Dictionary using Tries

Problem Statement:-

To make a dictionary using tries. The program should display the meaning of the word available in the dictionary**.**

Tries:-

In computer science, a trie is a kind of search tree—an ordered tree data structure that is used to store a dynamic set or associative array where the keys are usually strings. Unlike a binary search tree, no node in the tree stores the key associated with that node; instead, its position in the tree defines the key with which it is associated. All the descendants of a node have a common prefix of the string associated with that node, and the root is associated with the empty string.

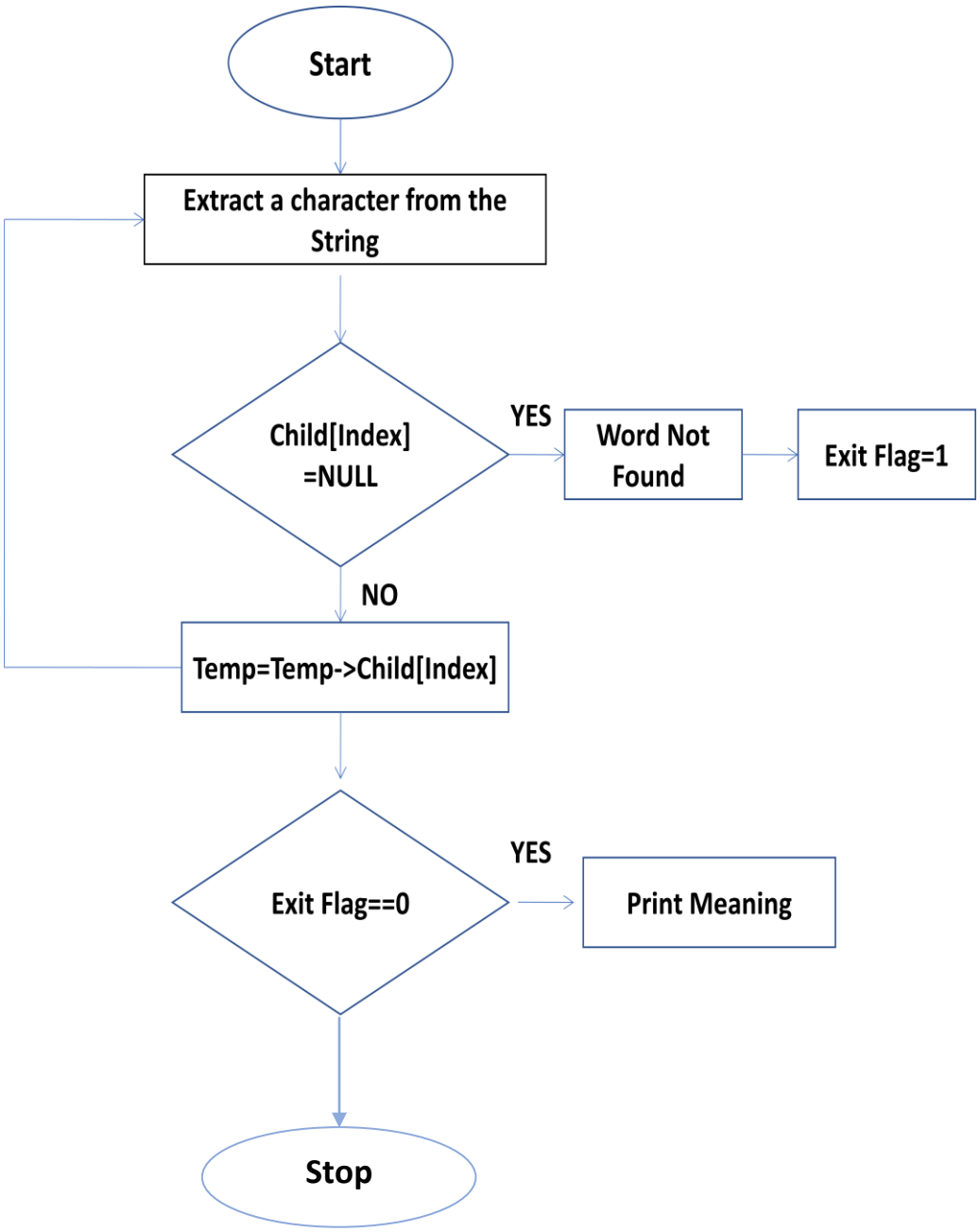
Tries an efficient information re*trie*val data structure. Using Tries, search complexities can be brought to optimal limit (key length). If we store keys in binary search tree, a well balanced BST will need timeproportional to **M * log N**, where M is maximum string length and N is number of keys in tree. Using Tries, we can search the key in O(M) time. However the penalty is on Tries storage requirements.

Every node of Tries consists of multiple branches. Each branch represents a possible character of keys. We need to mark the last node of every key as end of word node .A Tries node field *isEndOfWord* is used to distinguish the node as end of word node. A simple structure to represent nodes of English alphabet can be as following :-

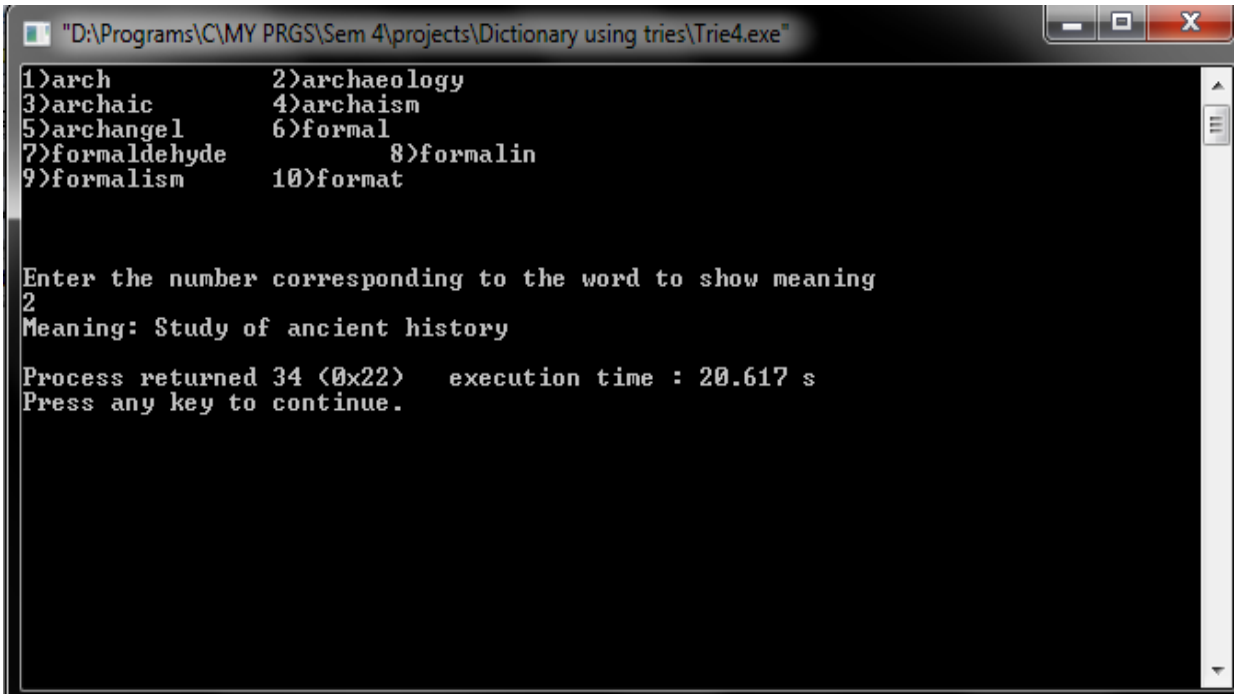
```
  // Tries node

struct TrieNode
{
     struct TrieNode *children[ALPHABET_SIZE];

     // isEndOfWord is true if the node
     // represents end of a word
```

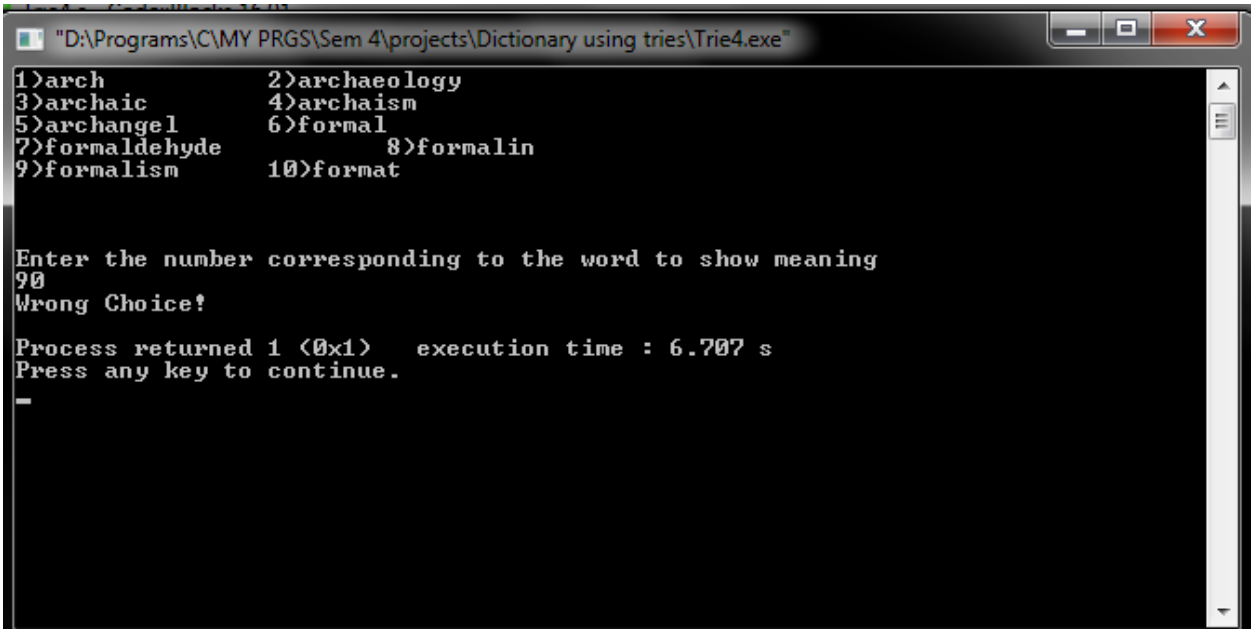
```
    bool isEndOfWord;
};
```

Flow Chart


Start
Extract a character from the String
Child[Index] =NULL
YES
Word Not Found
Exit Flag=1
NO
Temp=Temp->Child[Index]
Exit Flag==0
YES
Print Meaning
Stop

Screenshots





Assumptions :-

The program is a dictionary of only ten words at present:

arch,archaeology,archaic,archaism,archangel,formal,formaldehyde,formalin,formalism,format

All words of the dictionary are entered in *small case*.

Results:-

In our project, we have successfully entered the desired strings into our Dictionary using Tries with their corresponding meanings. Here by using Tries, we can search the key(i.e. our required string to be searched in the dictionary) in O(M) time, where M is maximum string length.

Future work:-

The project at present shows the correct meaning of ten words.
The future development will consist of addition of more words and addition of structures which hold every detail of the searched word like its synonym ,antonym ,tense ,and pronunciation.