

# Exercício 5 – 0.Criar pilha

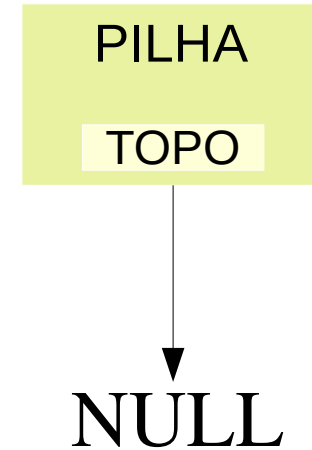
Class pilha:

```
Int tamanho;  
noh* topo;
```

Tamanho = 0

Class noh:

```
Int dado  
noh* próximo;
```



# 1. Empilhar elementos 5,2

*push(valor):*

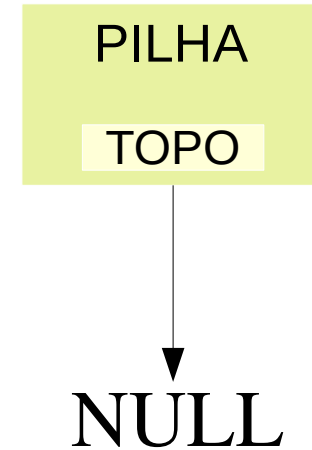
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 0



# 1. Empilhar elementos 5,2

*push(valor):*

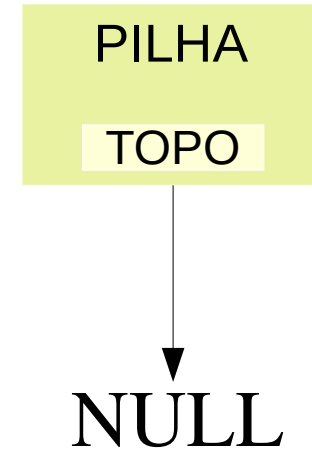
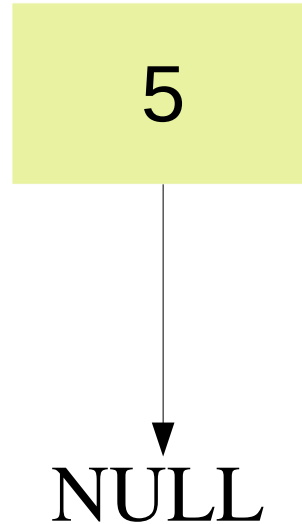
*novο* ← criar\_noh(valor);

*novο.proximo* ← topo;

*topo* ← *novο*;

*tamanho*++;

Tamanho = 0



# 1. Empilhar elementos 5,2

*push(valor):*

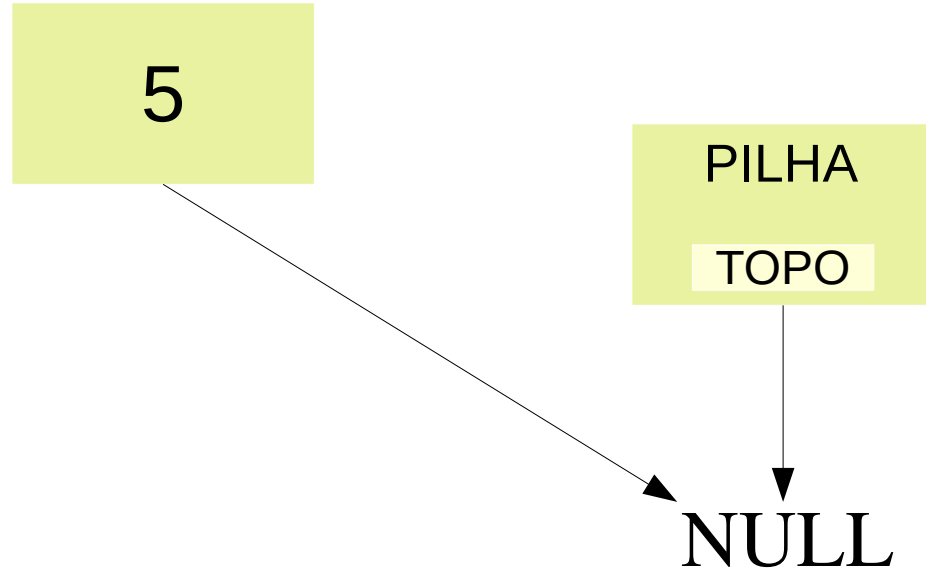
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 0



# 1. Empilhar elementos 5,2

*push(valor):*

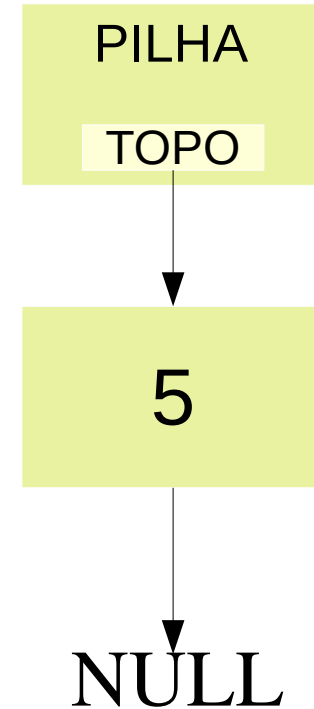
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 0



# 1. Empilhar elementos 5,2

*push(valor):*

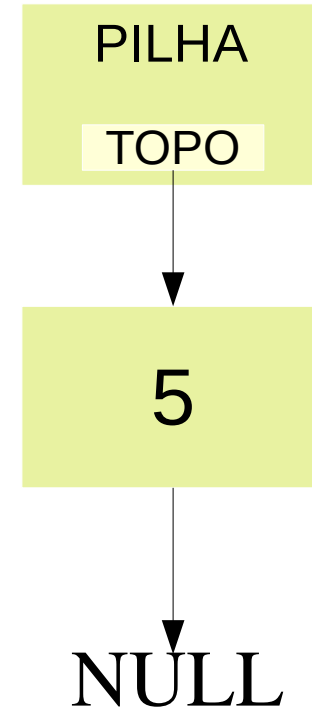
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 1



# 1. Empilhar elementos 5,2

*push(valor):*

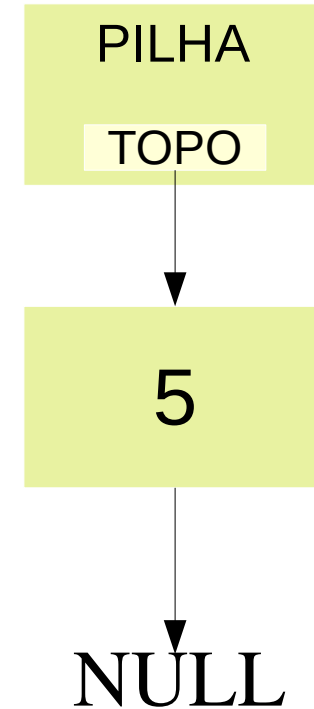
novo ← criar\_noh(valor);

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Tamanho = 1



# 1. Empilhar elementos 5,2

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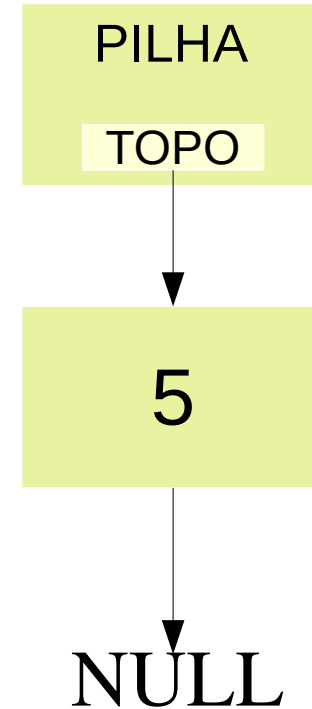
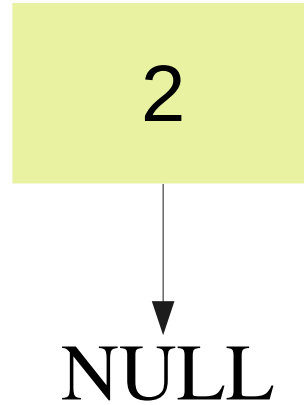
*novο* ← criar\_noh(valor);

*novο.proximo* ← topo;

topo ← *novο*;

tamanho++;

Tamanho = 1





# 1. Empilhar elementos 5,2

*push(valor):*

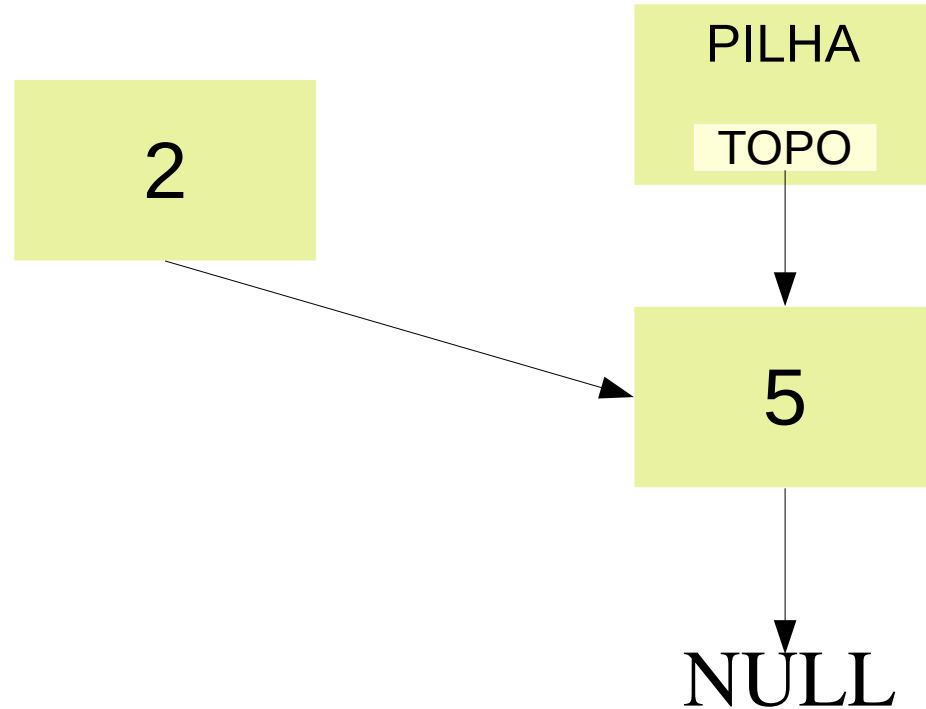
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 1



# 1. Empilhar elementos 5,2

*push(valor):*

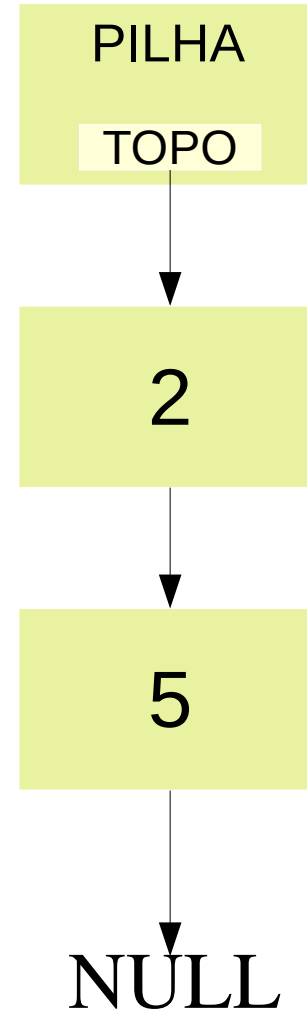
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 1



# 1. Empilhar elementos 5,2

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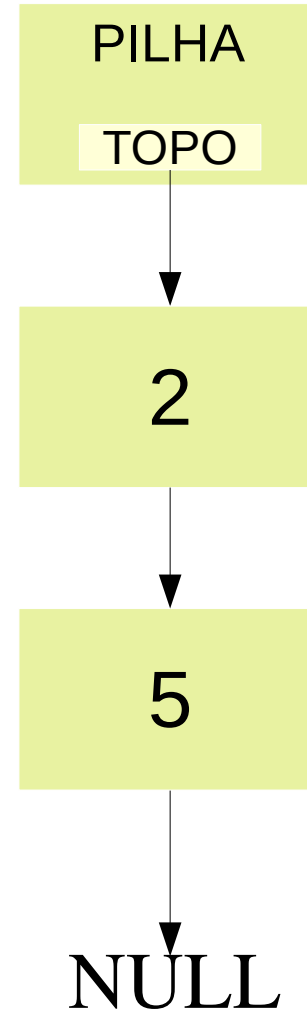
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 2

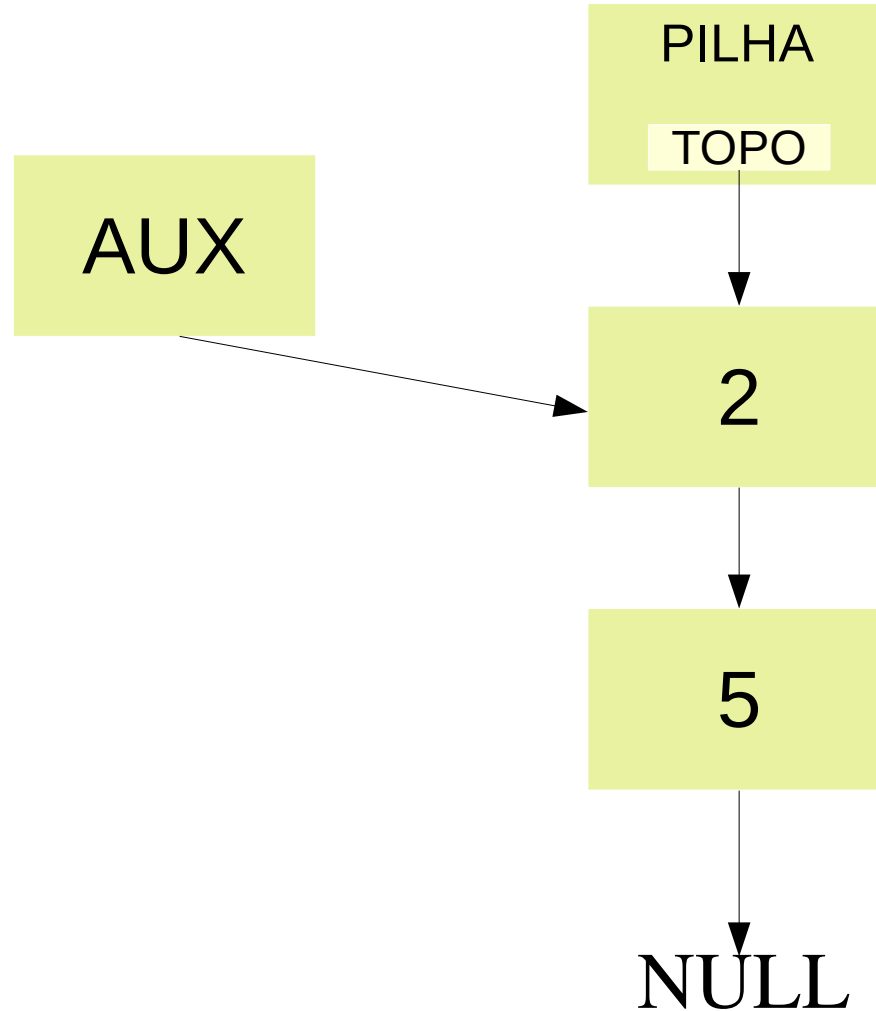


## 2. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2

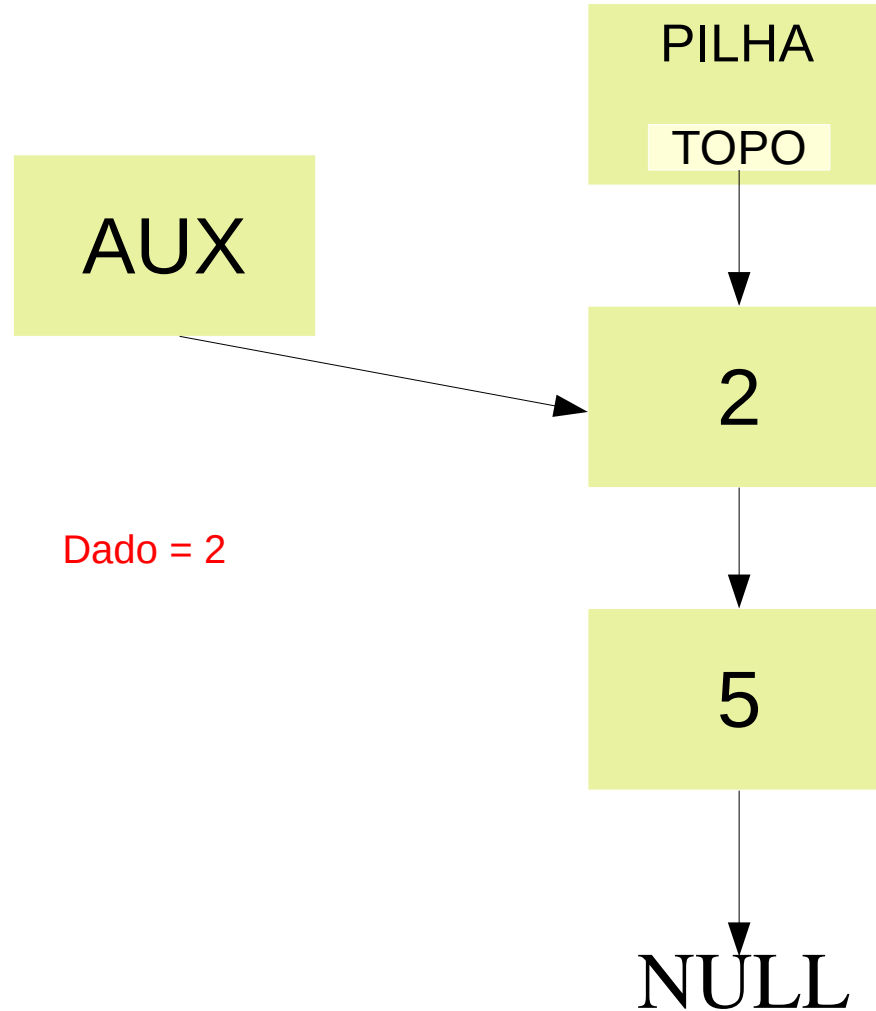


## 2. Desempilhar

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aux ← topo;  
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Tamanho = 2

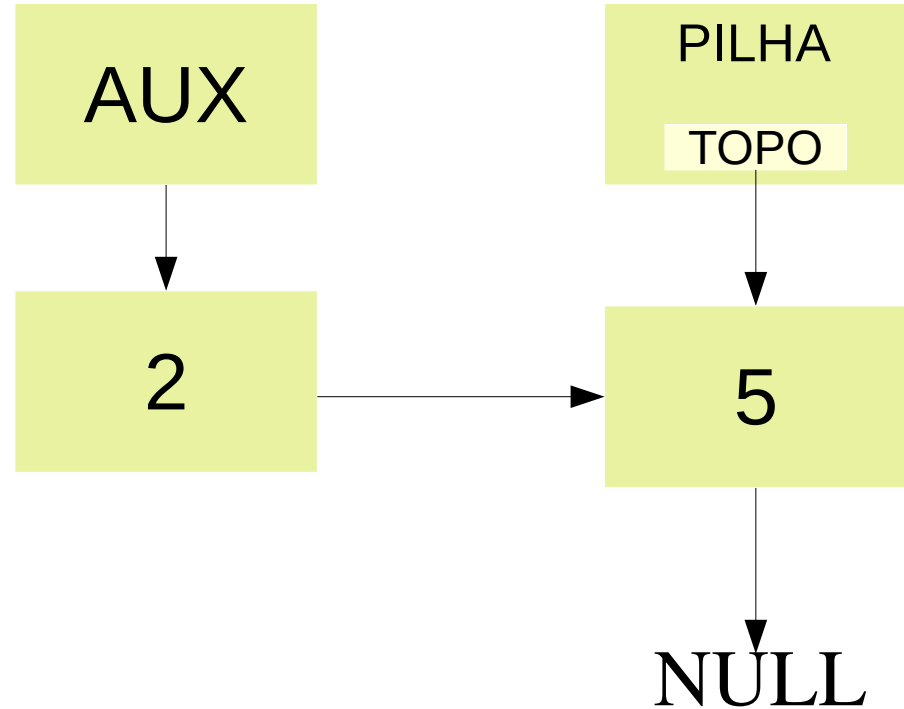


## 2. Desempilhar

pop():

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aux ← topo;  
dado ← aux.valor;  
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tamanho--;
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Tamanho = 2



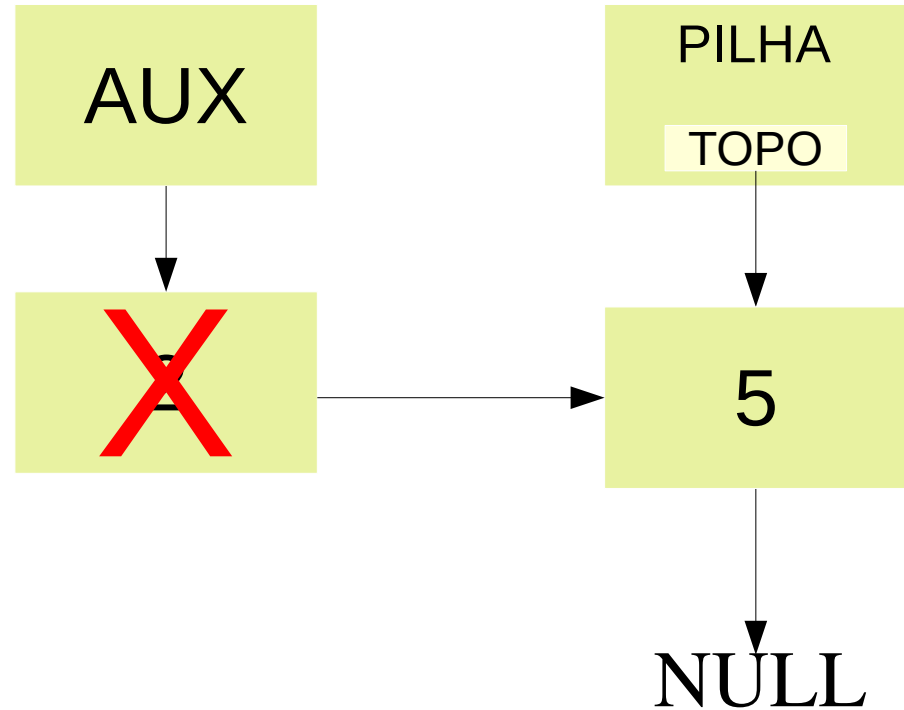
Dado = 2

## 2. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2



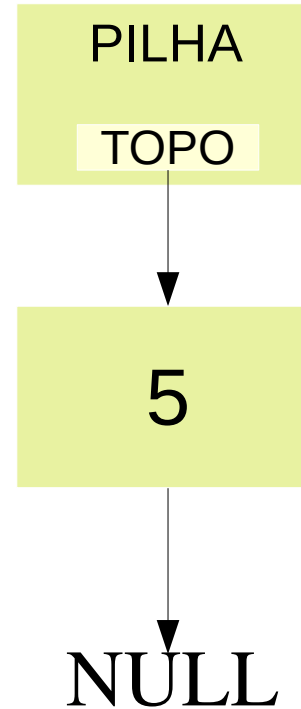
Dado = 2

## 2. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 1



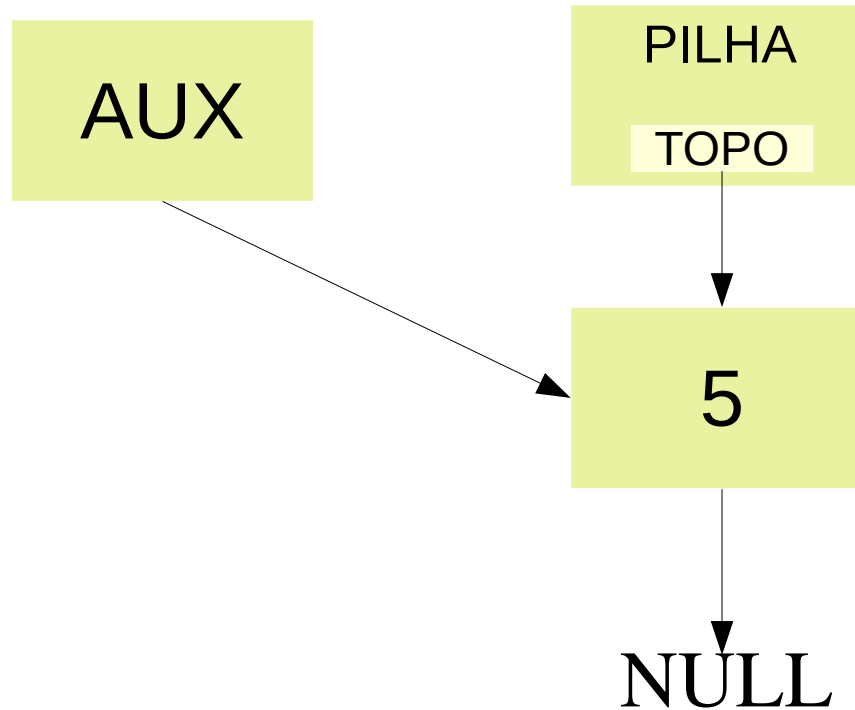


### 3. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 1

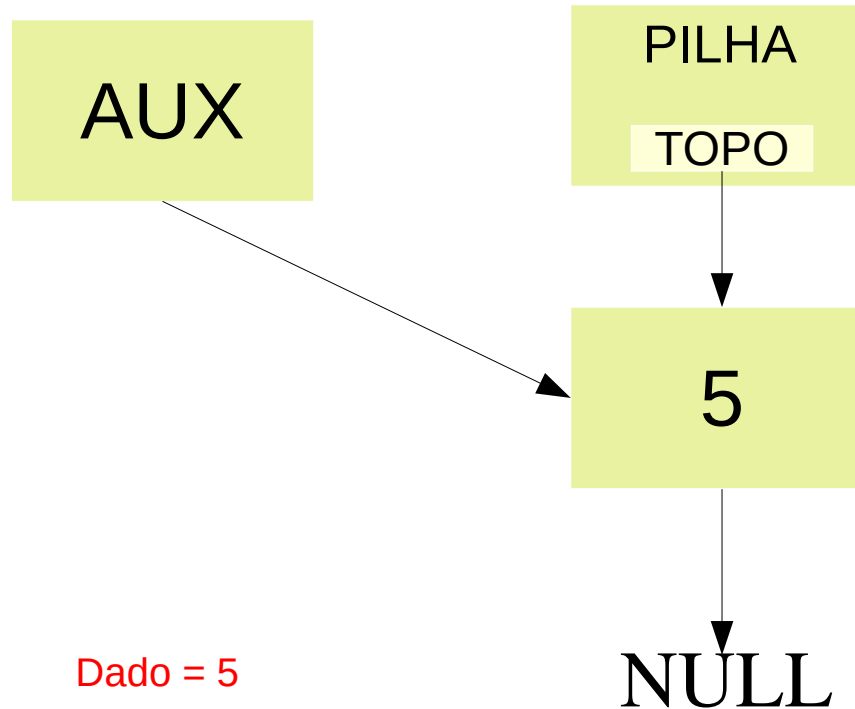


### 3. Desempilhar

pop():

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aux ← topo;  
dado ← aux.valor;  
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tamanho--;
```

Tamanho = 1

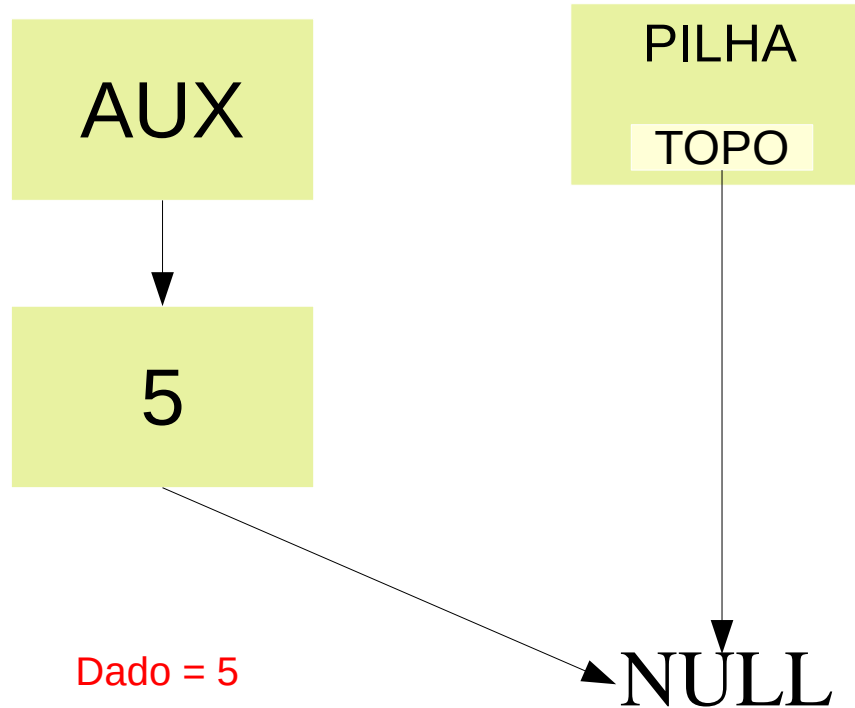


### 3. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 1

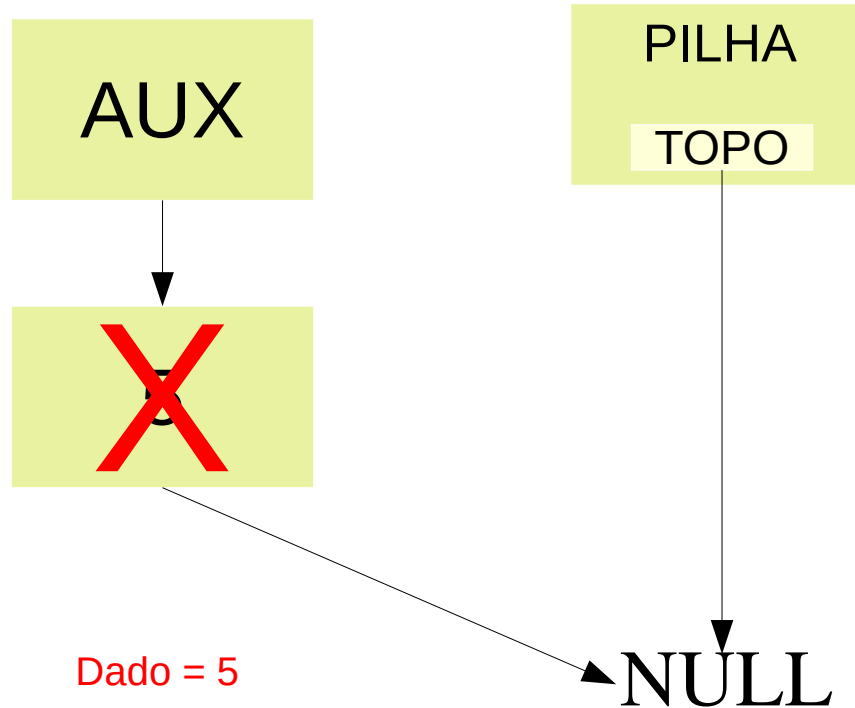


### 3. Desempilhar

pop():

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aux ← topo;  
dado ← aux.valor;  
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apagar(aux);  
tamanho--;
```

Tamanho = 1

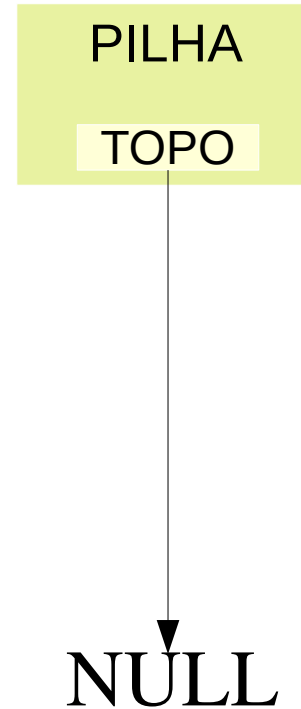


### 3. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 0



## 4. Empilhar elementos 5,11

*push(valor):*

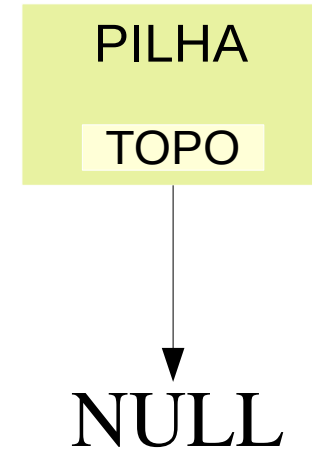
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 0



## 4. Empilhar elementos 5,11

*push(valor):*

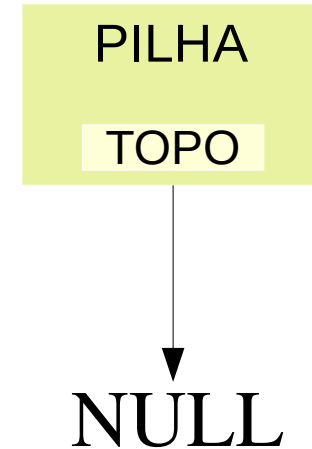
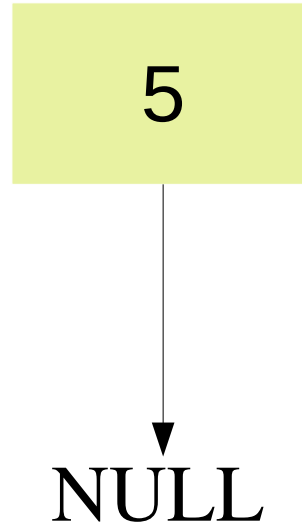
*novο* ← criar\_noh(valor);

*novο.proximo* ← topo;

*topo* ← *novο*;

*tamanho*++;

Tamanho = 0



## 4. Empilhar elementos 5,11

*push(valor):*

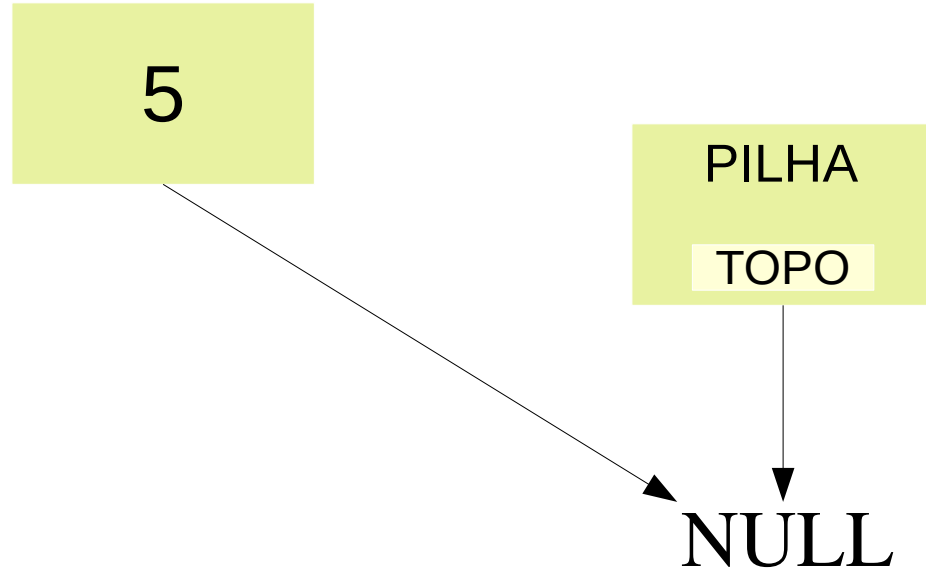
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 0





## 4. Empilhar elementos 5,11

*push(valor):*

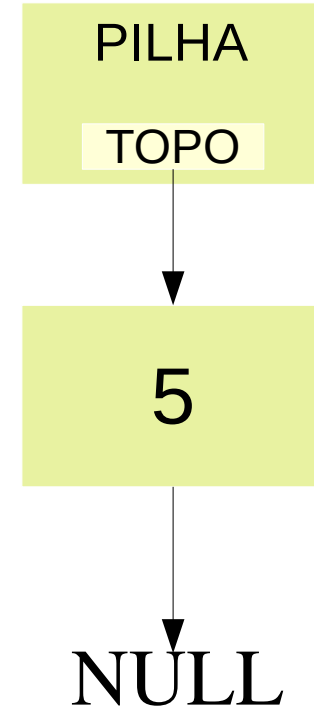
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 0



## 4. Empilhar elementos 5,11

*push(valor):*

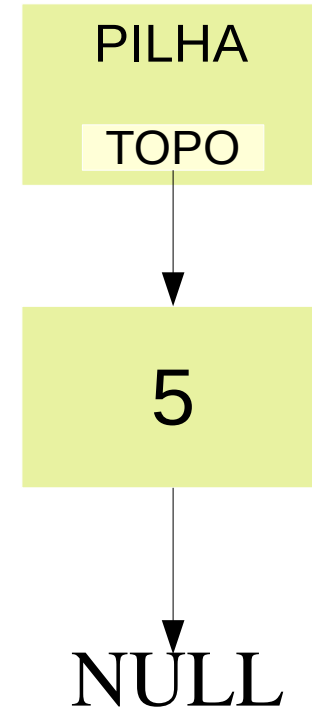
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 1



## 4. Empilhar elementos 5,11

*push(valor):*

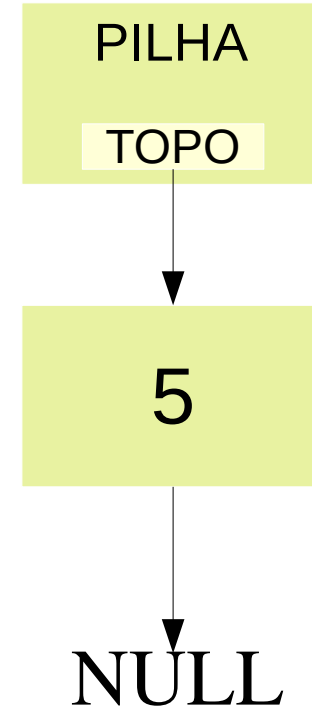
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 1



## 4. Empilhar elementos 5,11

*push(valor):*

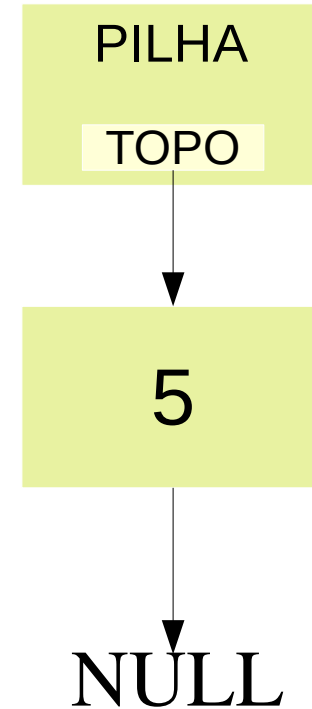
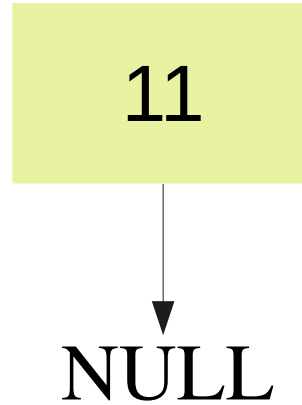
*novο* ← criar\_noh(valor);

*novο.proximo* ← topo;

topo ← *novο*;

tamanho++;

Tamanho = 1



## 4. Empilhar elementos 5,11

*push(valor):*

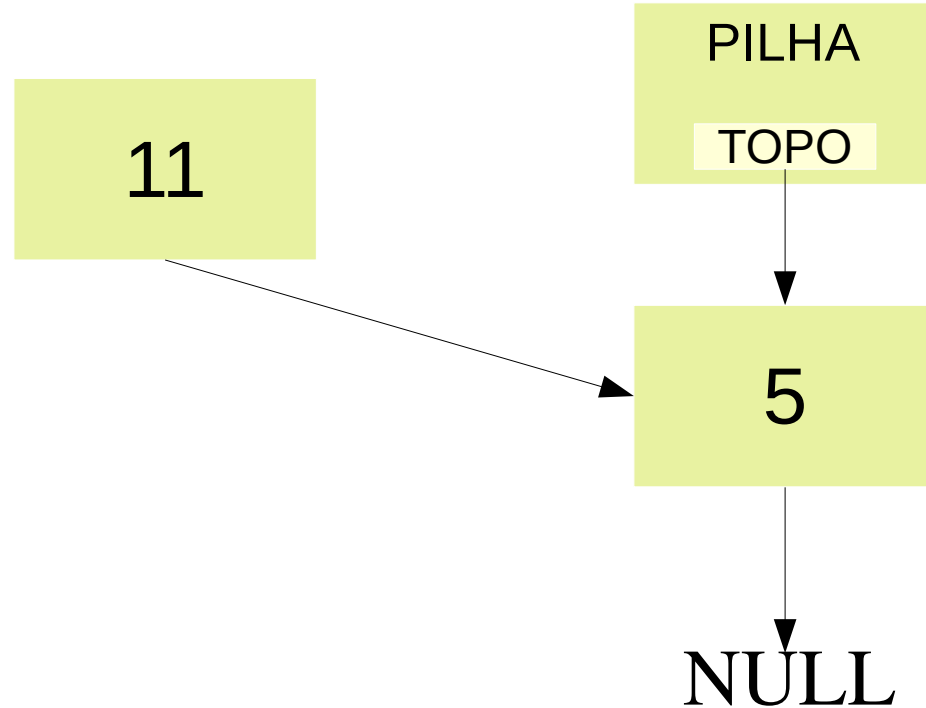
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 1



## 4. Empilhar elementos 5,11

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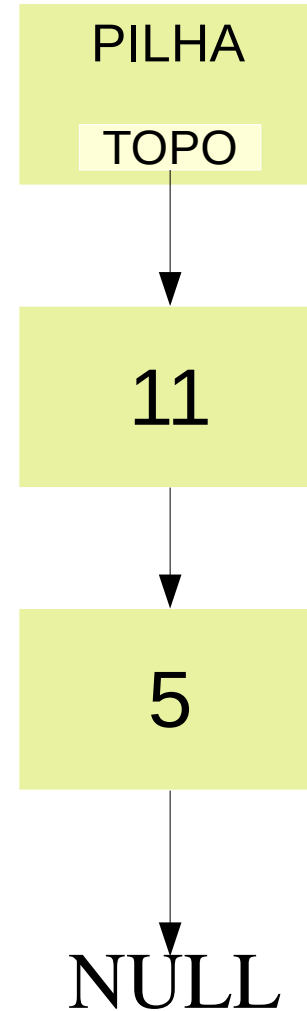
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 1



## 4. Empilhar elementos 5,11

*push(valor):*

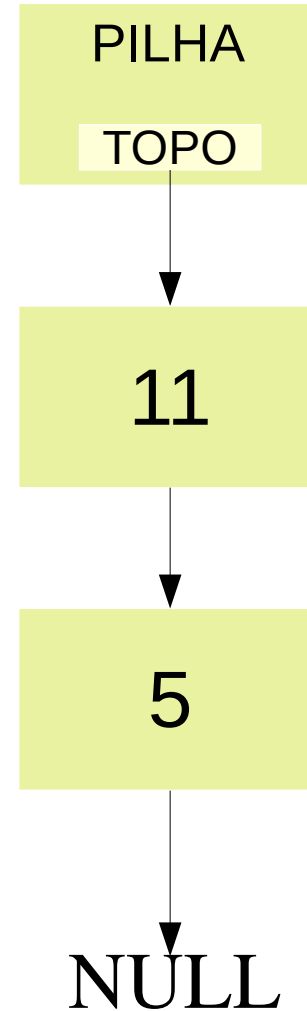
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 2

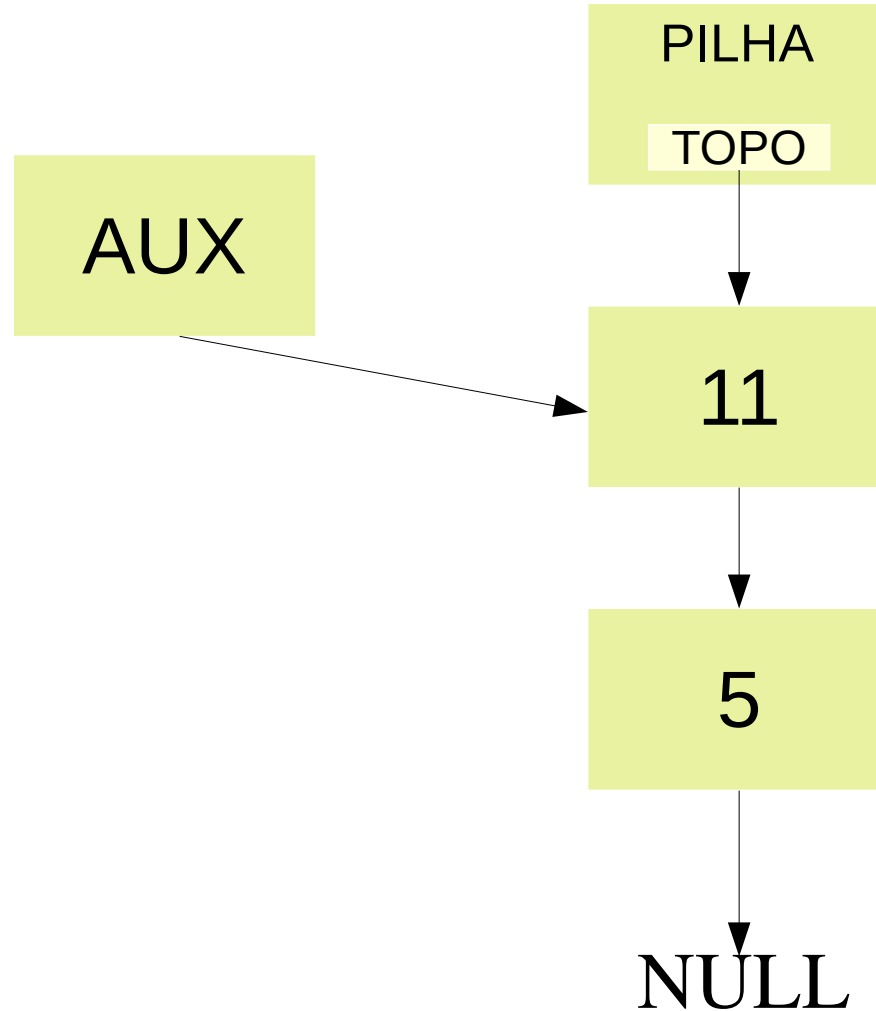


## 5. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2



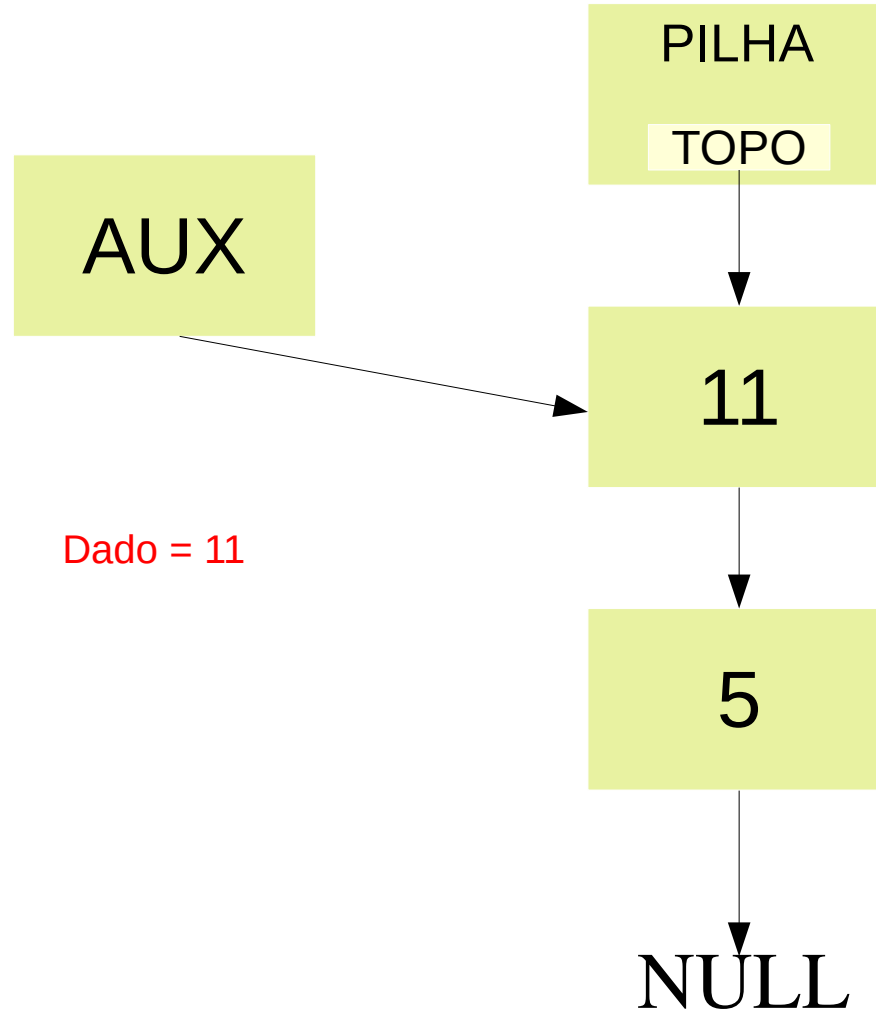


## 5. Desempilhar

pop():

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aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2

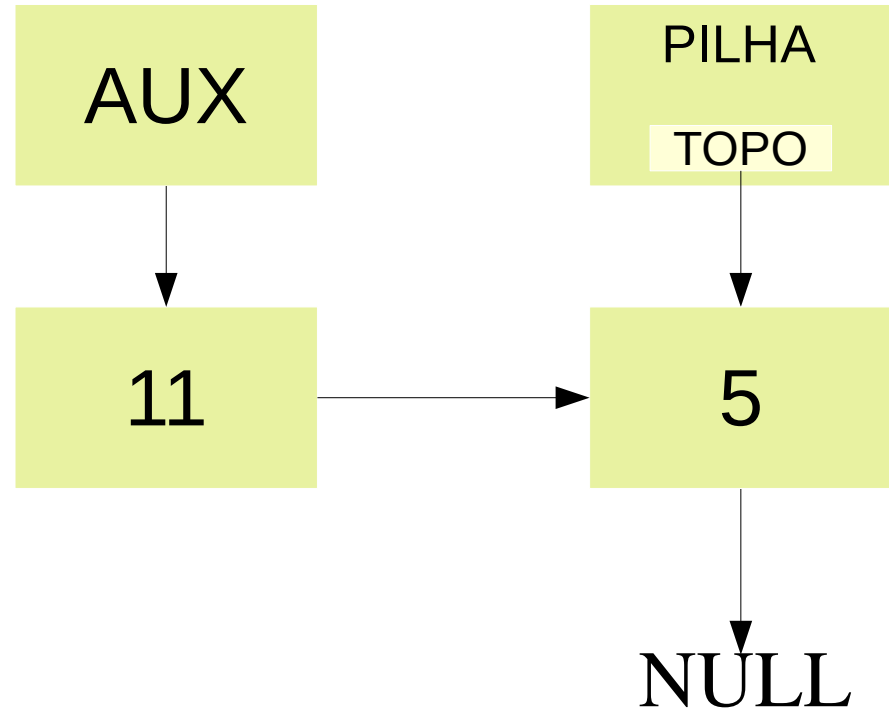


## 5. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2



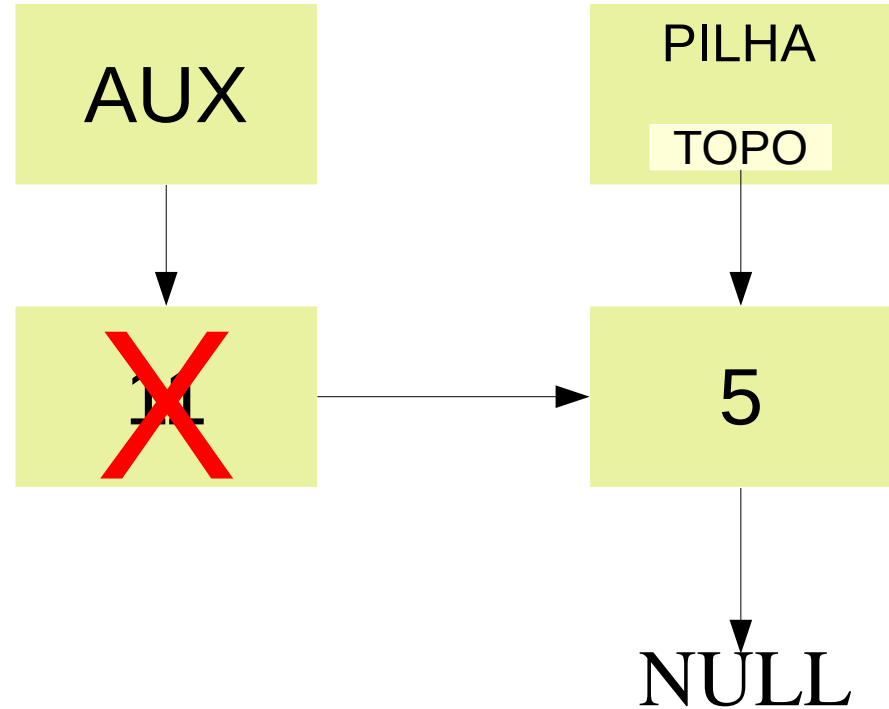
Dado = 11

## 5. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 2



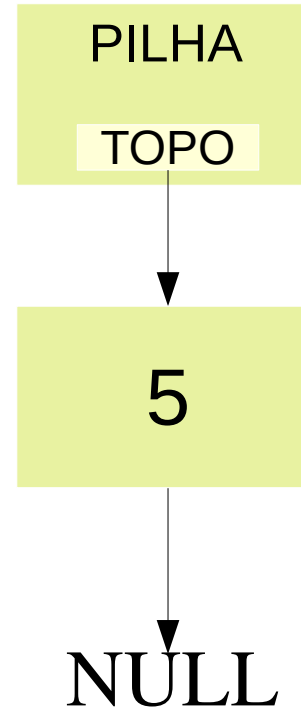
Dado = 11

## 5. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 1



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

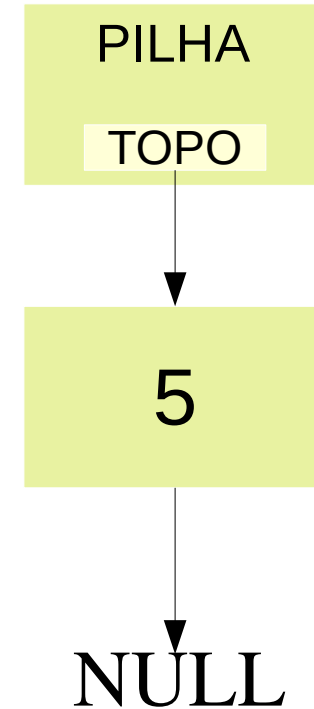
```
novo ← criar_noh(valor);
```

```
novo.proximo ← topo;
```

```
topo ← novo;
```

```
tamanho++;
```

```
Tamanho = 1
```



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

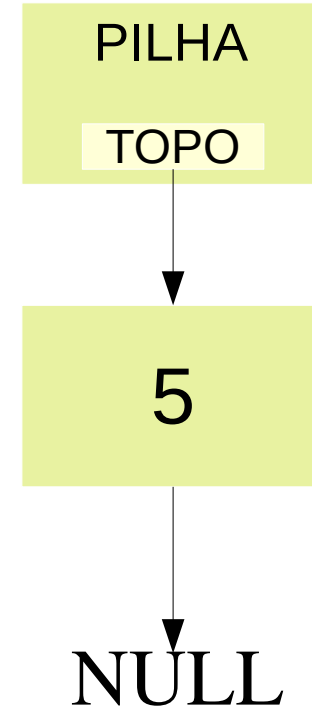
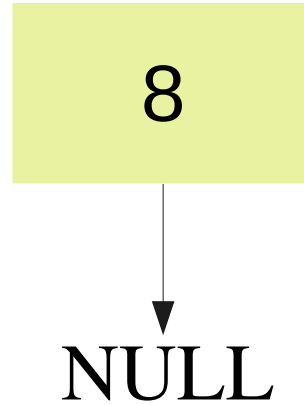
*nov*o ← criar\_noh(valor);

*nov*o.proximo ← topo;

topo ← *nov*o;

tamanho++;

Tamanho = 1



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

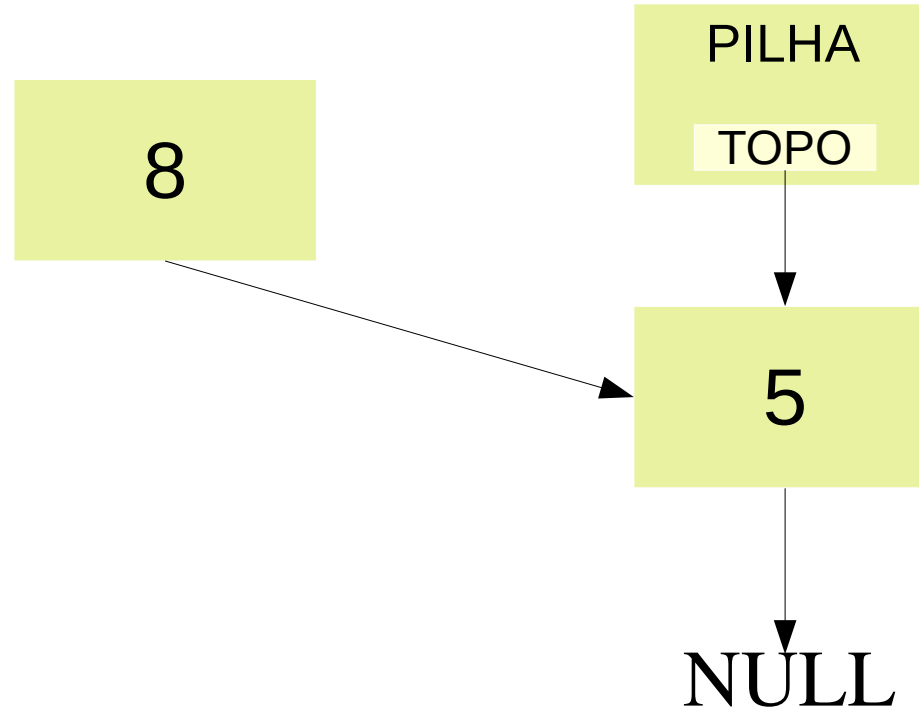
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 1



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

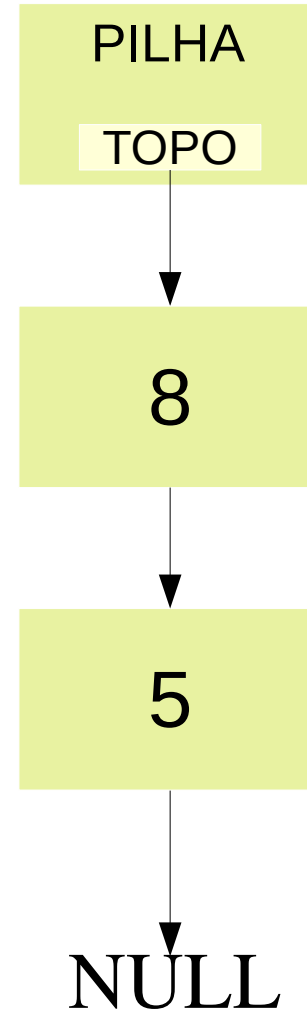
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 1





## 6. Empilhar elementos 8,10,3,11

*push(valor):*

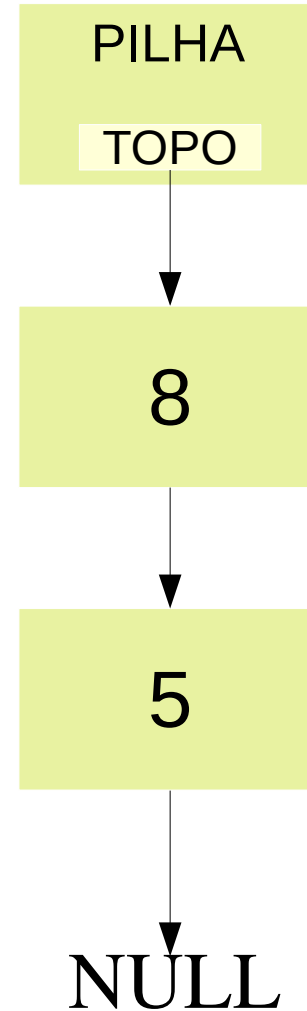
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 2



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

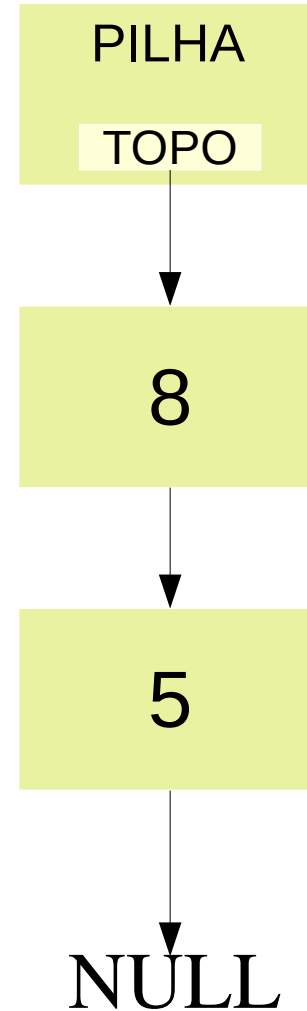
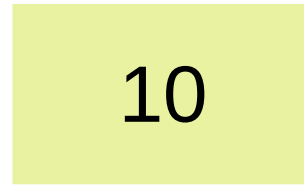
```
novo ← criar_noh(valor);
```

```
novo.proximo ← topo;
```

```
topo ← novo;
```

```
tamanho++;
```

Tamanho = 2



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

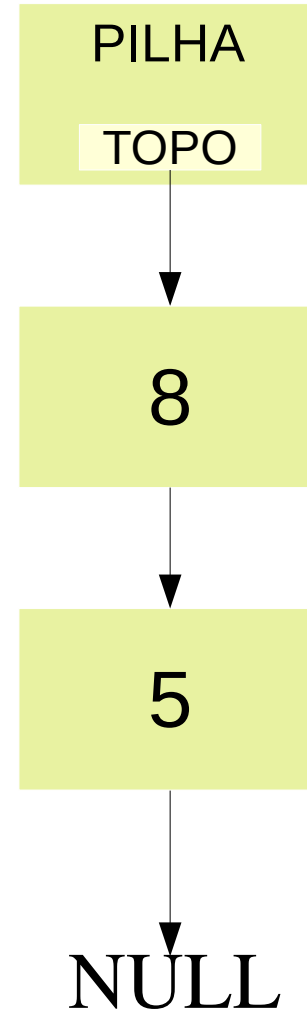
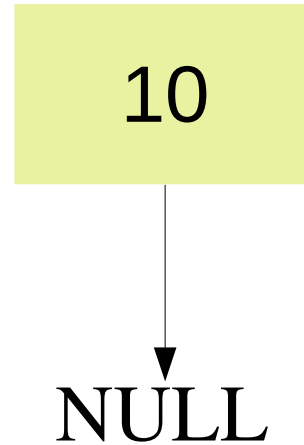
*novο* ← criar\_noh(valor);

*novο.proximo* ← topo;

topo ← *novο*;

tamanho++;

Tamanho = 2



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

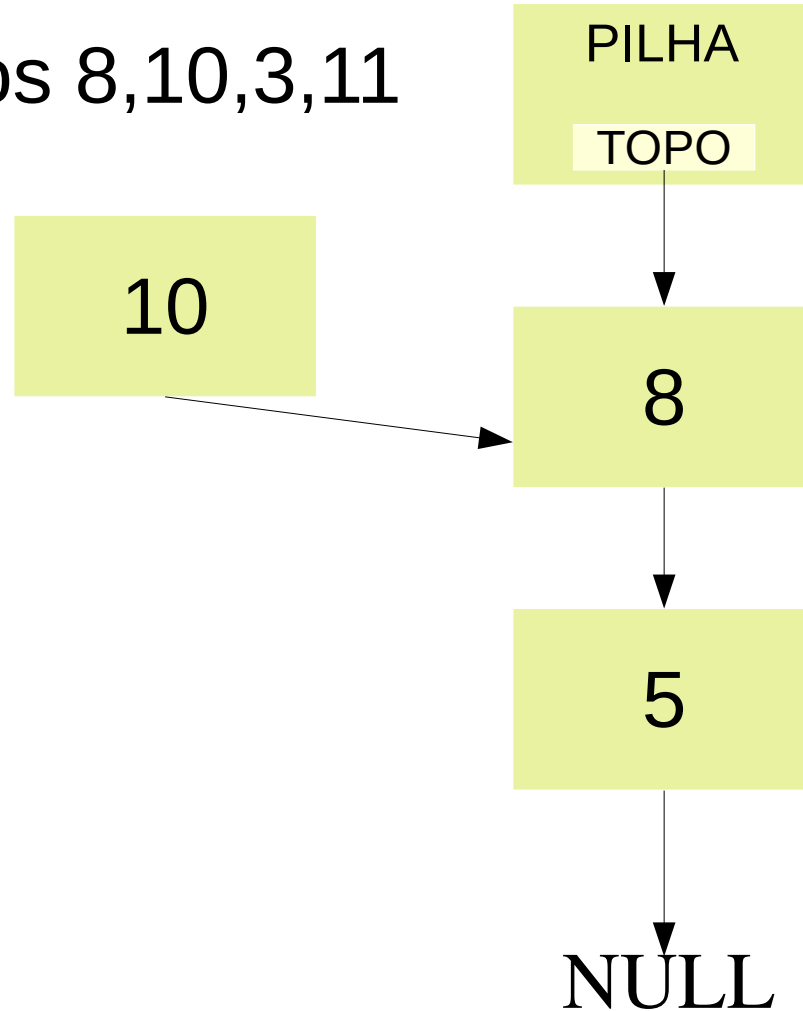
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 2



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

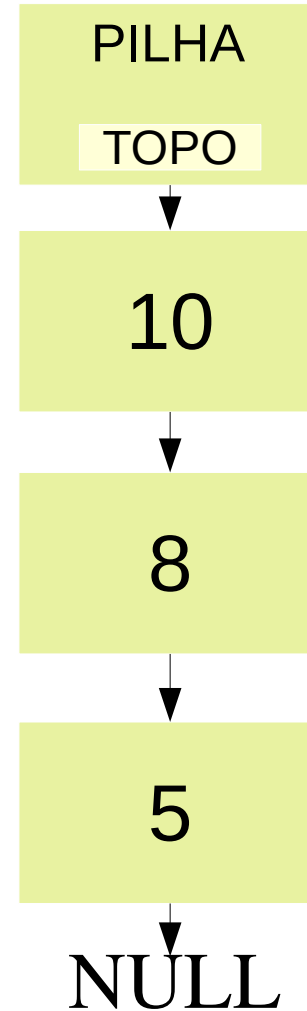
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 2



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

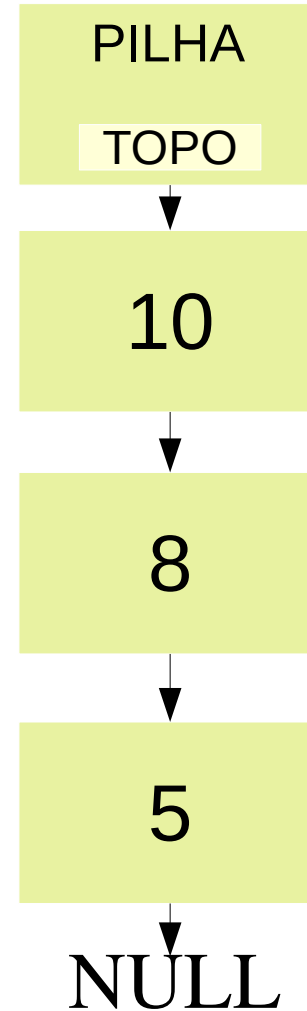
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 3



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

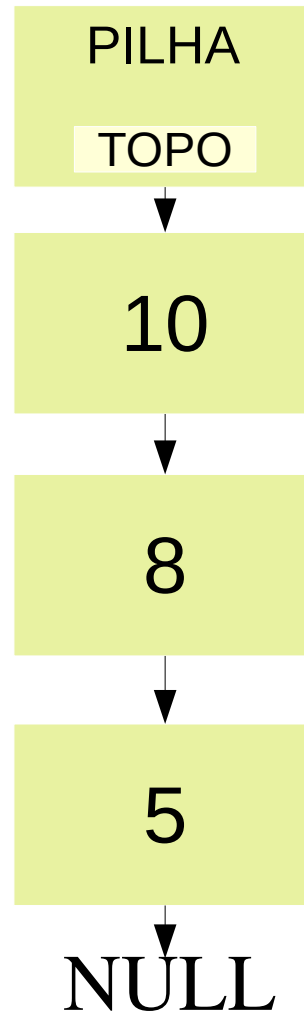
```
novo ← criar_noh(valor);
```

```
novo.proximo ← topo;
```

```
topo ← novo;
```

```
tamanho++;
```

Tamanho = 3



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

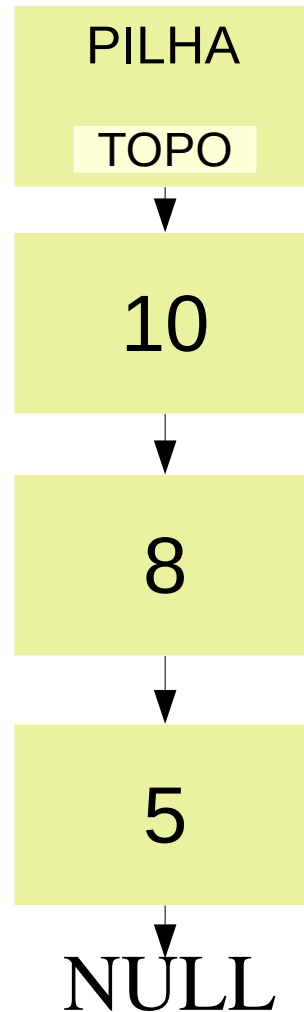
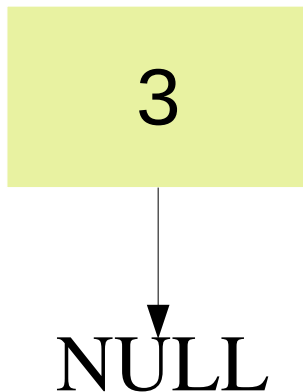
*novo* ← criar\_noh(valor);

*novo.proximo* ← topo;

topo ← novo;

tamanho++;

Tamanho = 3





## 6. Empilhar elementos 8,10,3,11

*push(valor):*

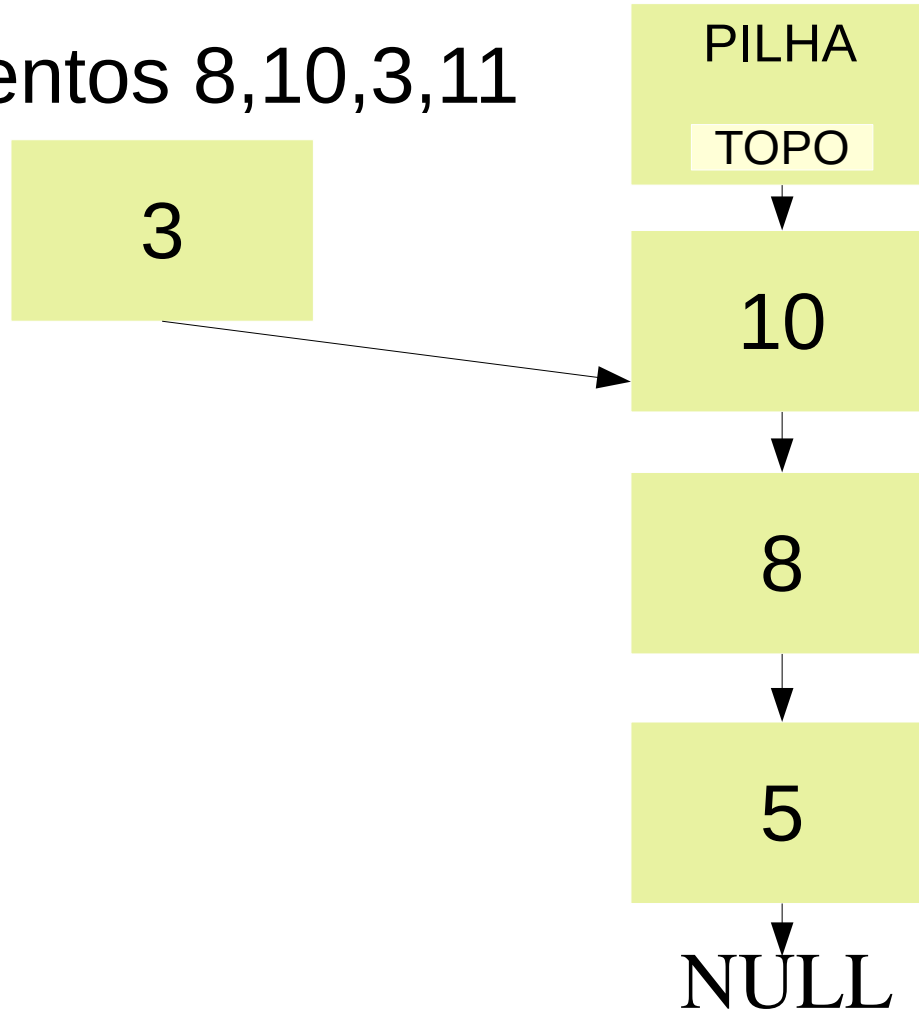
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 3



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

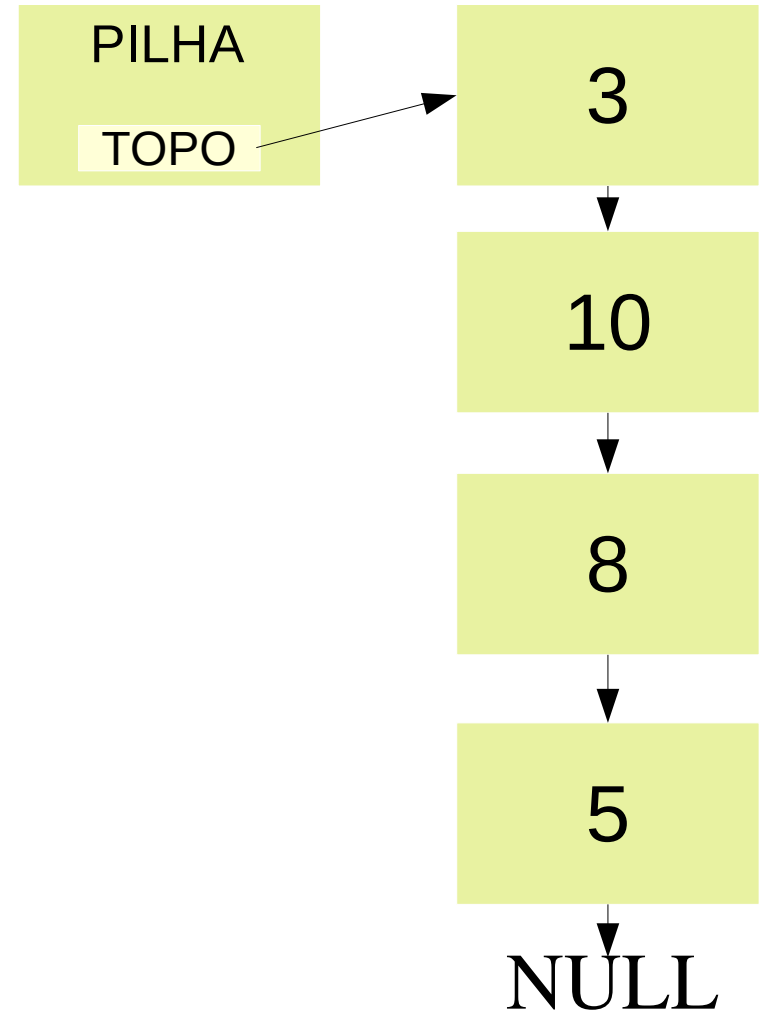
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 3



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

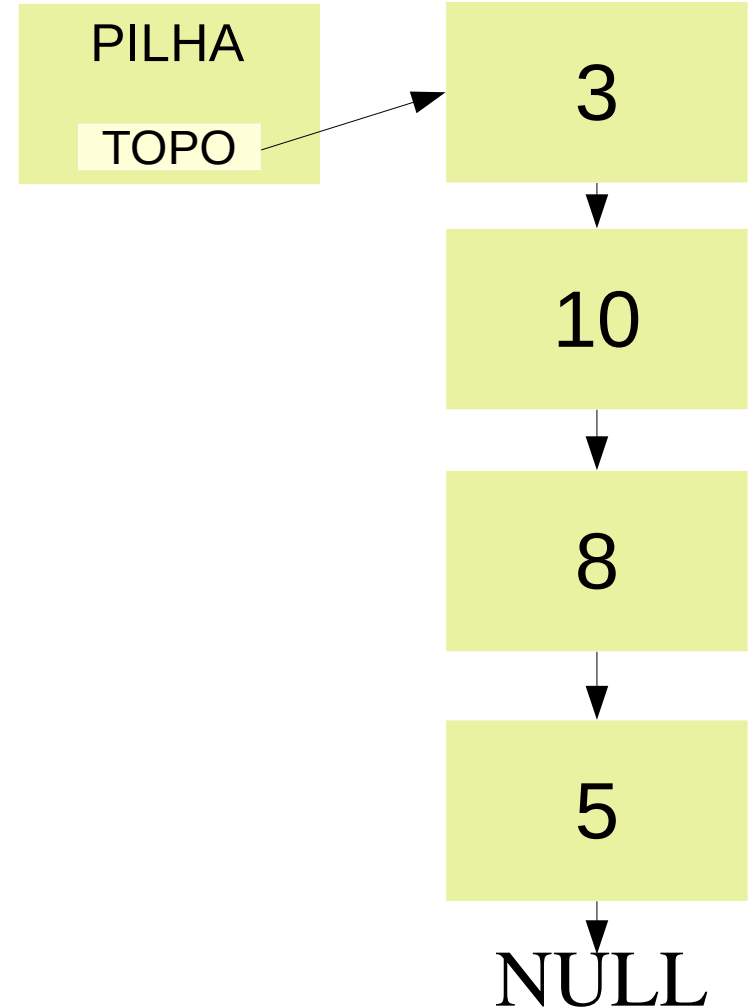
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 4



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

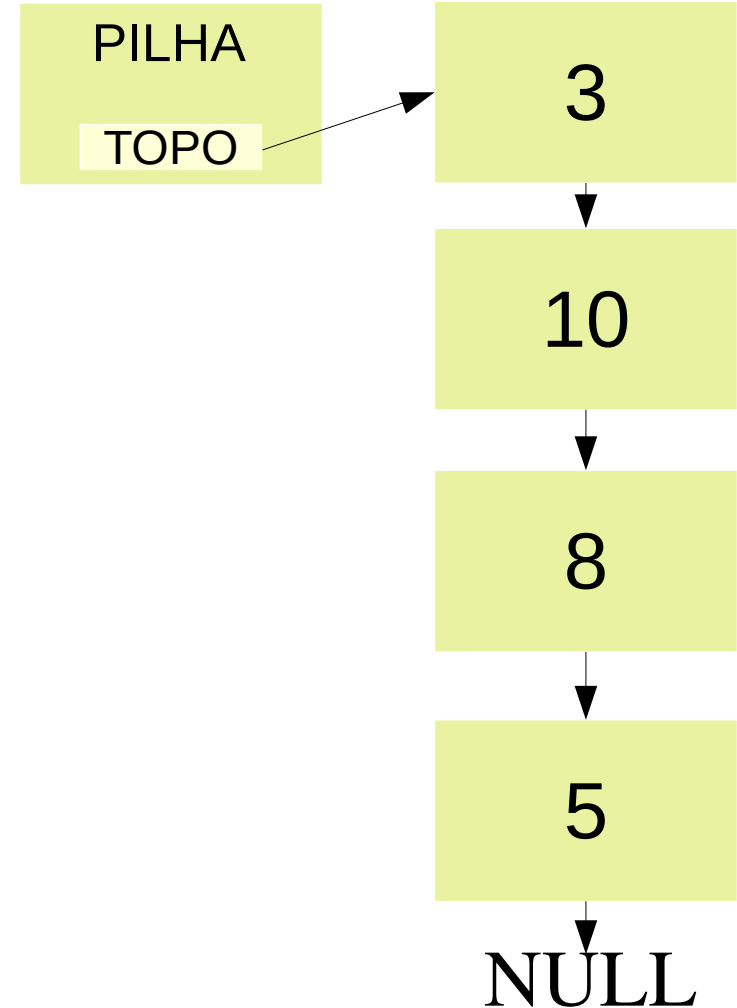
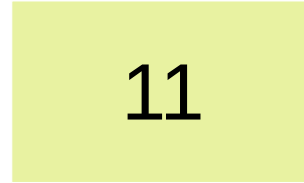
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 4



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

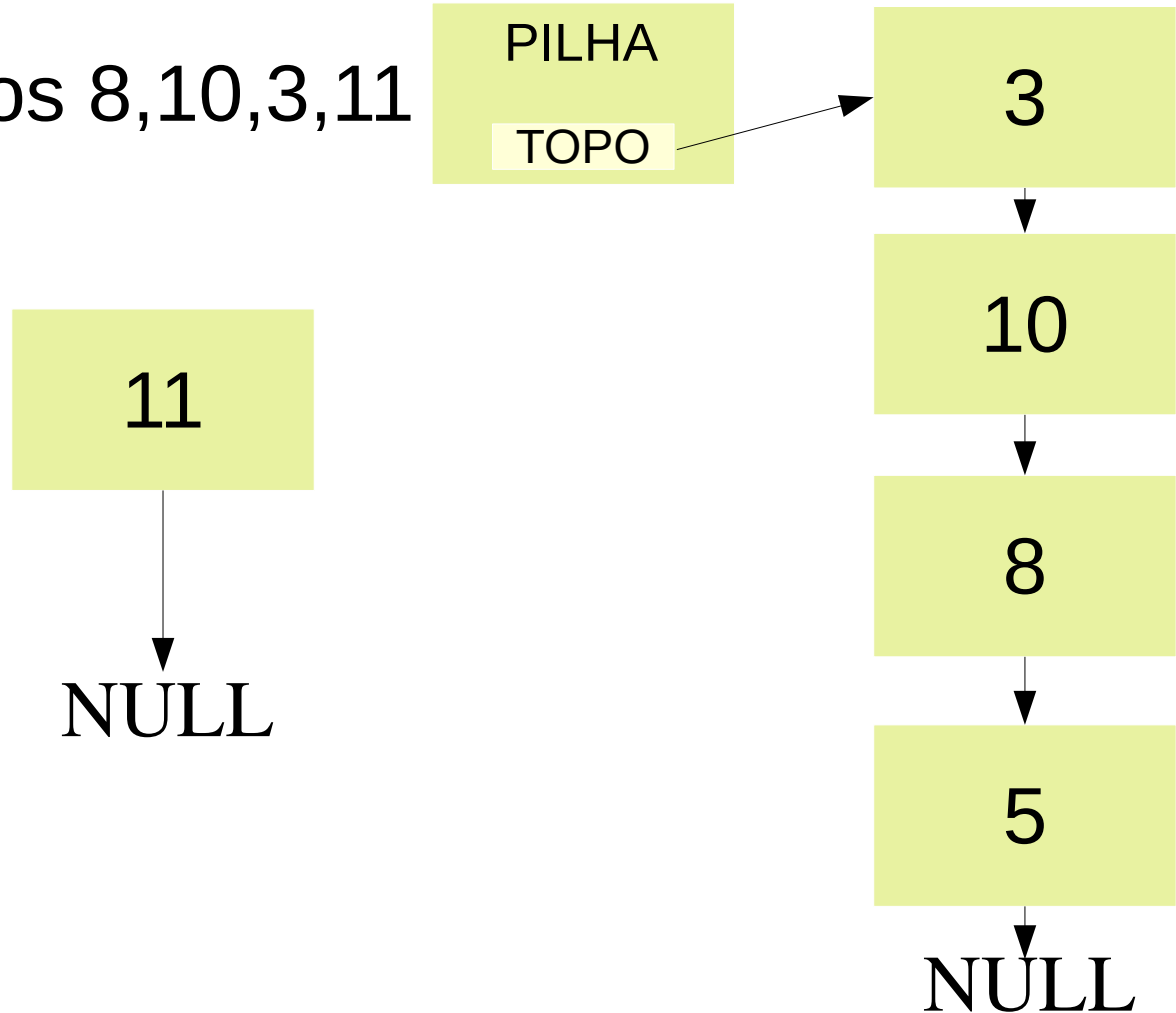
*nov*o ← criar\_noh(valor);

*nov*o.proximo ← topo;

topo ← *nov*o;

tamanho++;

Tamanho = 4



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

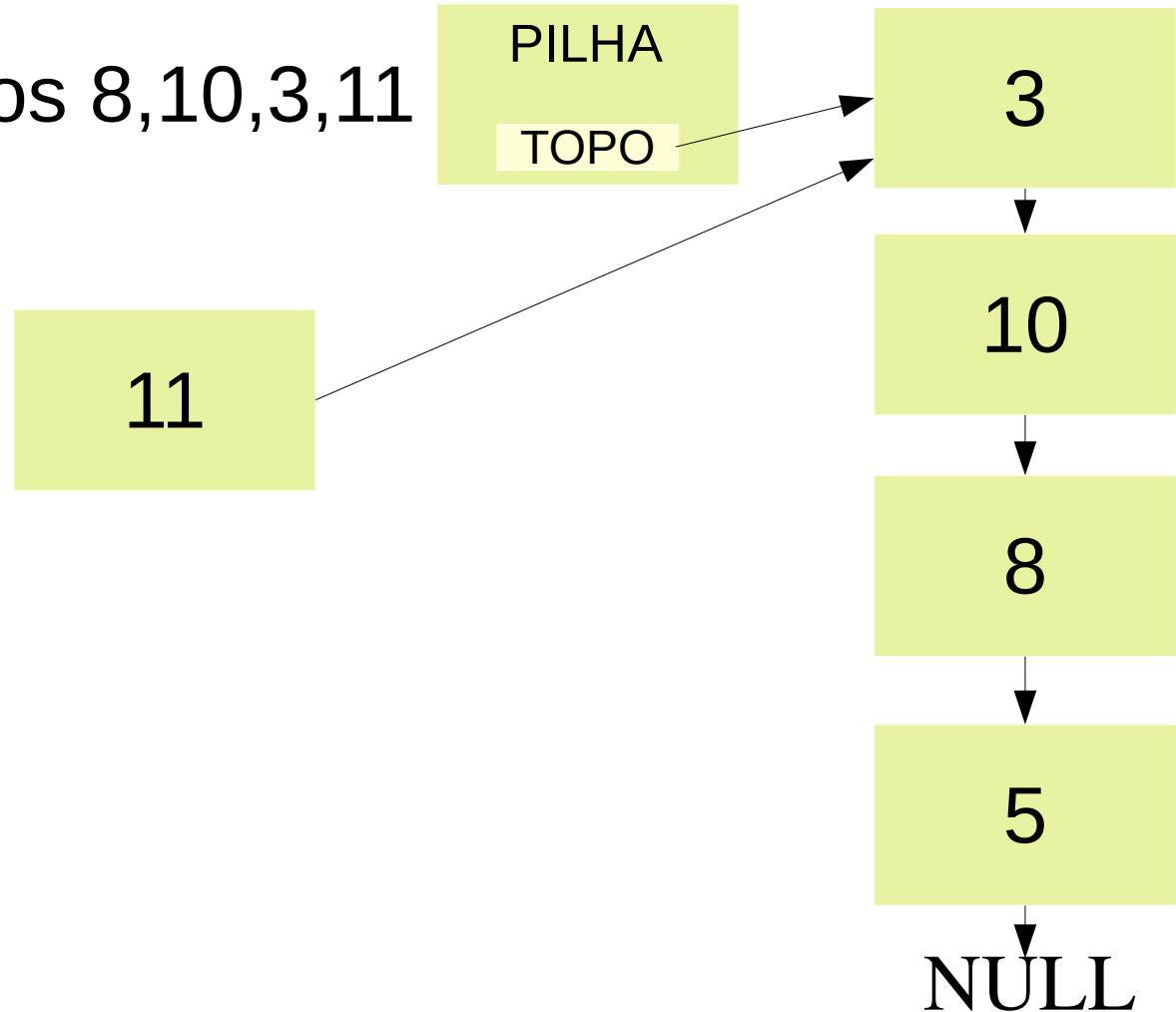
novo  $\leftarrow$  criar\_noh(valor);

novo.proximo  $\leftarrow$  topo;

topo  $\leftarrow$  novo;

tamanho++;

Tamanho = 4



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

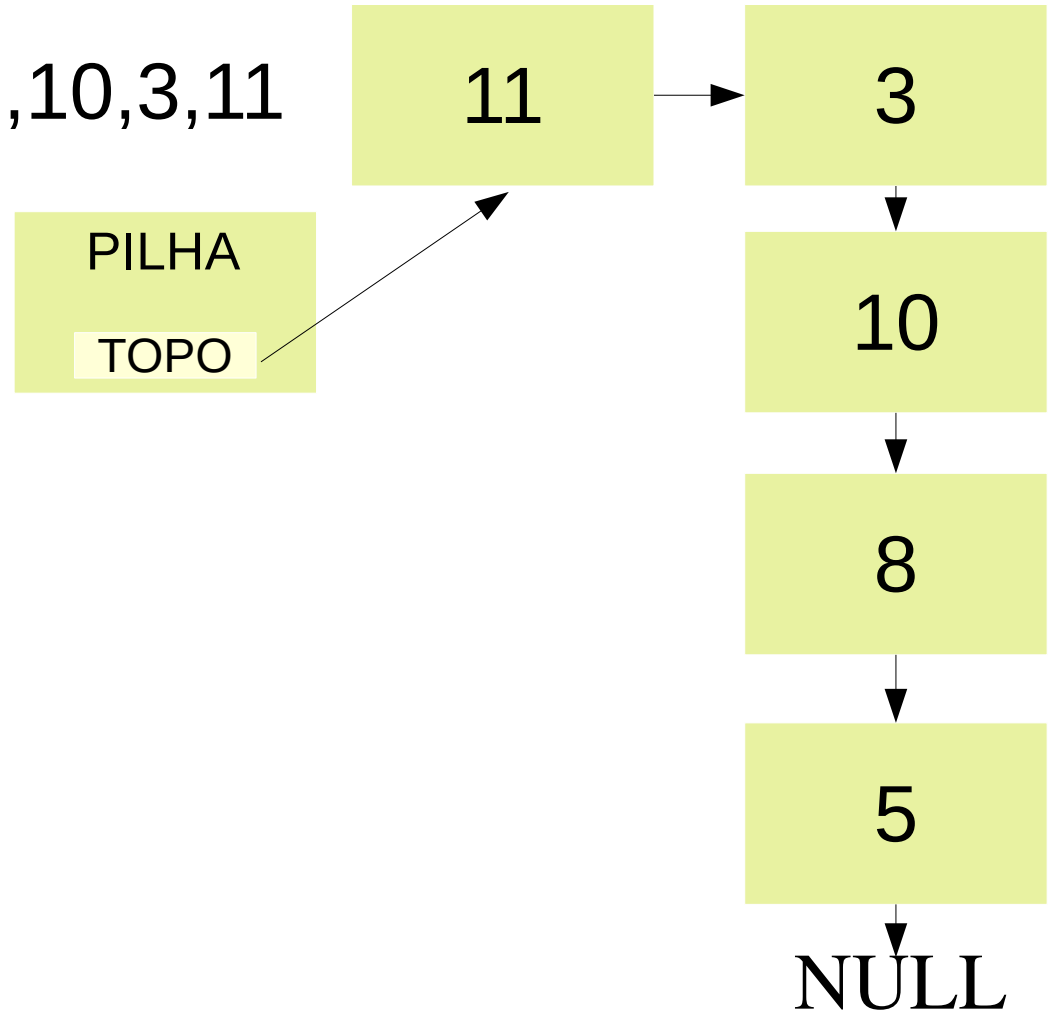
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 4



## 6. Empilhar elementos 8,10,3,11

*push(valor):*

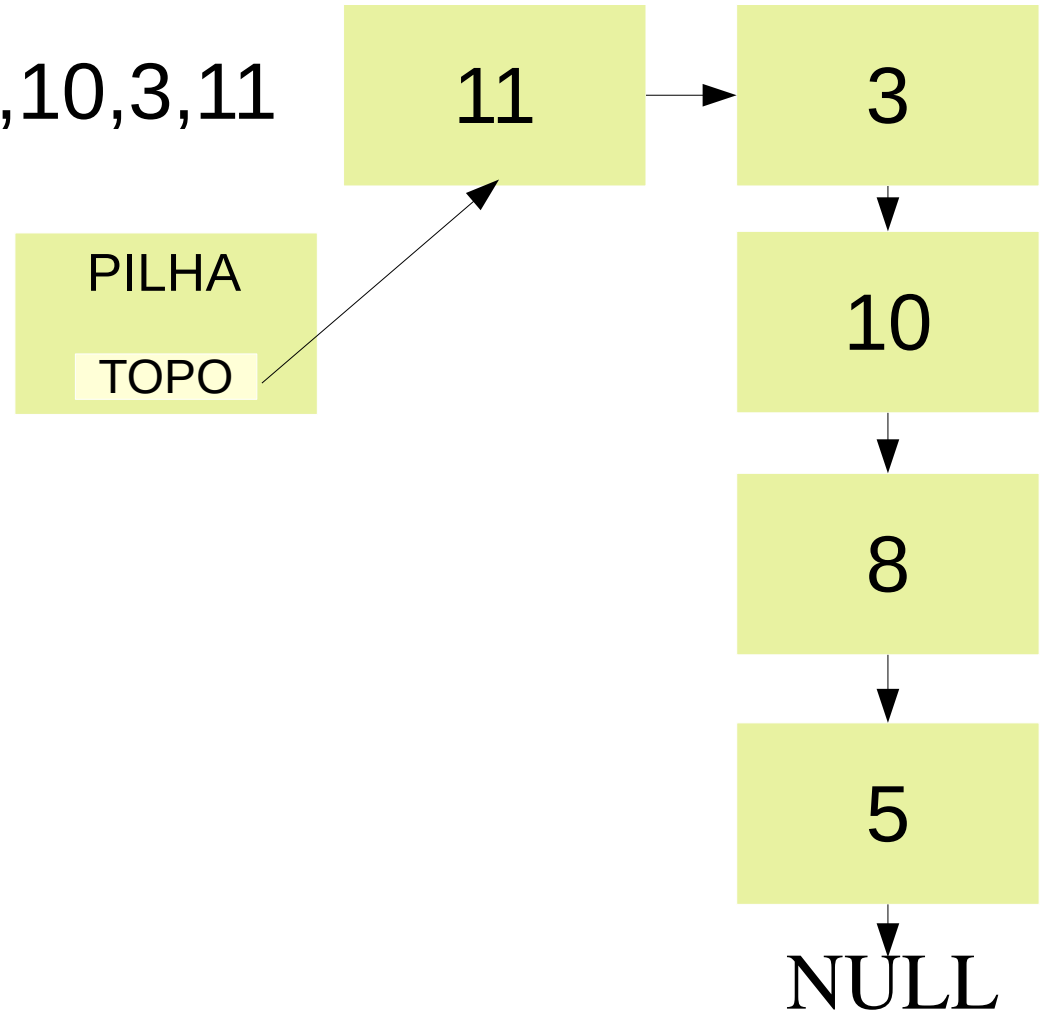
novo ← criar\_noh(valor);

novo.proximo ← topo;

topo ← novo;

tamanho++;

Tamanho = 5





## 7. Desempilhar

pop():

$\text{aux} \leftarrow \text{topo};$

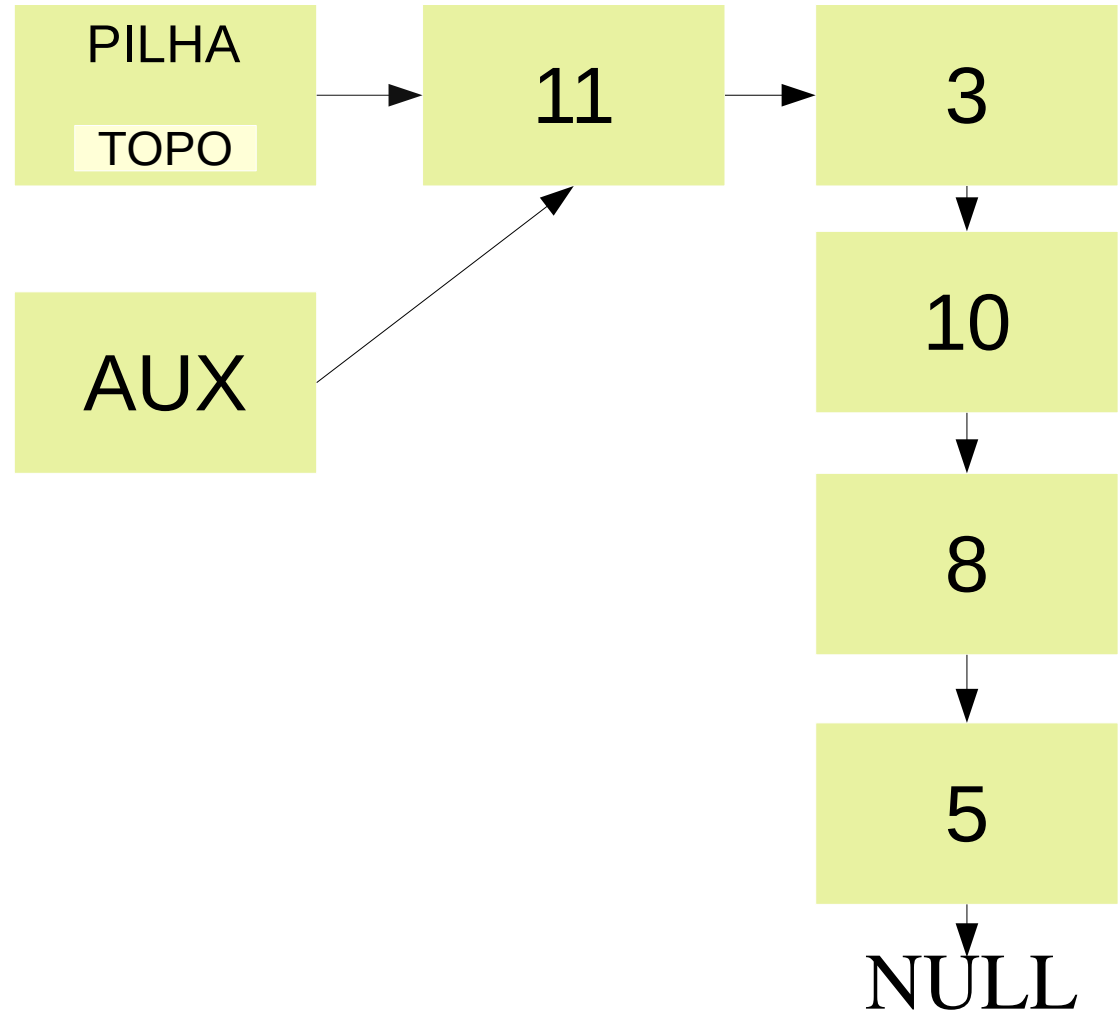
$\text{dado} \leftarrow \text{aux.valor};$

$\text{topo} \leftarrow \text{aux.proximo};$

$\text{apagar}(\text{aux});$

$\text{tamanho--};$

Tamanho = 5



## 7. Desempilhar

pop():

aux  $\leftarrow$  topo;

dado  $\leftarrow$  aux.valor;

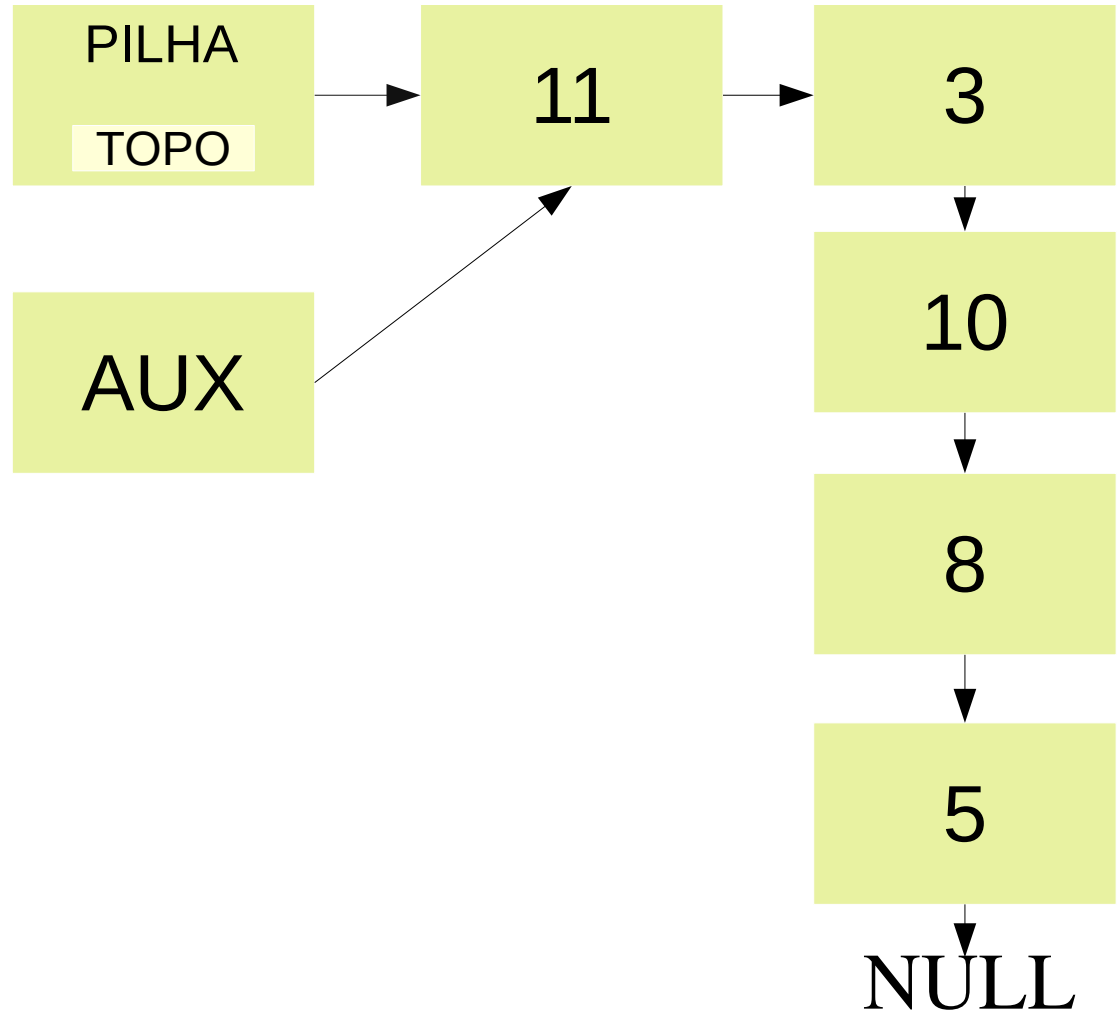
topo  $\leftarrow$  aux.proximo;

apagar(aux);

tamanho--;

Tamanho = 5

Dado = 11



## 7. Desempilhar

pop():

aux  $\leftarrow$  topo;

dado  $\leftarrow$  aux.valor;

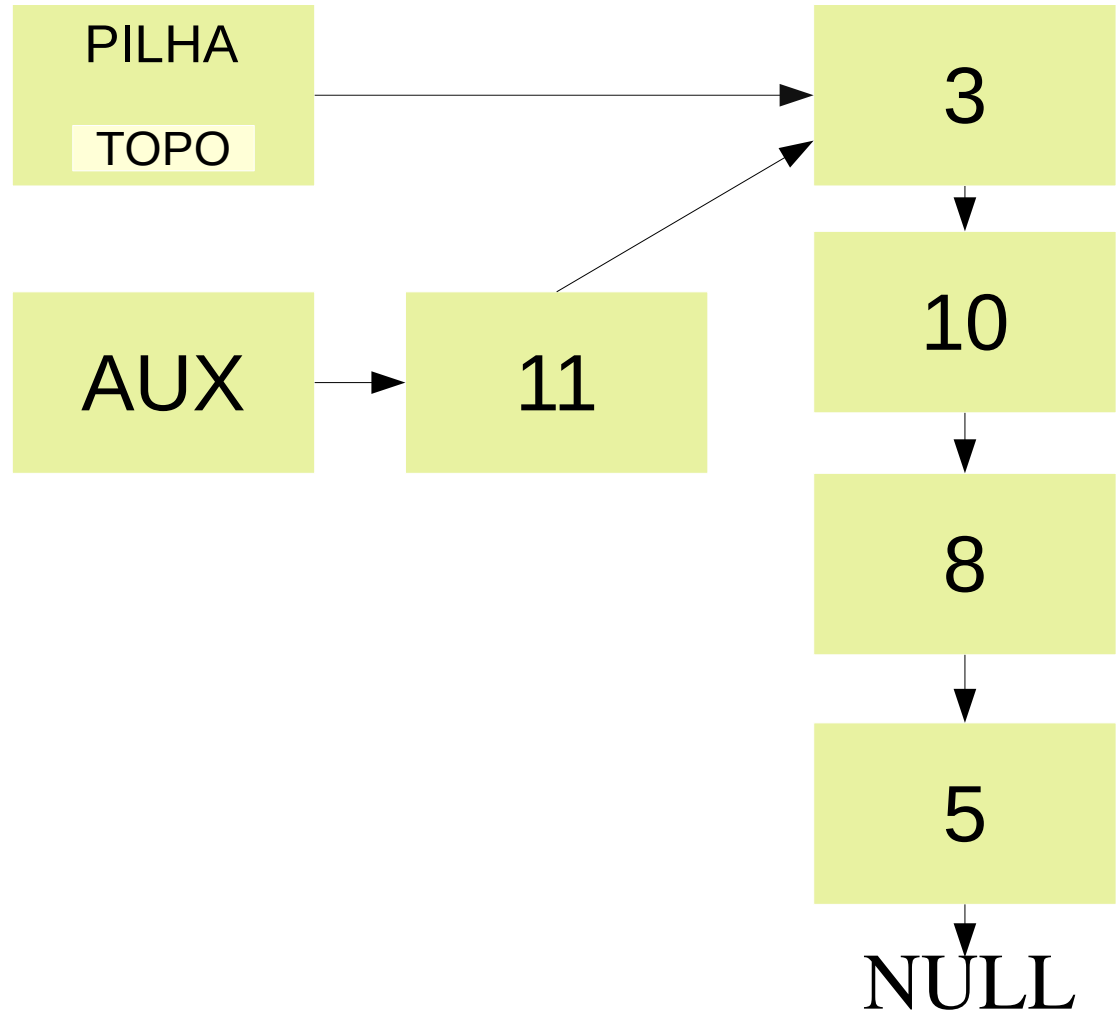
topo  $\leftarrow$  aux.proximo;

apagar(aux);

tamanho--;

Tamanho = 5

Dado = 11



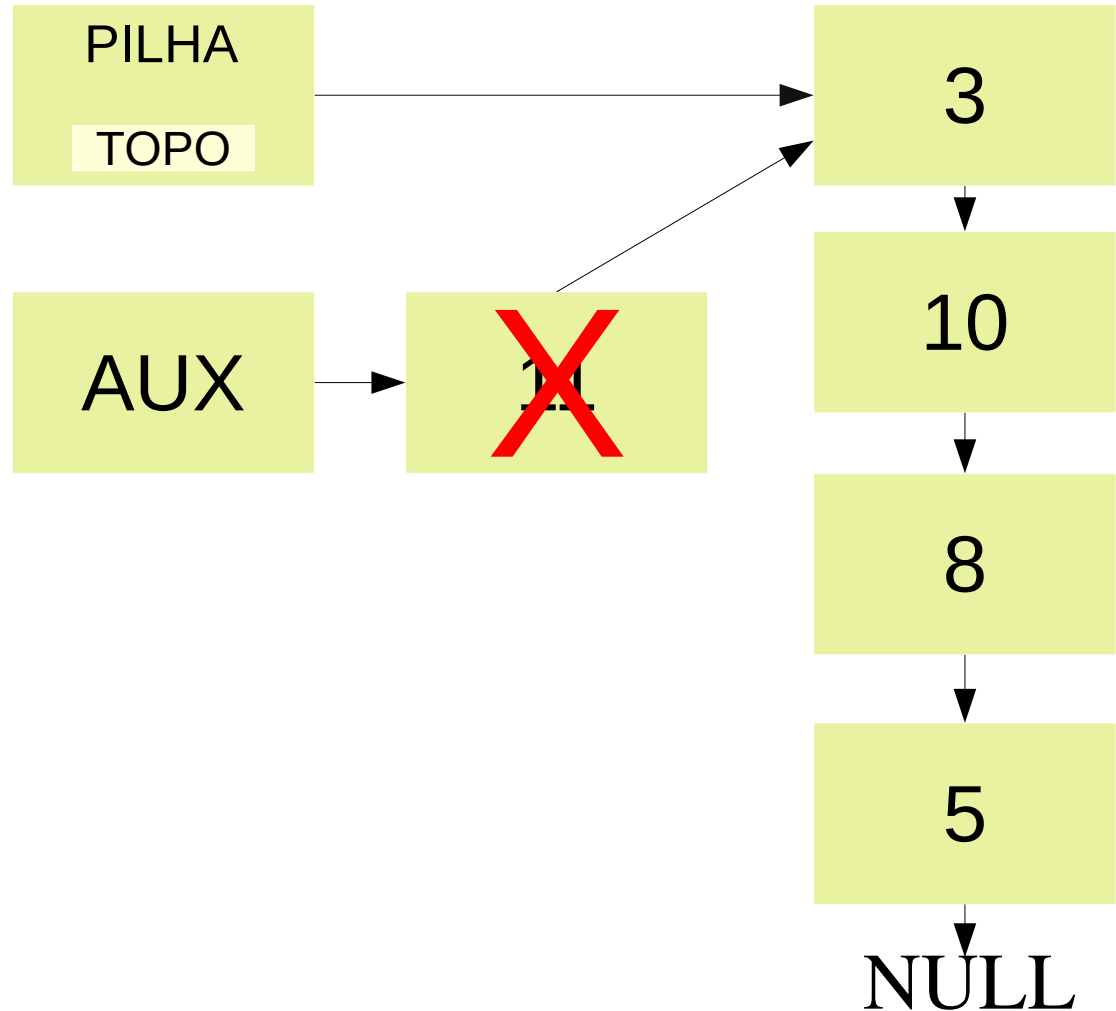
## 7. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 5

Dado = 11



## 7. Desempilhar

pop():

aux  $\leftarrow$  topo;

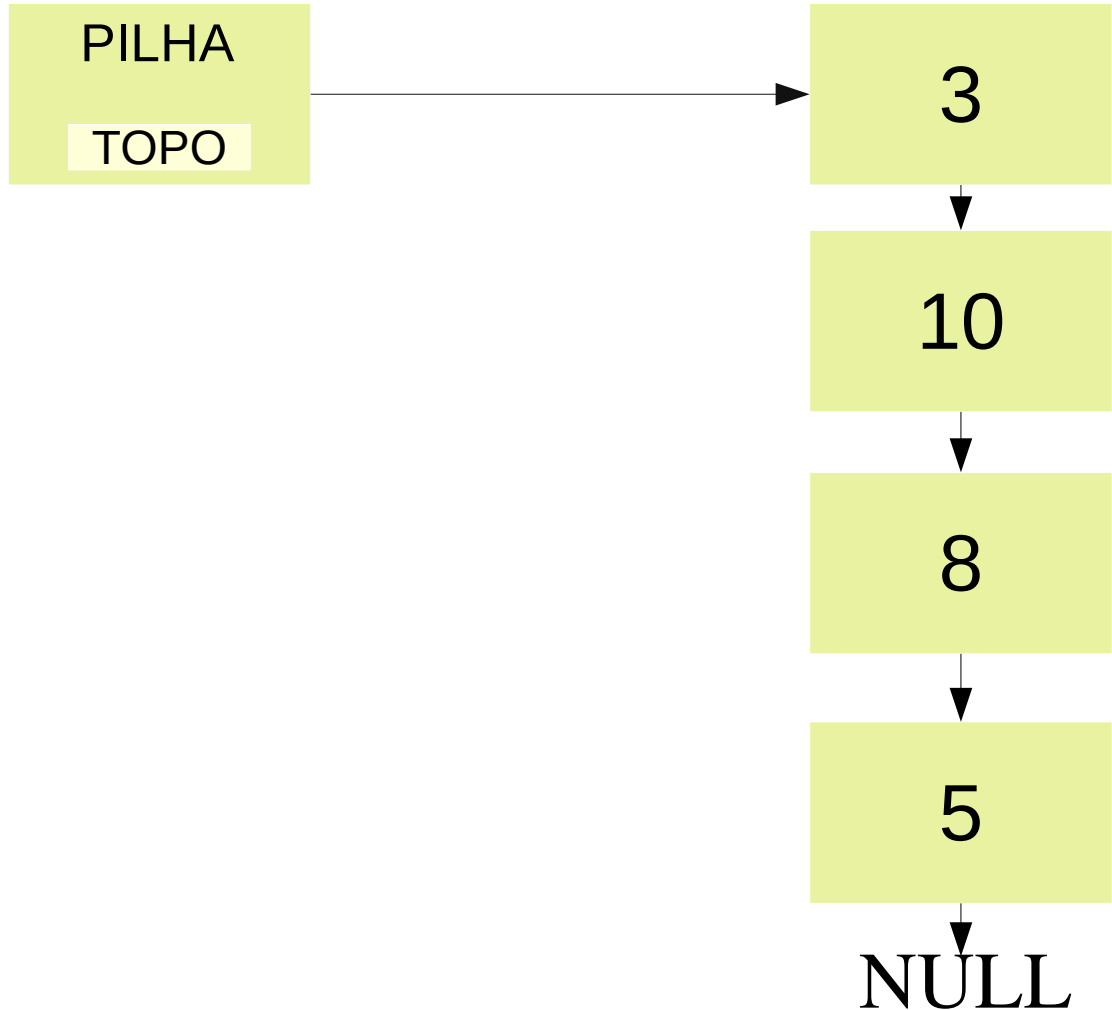
dado  $\leftarrow$  aux.valor;

topo  $\leftarrow$  aux.proximo;

apagar(aux);

tamanho--;

Tamanho = 4



## 8. Desempilhar

pop():

$\text{aux} \leftarrow \text{topo};$

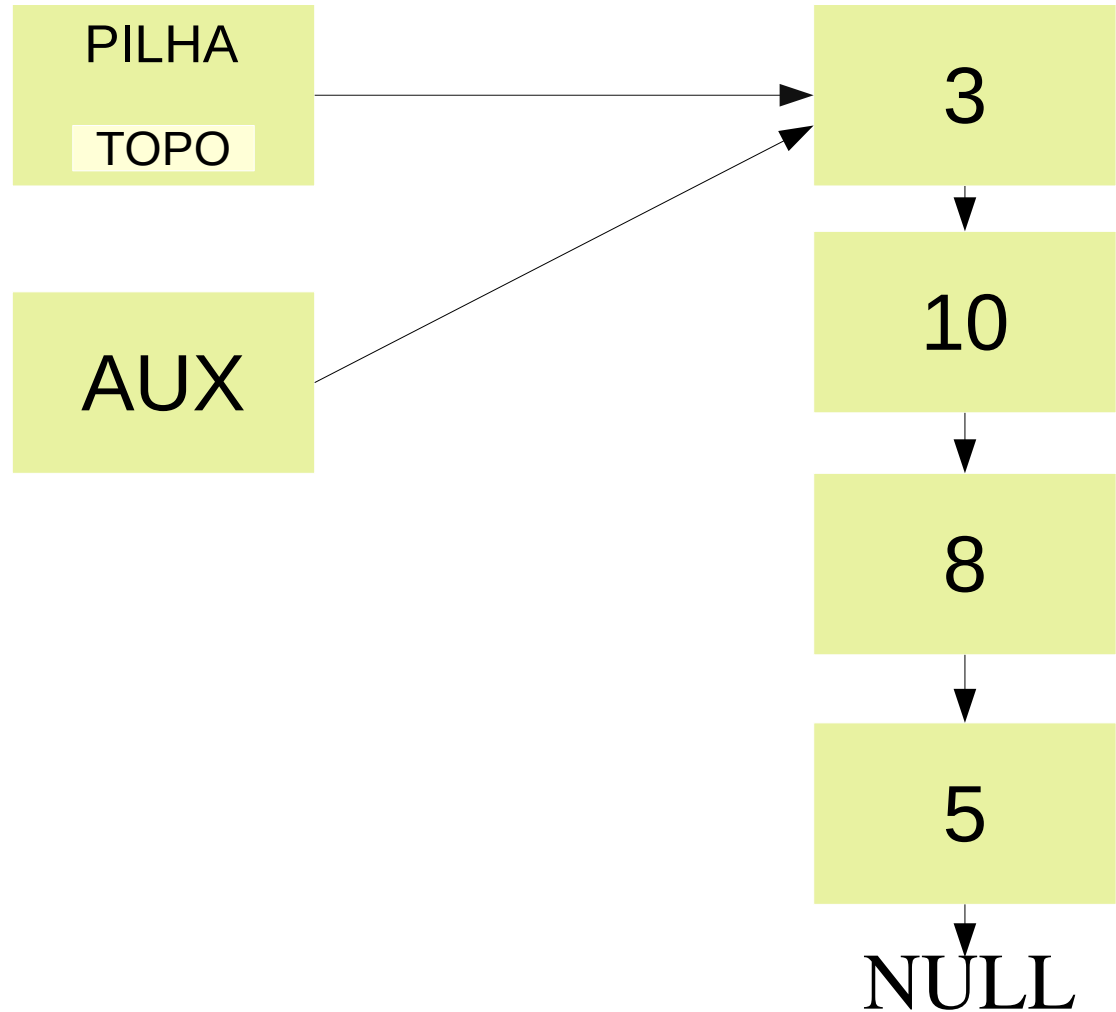
$\text{dado} \leftarrow \text{aux.valor};$

$\text{topo} \leftarrow \text{aux.proximo};$

$\text{apagar}(\text{aux});$

$\text{tamanho--};$

Tamanho = 4



## 8. Desempilhar

pop():

aux  $\leftarrow$  topo;

dado  $\leftarrow$  aux.valor;

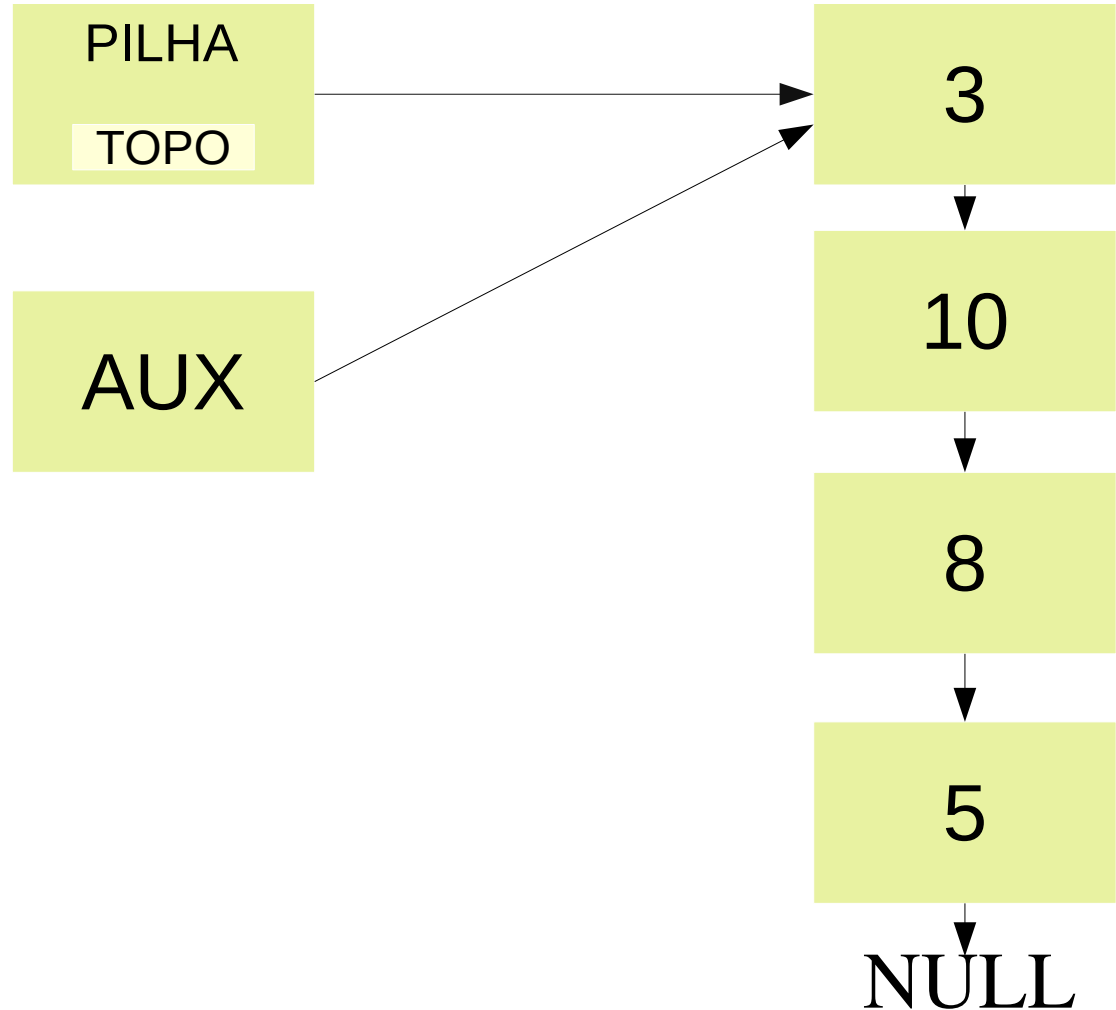
topo  $\leftarrow$  aux.proximo;

apagar(aux);

tamanho--;

Tamanho = 4

Dado = 3



## 8. Desempilhar

pop():

aux  $\leftarrow$  topo;

dado  $\leftarrow$  aux.valor;

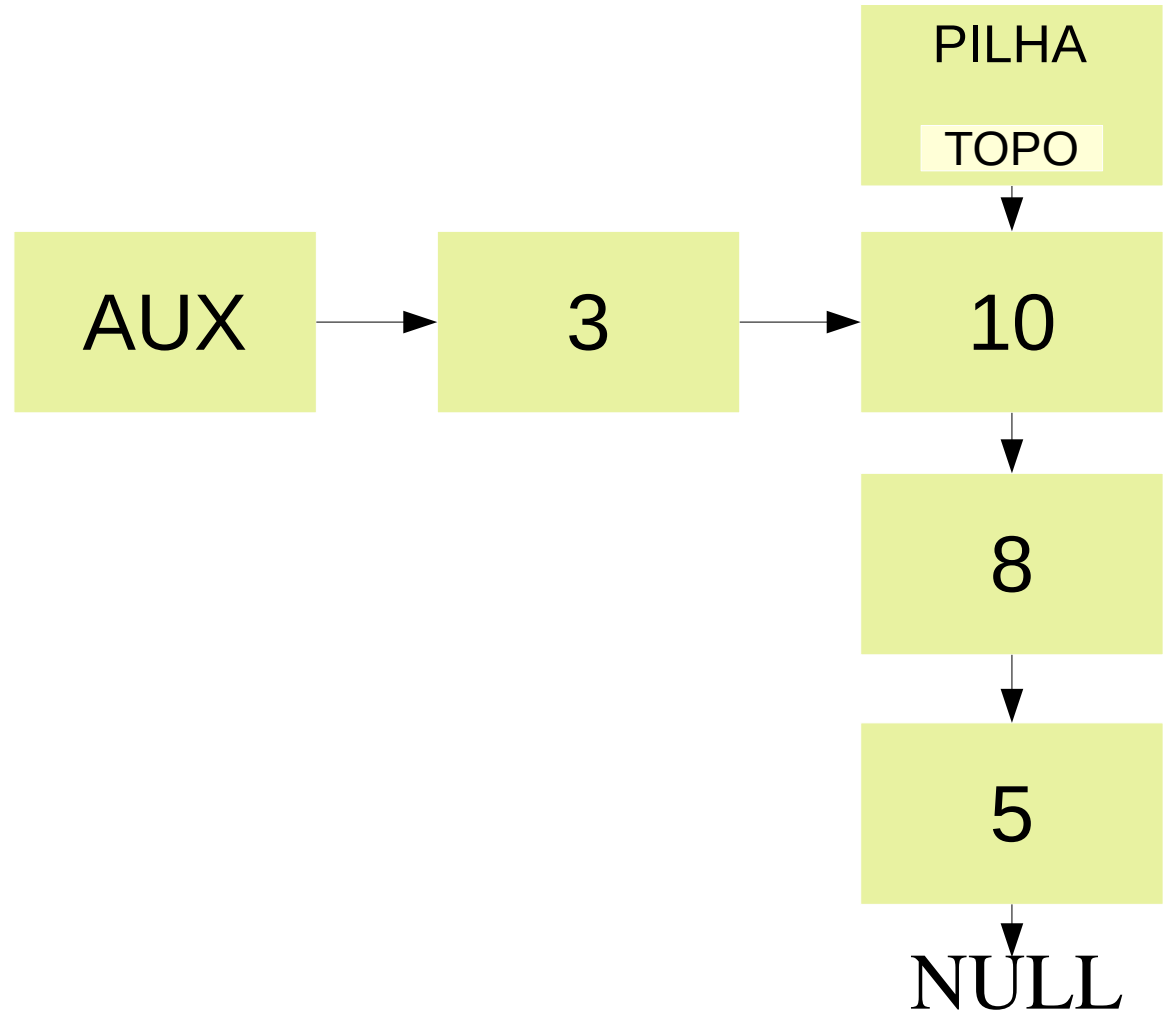
topo  $\leftarrow$  aux.proximo;

apagar(aux);

tamanho--;

Tamanho = 4

Dado = 3





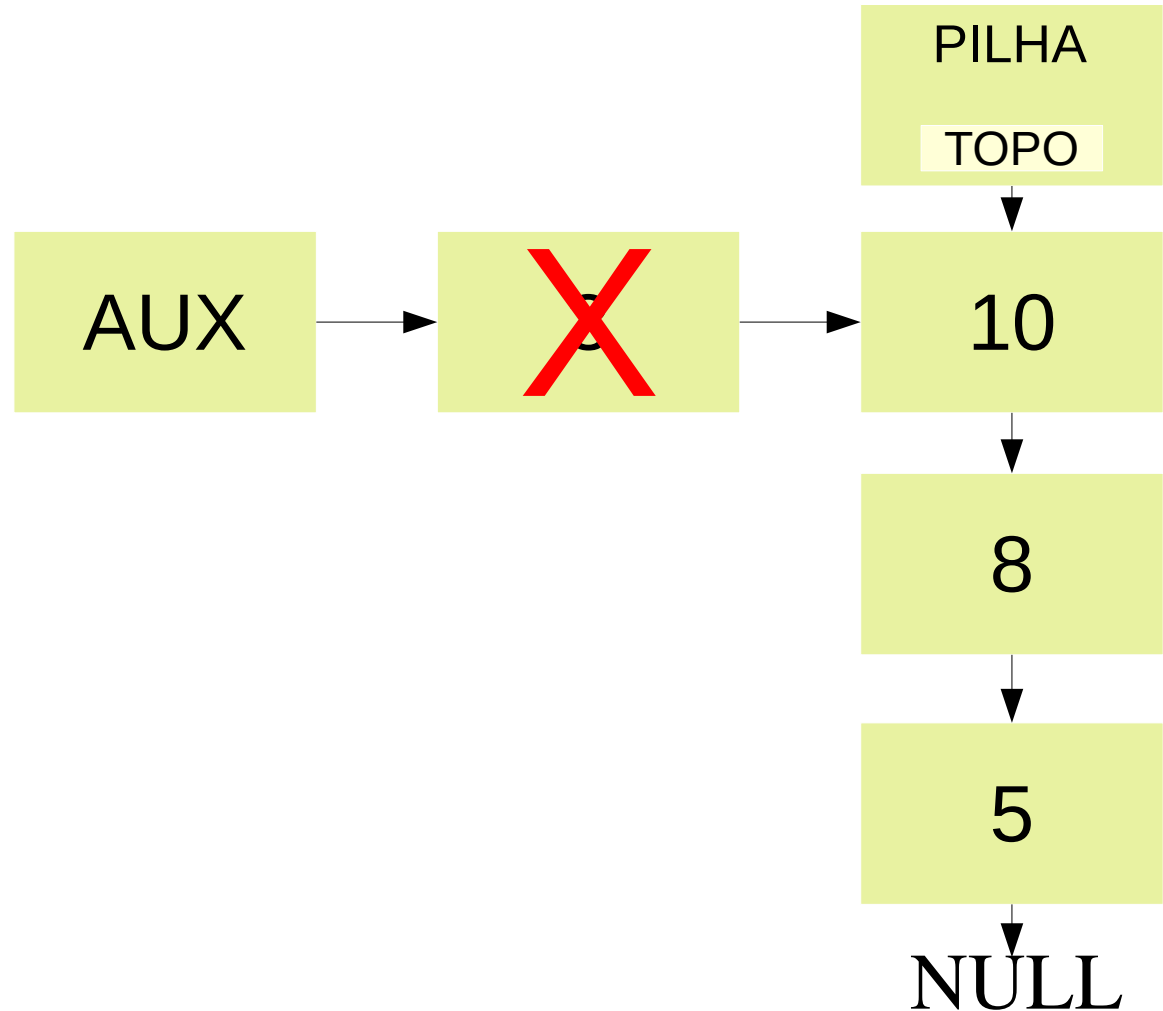
## 8. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 4

Dado = 3

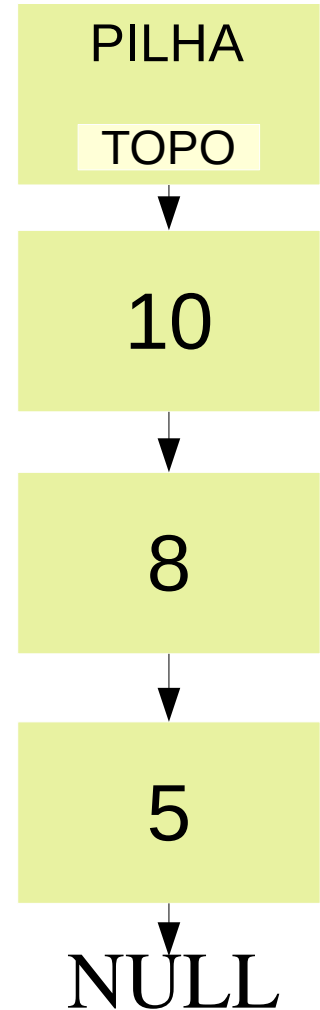


## 8. Desempilhar

pop():

```
aux ← topo;  
dado ← aux.valor;  
topo ← aux.proximo;  
apagar(aux);  
tamanho--;
```

Tamanho = 3



# Resultado da pilha:

Tamanho = 3

