Patricia (Practical algorithm to retrieve information coded in alphanumerics)

Compressed binary trie may be represented using nodes of a single type called augmented branch nodes and this resulting structure is called Partricia. It is obtained from the following way:

1. Replace each branch node by an augmented branch node.
2. Eliminate the element node.
3. Store the data previously in the element node in the data of the augmented branch node. Since every non-empty compressed binary trie has one less branch node that it has element nodes, it is necessary to add one augmented branch node called the header node. The remaining structure is the left sub-tree of the header node. The bit number of the header node is 0. The assignment of data to augmented branch nodes is done in such a way that the bit number in the augmented branch node is less than or equal to that in the parent of the element node that contained this data.
4. Replace the original pointers to element nodes to the respective augmented node.

Searching

- To search for an element with key k, begin at the header node and follow a path determined by the bits in k.
- When an element pointer is followed, the key in the node reached is compared with k. This is the only key comparison made. No comparisons are made on the way.

Multiway Trie

- Multiway Trie are used when the key values are of varying size.
- A trie is a tree of degree , $m \geq 2$ in which branching at any level is determined by only a portion of the key.
- Here the trie contains two kinds of nodes, the element node and the branch node.
- The element node contains the data and the branch node contains 27 pointers to subtrees (26 for alphabets and 1 for the blank character which is used to terminate all keys which are prefix of another key).