

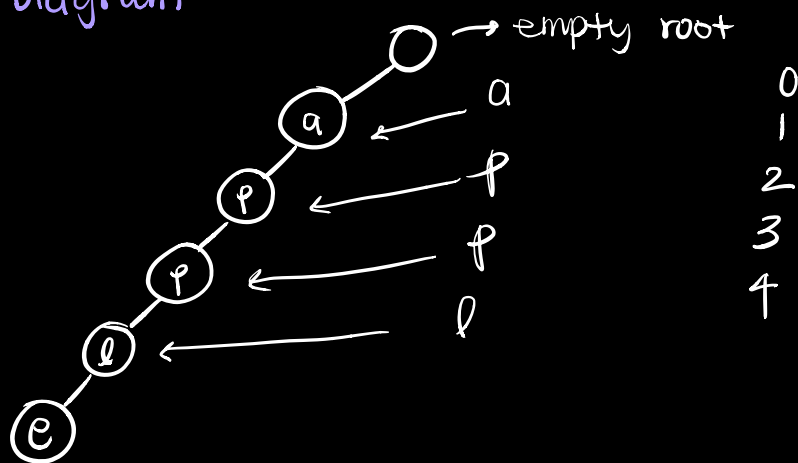
Implement Trie (Prefix tree)

Implement a trie with the following methods:

- insert
- search
- startsWith

```
ex) let trie = new Trie();  
    trie.insert("apple");  
    trie.search("apple"); // true  
    trie.search("app");  // false  
    trie.startsWith("app"); // true
```

Diagram



- each node of a trie has a collection of other nodes/letters
- A node can have a flag such as "isword"
- A node can have a key, representing a letter
- A node can have an array or map of child nodes

if a letter does not already exist in the collection of child nodes, a new node should be created & referenced

Implementation

```
var Node = function(letter){  
    let letter = this.letter;  
    let children = new Map();  
    let isWord = false;  
}
```

}

```
class Trie () {
```

```
  this.root = new Node("");
```

```
  function insert (word) {
```

```
    for (let i = 0; i < word.length; i++)
```

```
      let letter = word[i];
```

```
      if (!root.children.get(letter)) {
```

```
        let newLetter = new Node("");
```

```
        root.children.set(letter, newLetter);
```

```
      }
```

```
      if (i === word.length - 1) { // last letter in word
```

```
        root.children.get(letter).isWord = true;
```

```
      }
```

```
      root = root.children.get(letter);
```

```
    }
```

```
  };
```

```
  function search (word) {
```

```
    for (let i = 0; i < word.length; i++) {
```

```
      let letter = word[i];
```

```
      if (!root.children.get(letter)) {
```

```
        return false;
```

```
      }
```

```
      if (i === word.length - 1) {
```

```
        return root.isWord ? true : false;
```

```
      }
```

```
      root = root.children.get(letter);
```

```
    }
```

```
  };
```

```
function startsWith(substring) {  
  for (let i = 0; i < prefix.length; i++) {  
    let letter = prefix[i];  
    if (!root.children.get(letter)) {  
      return false;  
    }  
    if (i === prefix.length - 1) {  
      return true;  
    }  
    root = root.children.get(letter);  
  }  
};  
}
```