m-Way Search Tree

An m-way search tree T may be an empty tree. If T is non-empty, it satisfies the following properties:

(i) For some integer m known as the order of the tree, each node has at most m child nodes. A node may be represented as $A_0, (K_1, A_1), (K_2, A_2) \ldots (K_{m-1}, A_{m-1})$

where K_i, $1 <= i <= m-1$ are the keys and

A_i, $0 <= i <= m-1$ are the pointers to the subtree of T.

m-Way Search Tree

[2] If the node has **k** child nodes where **k<=m**, then the node can have only (**k-1**) keys, K_1 , K_2 , K_{k-1} contained in the node such that $K_i < K_{i+1}$ and each of the keys partitions all the keys in the subtrees into **k** subsets

[3] For a node A_0 , $(K_1 , , A_1), (K_2, A_2,).....$ (K_{m-1} , A_{m-1}) all key values in the subtree pointed to by A_i are less than the key K_{i+1} , $0<=i<=m-2$ and all key values in the subtree pointed to by A_{m-1} are greater than K_{m-1}

m-Way Search Tree

[4] Each of the subtree A_i , 0<=i<=m-1 are also m-way search tree

m-Way Search Tree [m=5]