

Bacharelado em Ciência da Computação
Universidade Federal do ABC

Algoritmos e Estruturas de Dados II

AutoComplete com Trie

Allan Holanda Targino

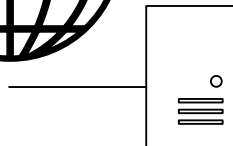
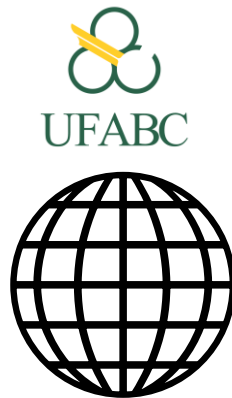
RA: 11061112

Elsio Antunes

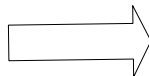
RA: 11097612

Dezembro de 2016

Motivação



```
{  
  system_name: [ ],  
  accession: "TNC000000000",  
  schema_version: "2",  
  alternate_accessions: [ ],  
  culture_harvest_date: "2012-04-10",  
  aliases: [  
    "Richard-Spencer/MCF-7 rep 3"  
  ],  
  email: [ ],  
  submitted_by: [ ],  
  uid: "56e9ff2b-25ao-to58-9928-f63b6622",  
  biosample_type: "Immortalized cell line",  
  passage_number: 5,  
  notes: "(PMTD: 4357757)",  
  source: [ ],  
  developmental_name: [ ],  
  donor: [ ],  
  pooled_from: [ ],  
  status: "CURATED",  
  part_of: [ ],  
}
```



Metodologia

- Linguagem: Javascript
- Estrutura: Trie
- Compactação: LZW

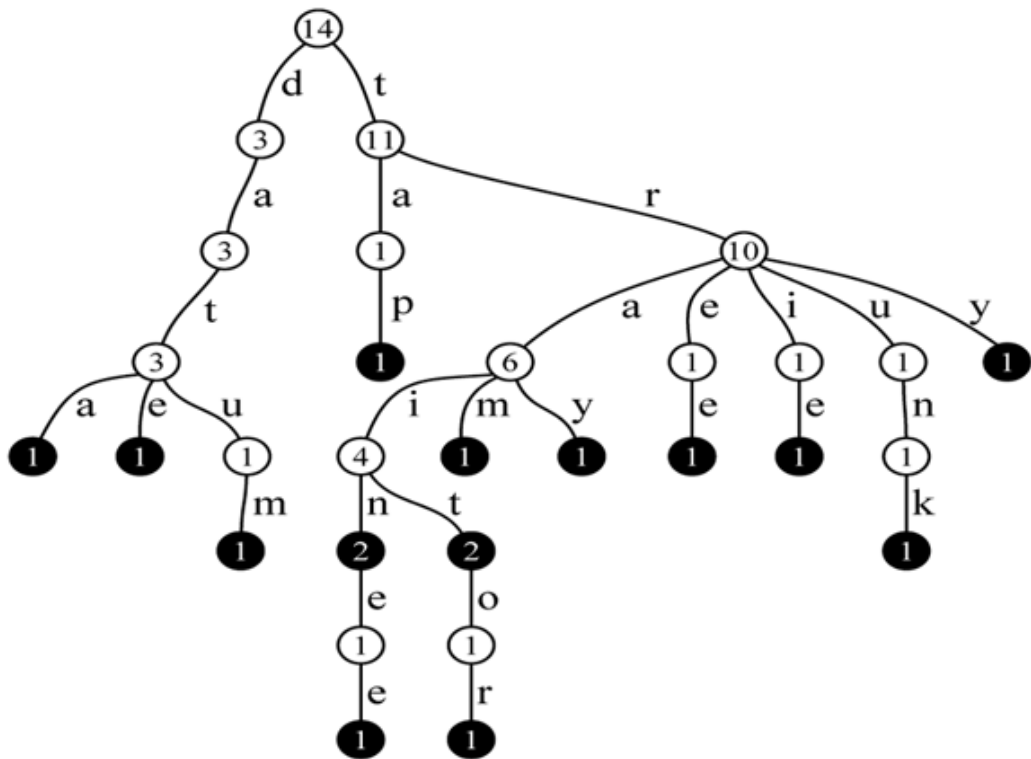
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee

```
String buscalinear(A, str) {  
    for(i=0; i<sizeof(A); i++)  
        if(A[i] == str)  
            return i;  
    return nil;  
}
```

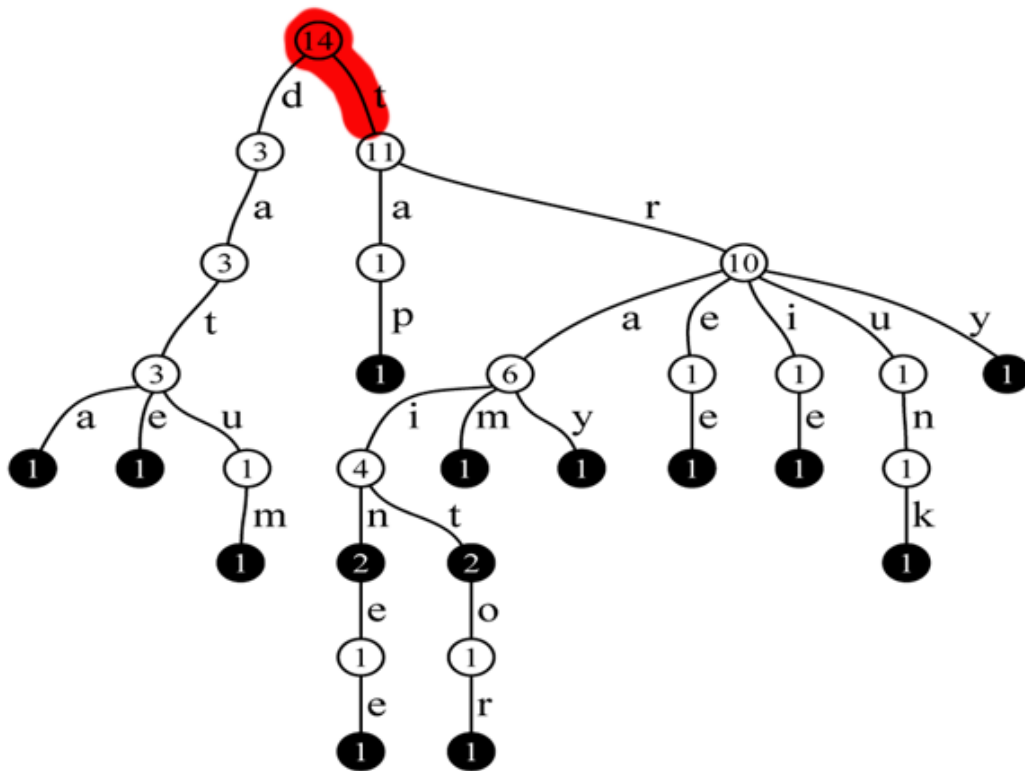
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
date

trainee



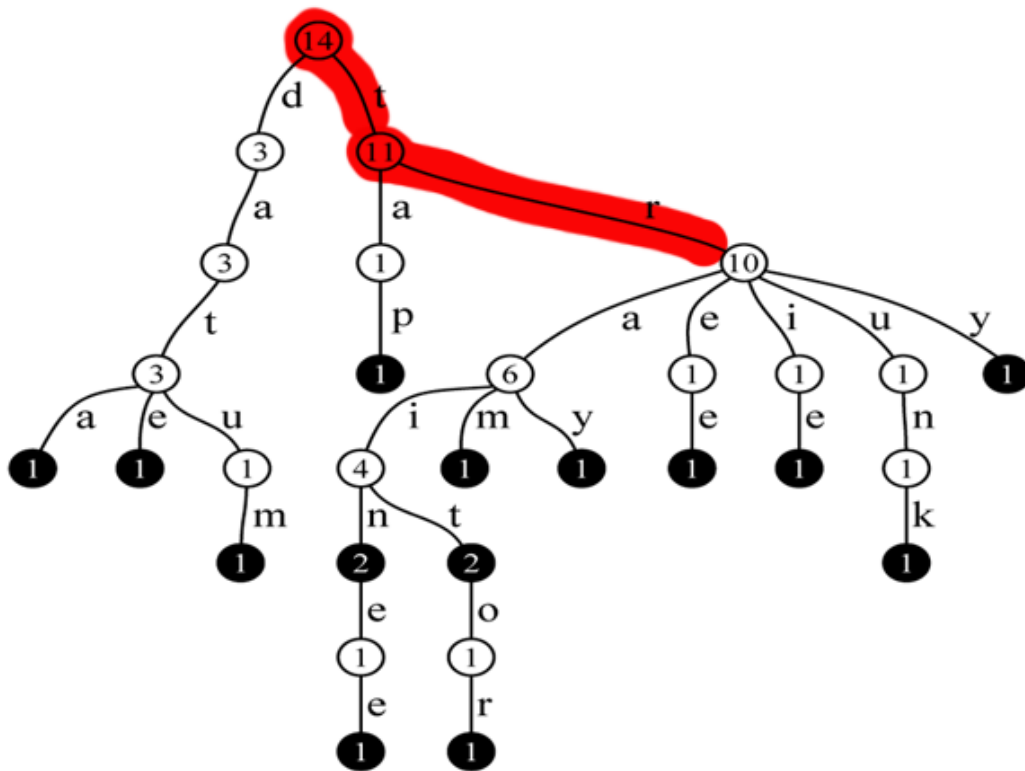
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



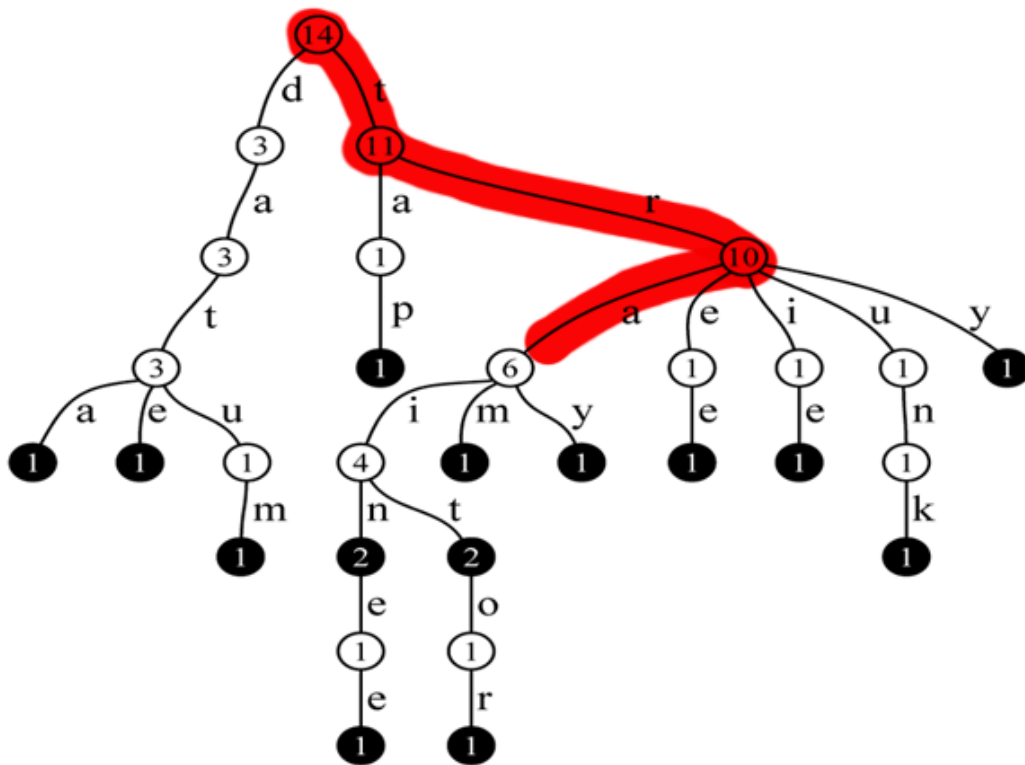
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



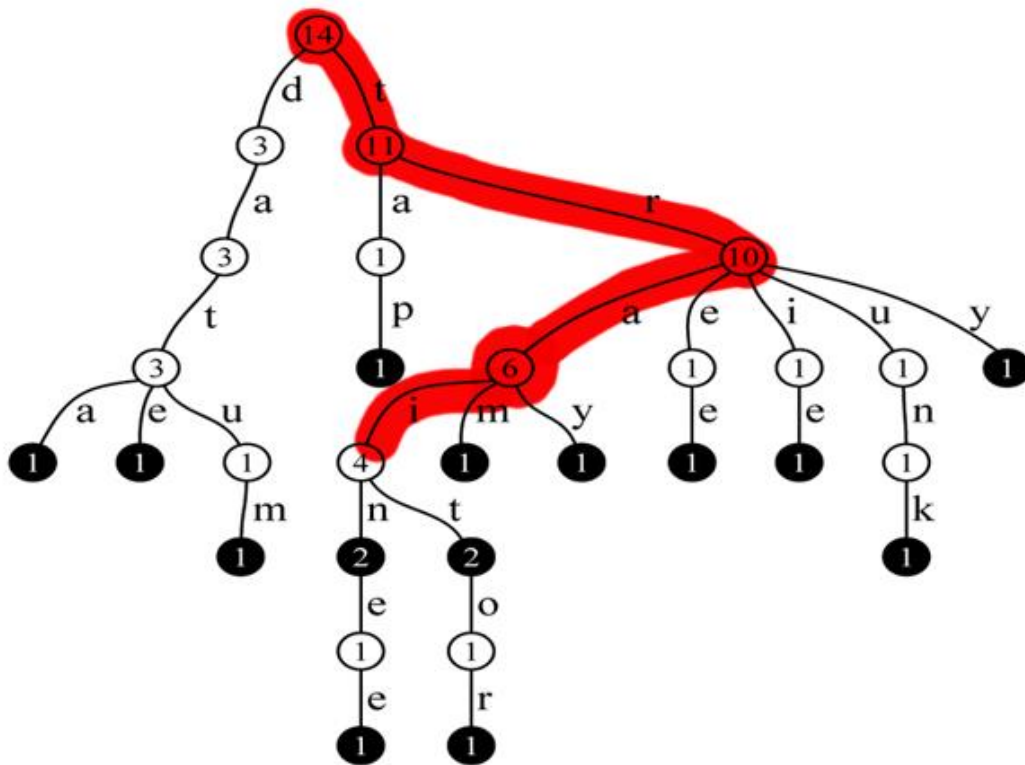
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



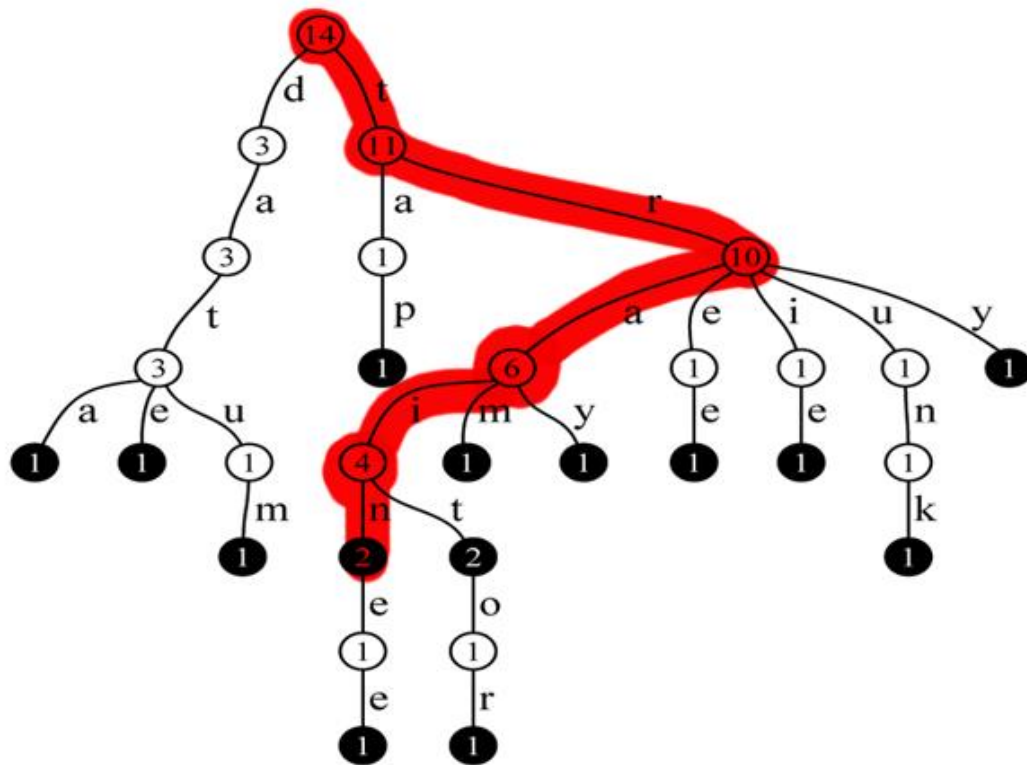
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



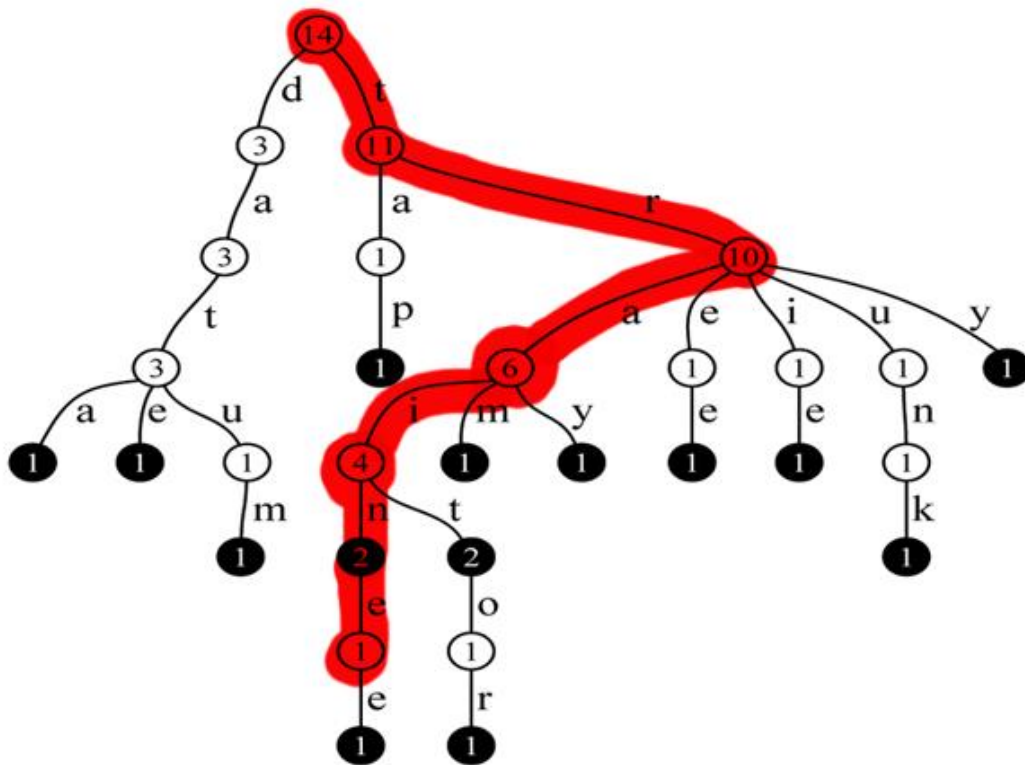
try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



try,
trunk,
trie,
tree,
tray,
tram,
traitor,
trait,
trainee,
train,
tap,
datum,
date,
data

trainee



:Bases Matematicas

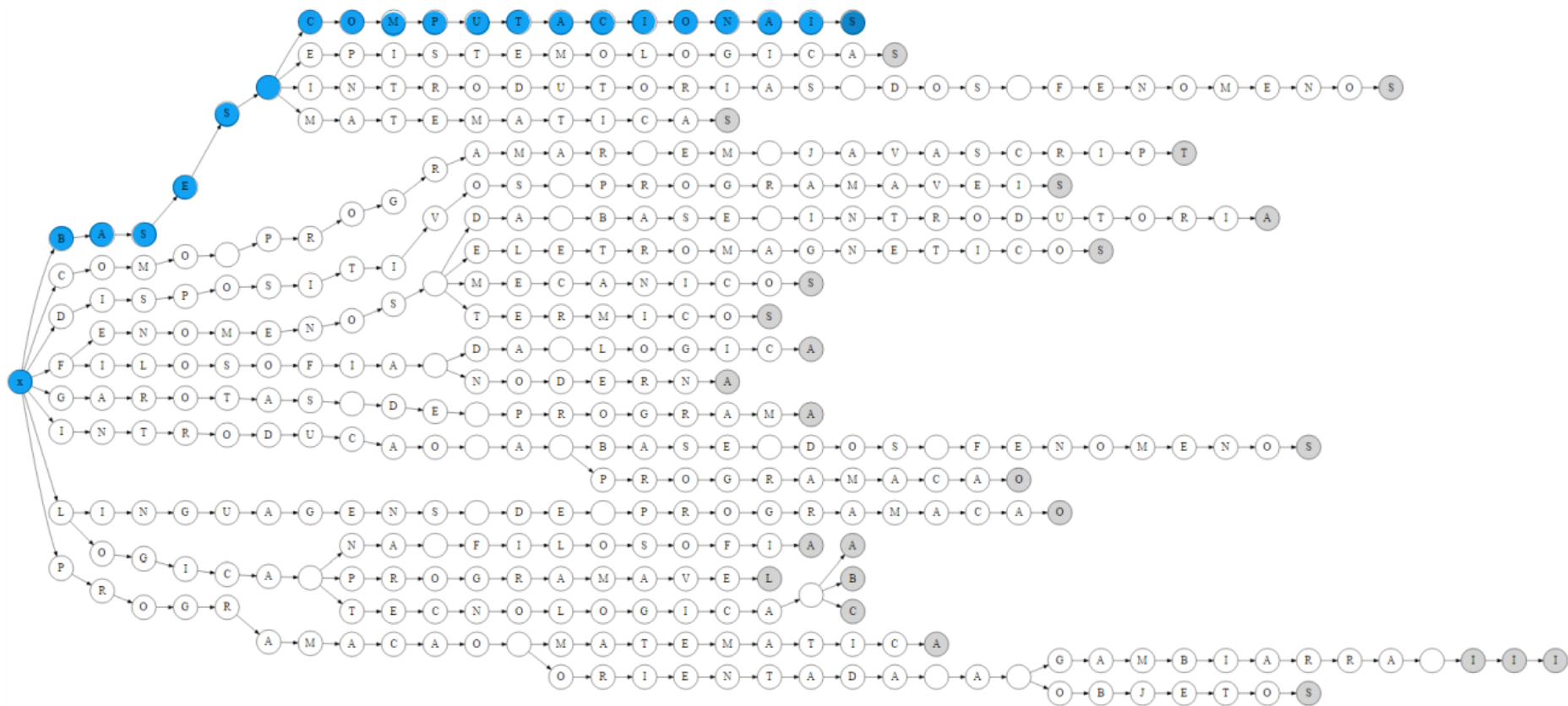
base

- 1 Base Experimental das Ciencias Naturais
- 2 Bases Biologicas para Engenharia I
- 3 Bases Biologicas para Engenharia II
- 4 Bases Computacionais da Ciencia
- 5 Bases Conceituais da Energia
- 6 Bases Epistemologicas da Ciencia Moderna
- 7 Bases Matematicas**
- 8 Bases Neurais da Motricidade

```
void inserir(String str) {  
    Node atual = this.root;  
    for(int i = 0; i < str.length(); i++) {  
        int k = str.charAt(i);  
        if(!atual.letra[k])  
            atual.letra[k] = new Node();  
        atual = atual.letra[k]  
    }  
    atual.fim = true;  
}
```

```
void inOrder(node, str) {  
    if (node.fim)  
        this.out.push(str)  
  
    for (var i=0; i < 256; i++)  
        ch = node.lettra[i]  
        if (ch)  
            this.inOrder(ch, str + chr(i))  
}
```

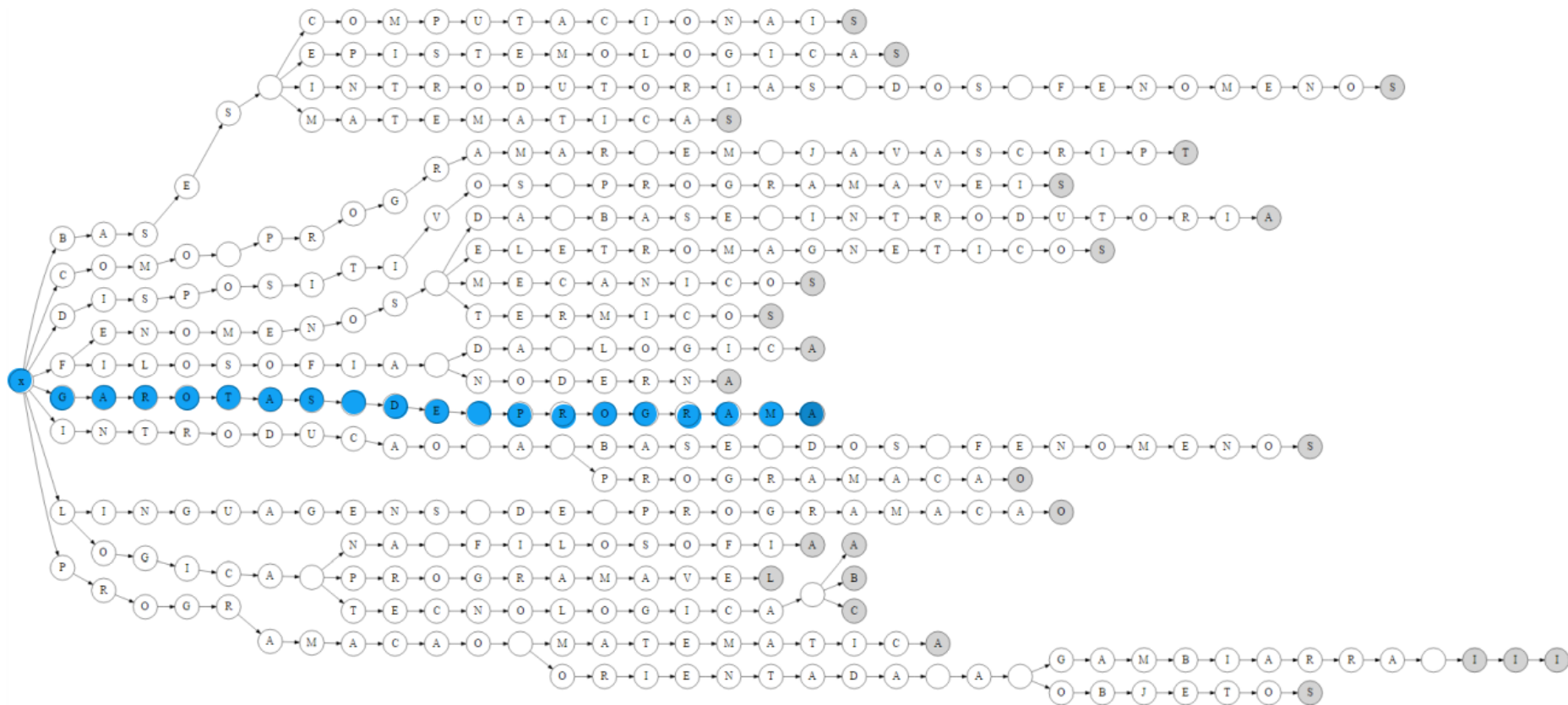
Trie Modificada



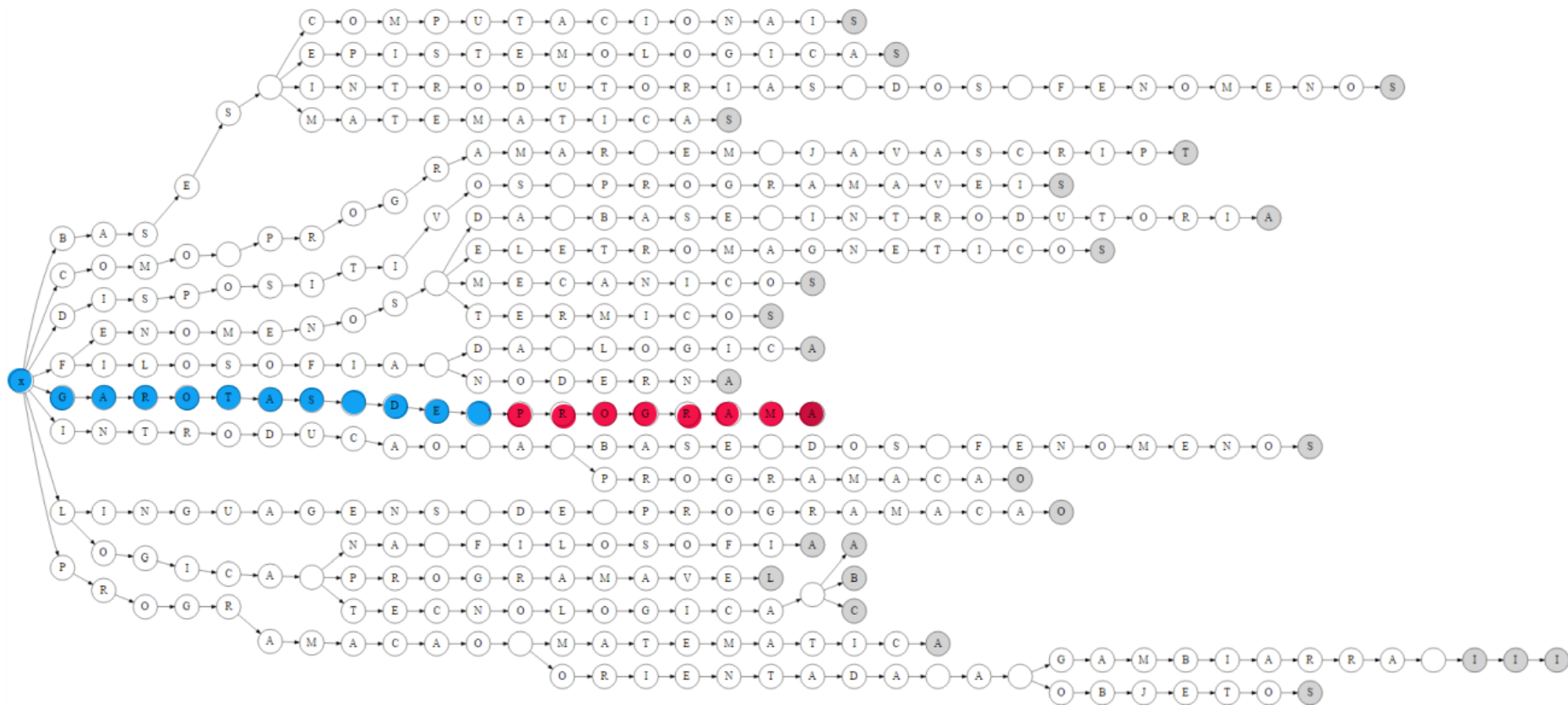
Trie Modificada



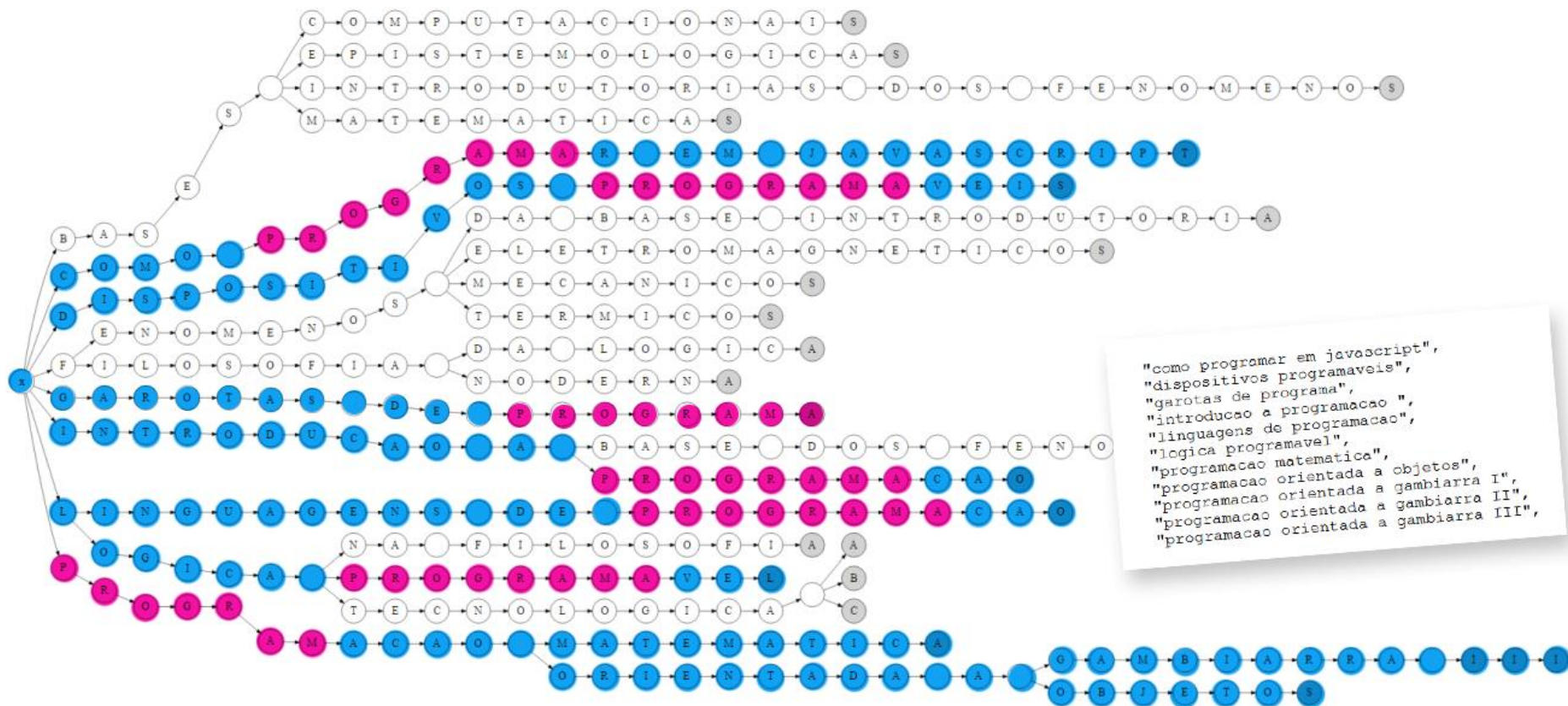
Trie Modificada



Trie Modificada



Trie Modificada



Trie Modificada

Palavra Completa

Palavra de Busca

Complexidade

$$\begin{aligned} &= (n-m) * (m-1) \\ &= n * m - n - m^2 + m \\ &\cong n * m - m^2 \\ &\cong n * m \end{aligned}$$

n = 17 (Bases matemáticas)
m = 4 (Base)

```
listar: function(compare){  
  this.compare = compare  
  this.out = []  
  this.listarRec(this.root, "")  
  return this.out  
},
```

```
listarRec: function(node, str){  
  var n = str.length;  
  var m = this.compare.length;  
  if(node.fim && n >= m){  
    var s = 0;  
    while(s <= n-m){  
      var j = m-1;  
      while(j>0 && str.charAt(s + j).toUpperCase() == this.compare.charAt(j).toUpperCase()){  
        j--;  
      }  
  
      if(j==0){  
        this.out.push(str + ":" + s)  
        break;  
      }  
      s++  
    }  
  }  
}
```

```
for(var i=0; i < 256; i++)  
  if(node.letra[i])  
    this.listarRec(node.letra[i], str + String.fromCharCode(i))
```

```
},
```

:Morfofisiologia animal comparada

animal

- 1 Biologia Animal I
- 2 Biologia Animal II
- 3 Biologia Animal III
- 4 Ecologia Animal
- 5 Morfofisiologia animal comparada

Demo

bit.ly/melhortrie

Considerações Finais

github.com/elsio/Trie

Obrigado!!!