Data Structures and its Applications

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DATA STRUCTURES AND ITS APPLICATIONS

Implementation of TRIE Trees

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TRIE Trees – Implementation

Structure of a node in a TRIE Tree :

- A node of a TRIE tree is represented as shown below.
- One field for each alphabet(A – Z), 26 columns.
- Each column is a pointer to another TRIE node or carries NULL and
- One field for end of word (key).

A	B	C	D	E	F	.....	W	X	Y	Z
F1	F2	F3	F4	F5	F6	.....	F23	F24	F25	F26
End of Word / (eok)										

Address of the next node (reference for us)
Field number – for user's reference no field is created , No memory is allocated
End of word / key field

```
struct trienode
{
  struct trienode* child[26];
  int endofword;
};
```

TRIE Trees – Implementation

```
struct trienode
{
   struct trienode* child[26];
   int endofword;
};
```

A	B	C	D	E	F	.....	W	X	Y	Z
F1	F2	F3	F4	F5	F6	.....	F23	F24	F25	F26
End of Word / (eok - $)										

Address of the next node (reference for us)
Field number
End of word / key field

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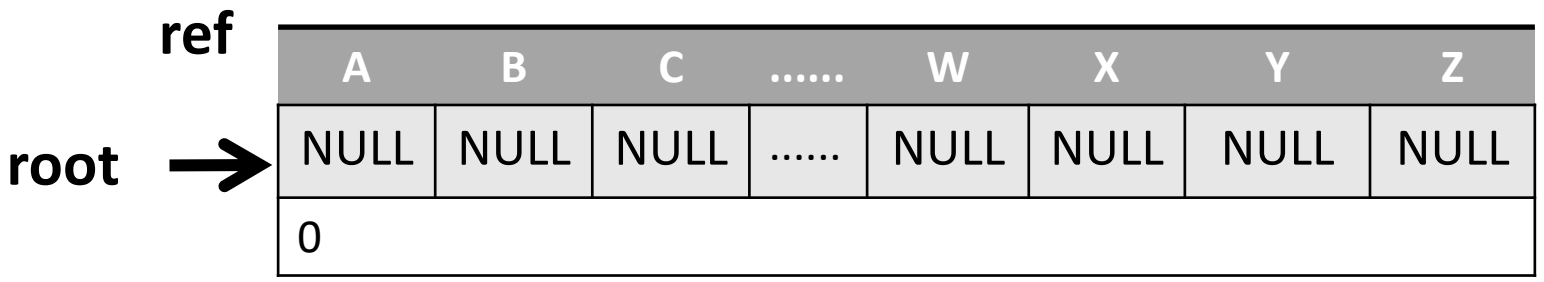
TRIE Trees – Implementation

Creation of a node in a TRIE Tree using malloc() function.

```
struct trienode *getnode()
 {
   int i;
   struct trienode *temp;
    temp=(struct trienode*)(malloc(sizeof(struct trienode)));
    for(i=0;i<26;i++)
        temp->child[i]=NULL;      // Initialize all the fields to NULL.
    temp->endofword=0;     // Initialize endofword to 0.
   return temp;
 }
```



root=getnode();

TRIE Trees – Implementation

Insertion of a node in a TRIE Tree

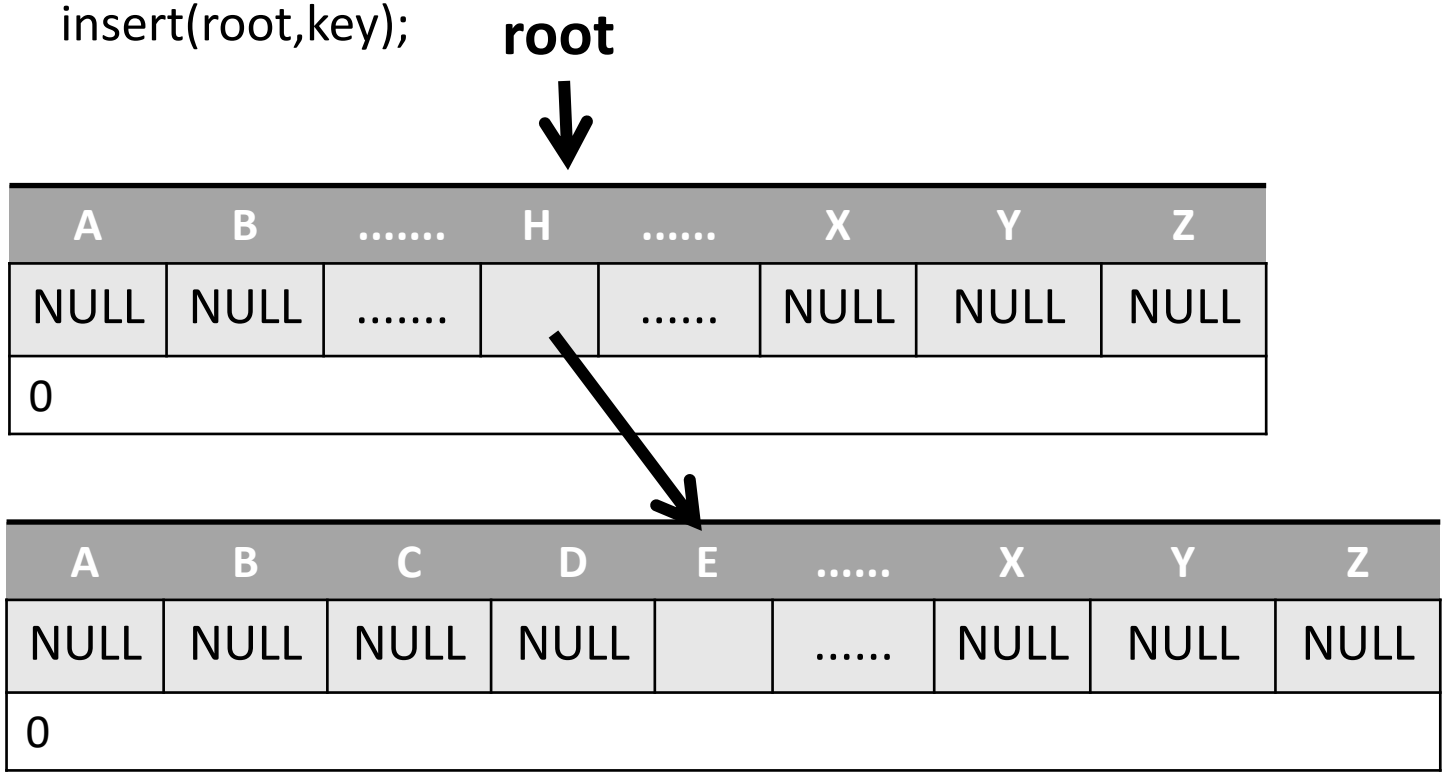
```
void insert(struct trienode *root, char *key)
 {
   struct trienode *curr;
   int i,index;

   curr=root;
   for(i=0;key[i]!='\0';i++)
   {
     index=key[i]-'a';
     if(curr->child[index]==NULL)
        curr->child[index]=getnode();
     curr=curr->child[index];
   }
   curr->endofword=1;
 }
```

TRIE Trees – Implementation

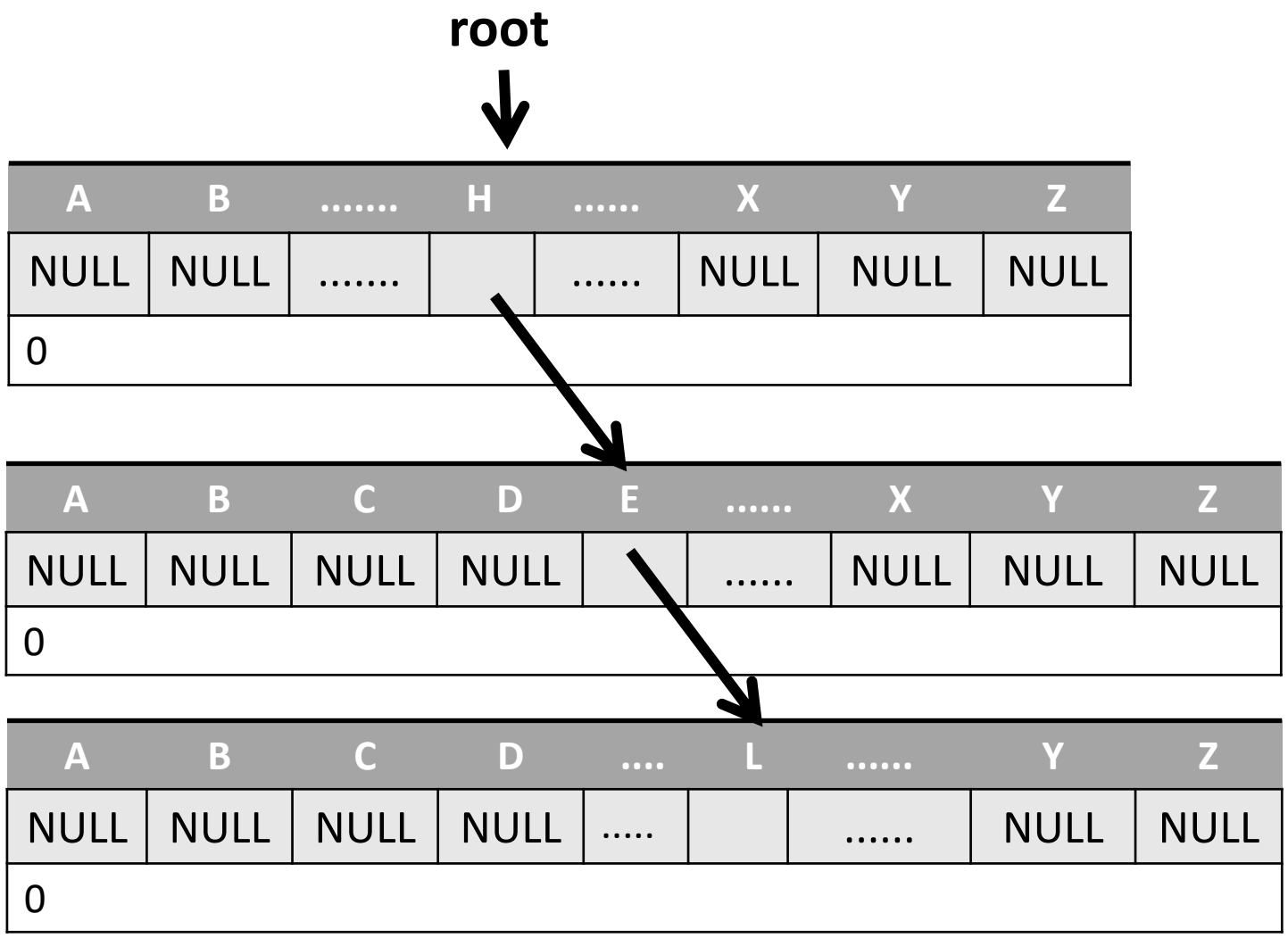
Insertion of a node in a TRIE Tree

On function call insert, the given string “HELLO” is inserted into the TRIE tree as shown below.

insert(root,key);



TRIE Trees – Implementation



THANK YOU

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