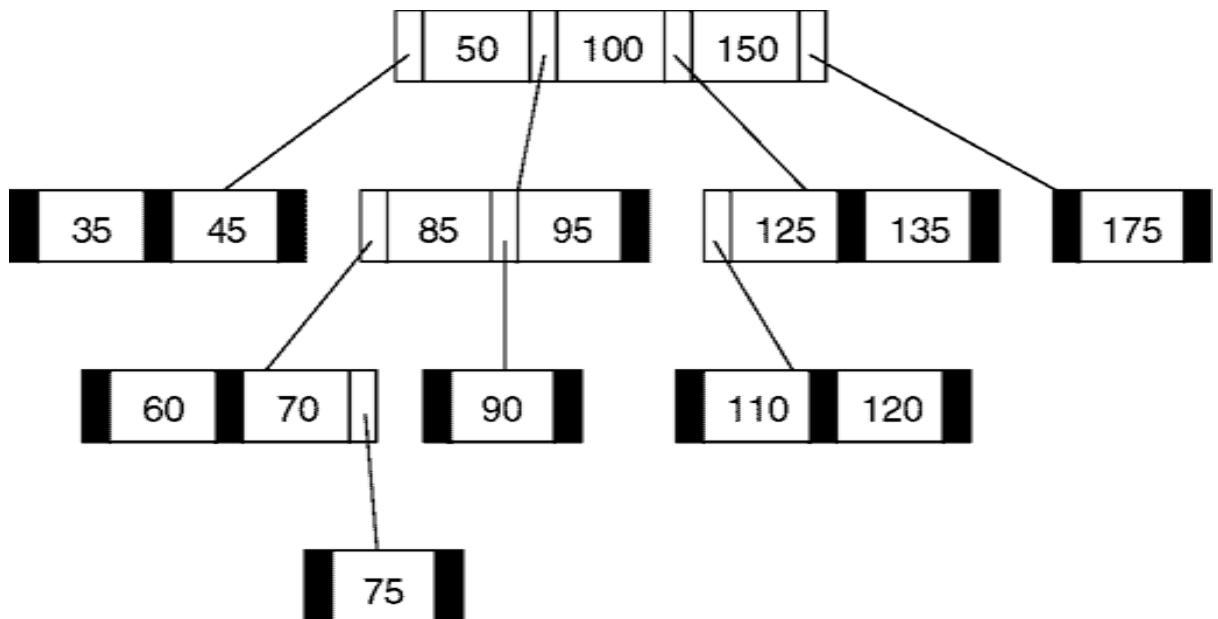
M-way trees have the following properties:
1. Each node has 0 .. m subtrees
2. A node with k < m subtrees, contains k-1 keys.
3. The key values of the first subtree are all less than the key value.
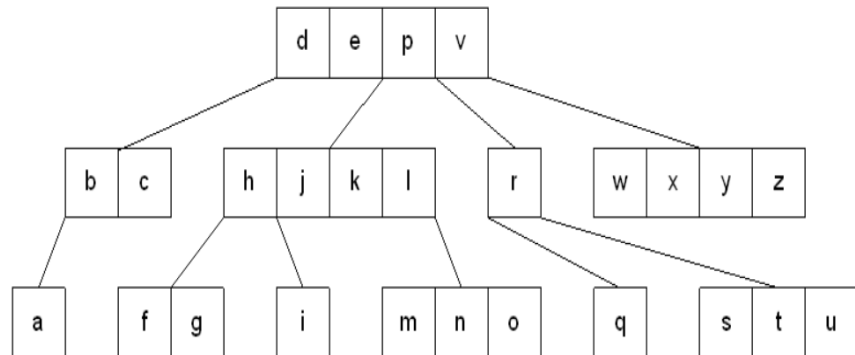4. The data entries are ordered.
5. All subtrees are m-way trees.

Example:
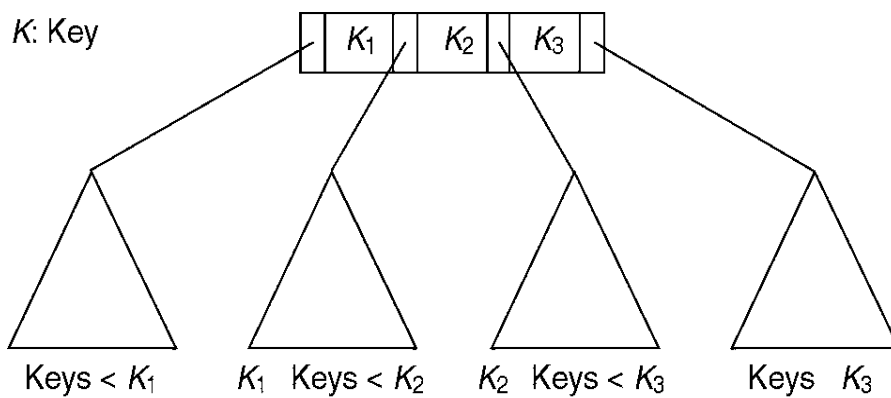
Example-1: A four way tree: i.e. multiway tree of order 4

Example-2: Multi-way tree of order 5

B –Tree:

- B-tree is a specialized m-way tree.

- A B-tree of order m can have at most m-1 keys and m children.

- A B-tree of order m contains all the properties of an M-way tree. In addition, it contains the following properties.

1. Every node in a B-Tree contains at most m children.
2. Every node in a B-Tree except the root node and the leaf node contain at least m/2 children.
3. The root nodes must have at least 2 nodes.
4. All leaf nodes must be at the same level.

It is not necessary that, all the nodes contain the same number of children but, each node must have m/2 number of nodes.

Example: A B-tree of order 4