TDA PILA
IMPLEMENTACION CON NODOS

75.41 - ALGORITMOS Y PROGRAMACIÓN II

FACULTAD
DE INGENIERIA
Universidad de Buenos Aires

LUCAS PANDOLFO - 2DO CUATRIMESTRE 2019

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¿QUÉ ES UNA PILA?

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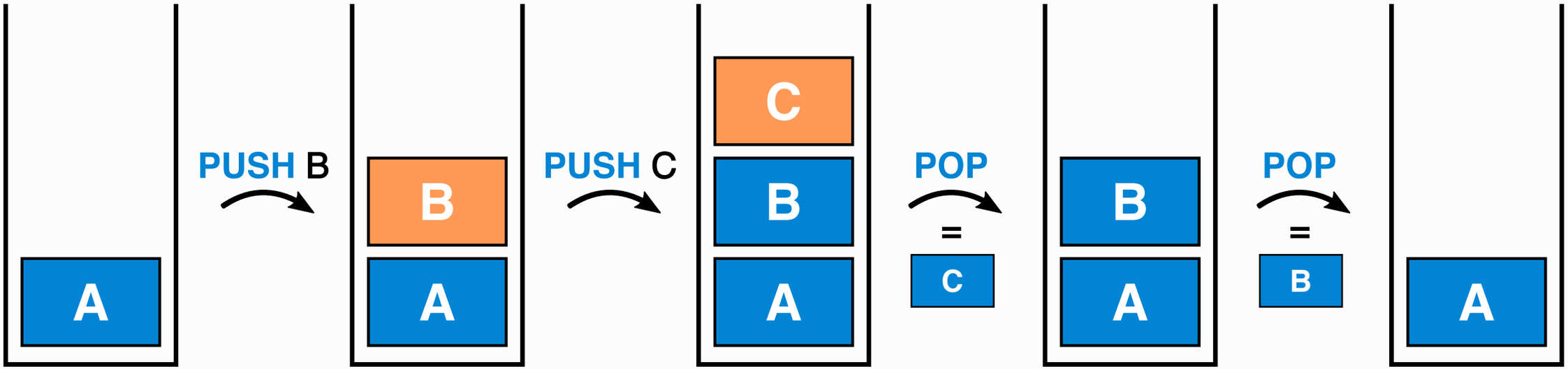
Estructura de datos **LIFO** (**L**ast **I**n **F**irst **O**ut).

PUSH agrega un elemento en el tope de la pila.

POP quita el elemento en el tope de la pila, si existe.



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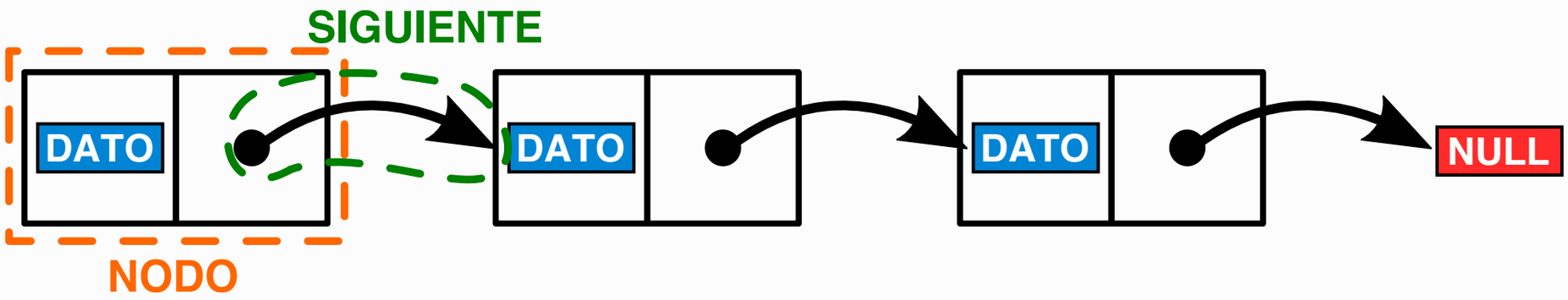
FUNCIONAMIENTO E IMPLEMENTACIÓN (NODOS ENLAZADOS)

NODOS

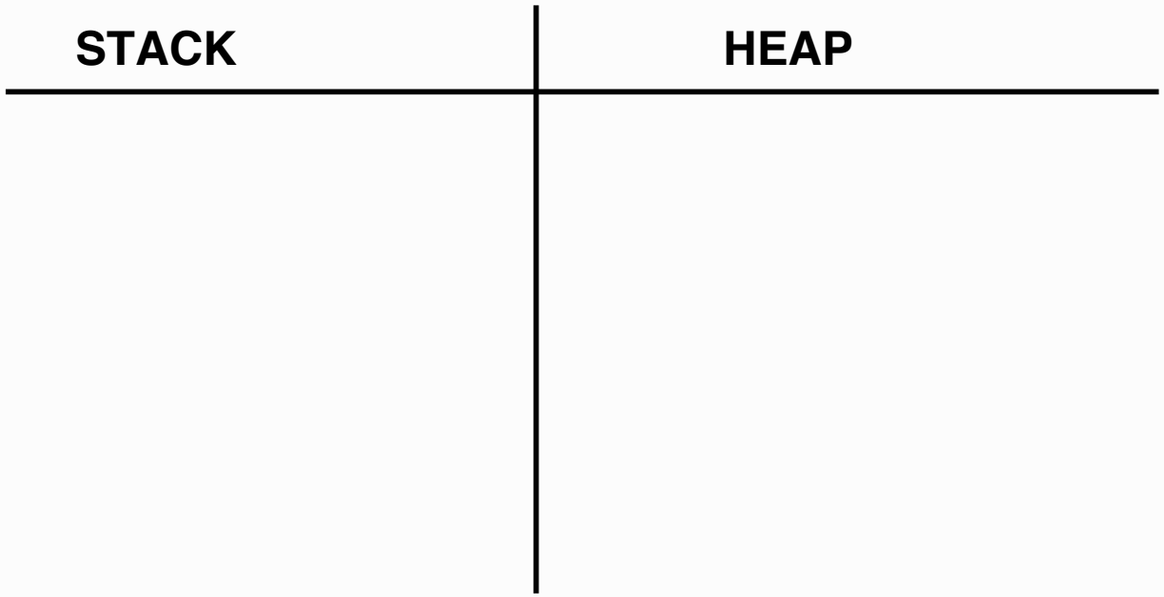
```
typedef struct Nodo{
   void* dato;
   struct Nodo* siguiente;
} Nodo;
```



CREACIÓN

```c
typedef struct pila {
  nodo_t* primer_nodo;
} pila_t;

pila_t* pila_crear(){
  pila_t* pila = malloc(sizeof(pila_t));
  pila->primer_nodo = NULL;
  return pila;
}
```



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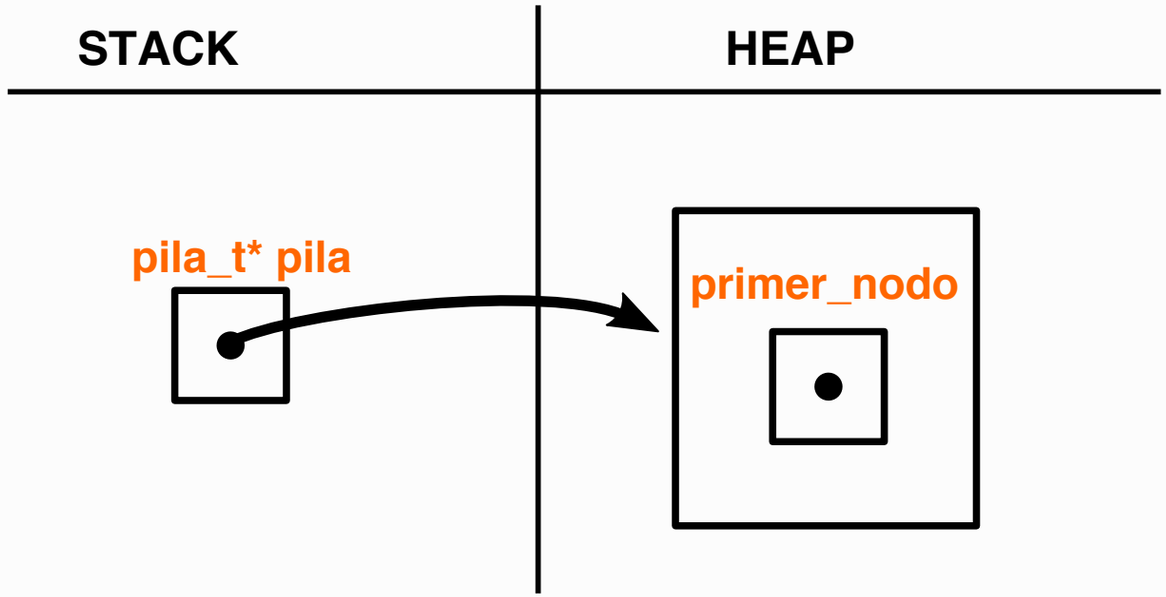

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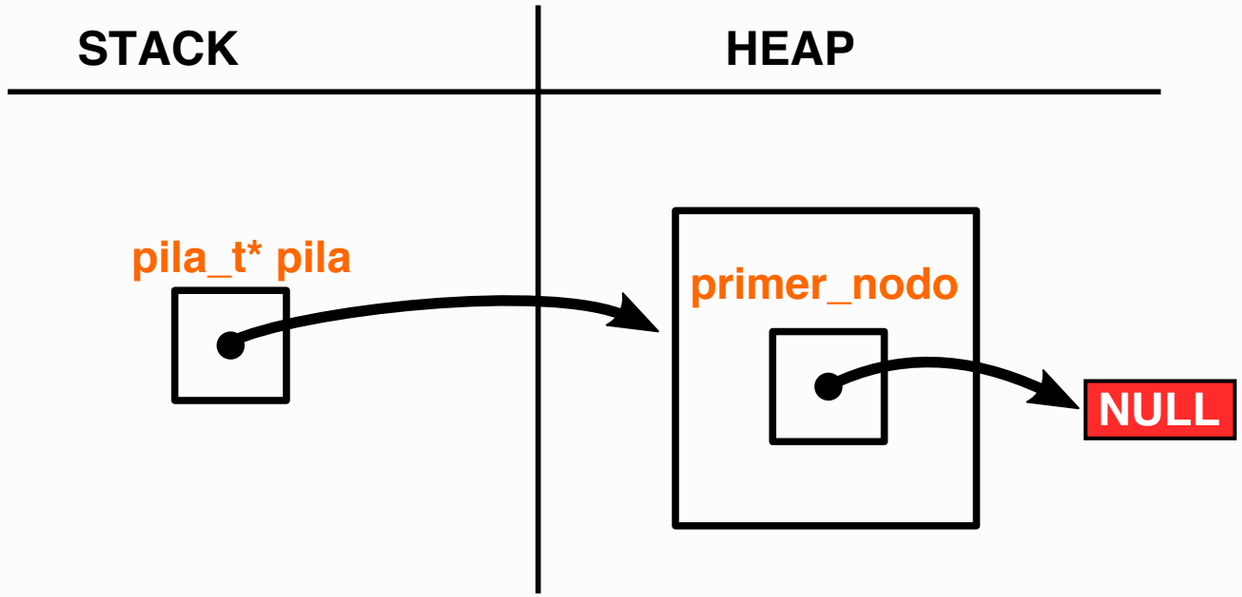

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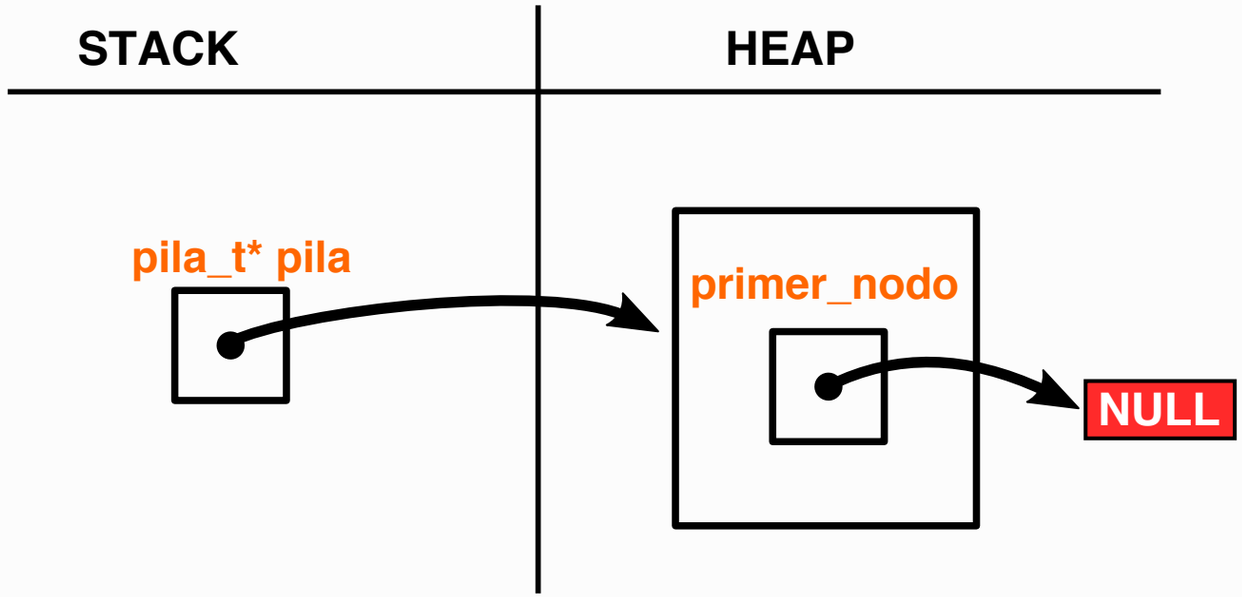
¿QUÉ FALTA? ಠ_ಠ



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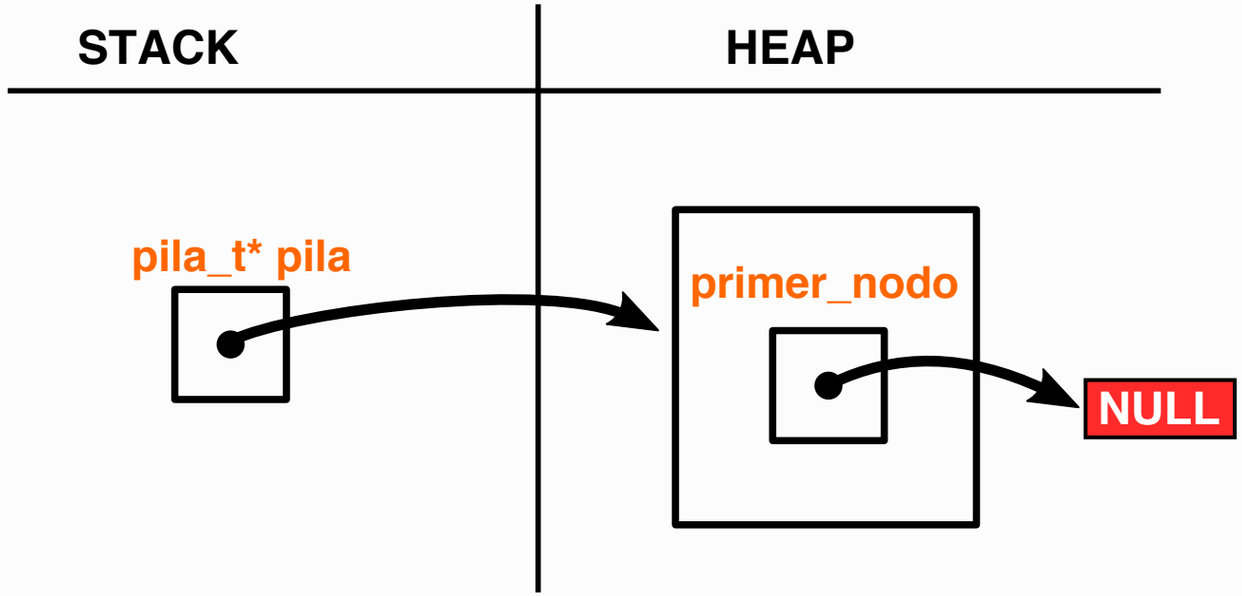
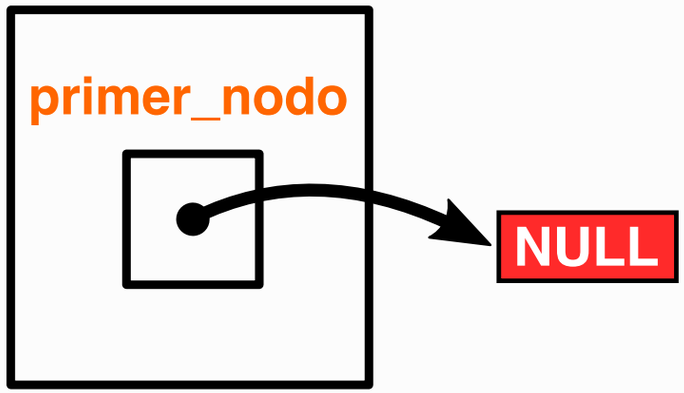
¿QUÉ FALTA? ಠ_ಠ

VERIFICAR NULL



¿PUSH?

PUSH(DATO), PUSH(DATO), PUSH(DATO)



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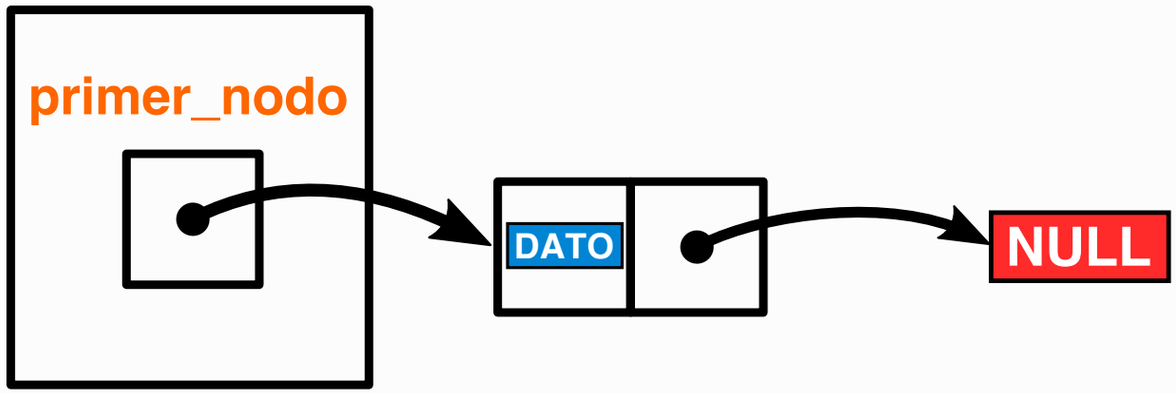

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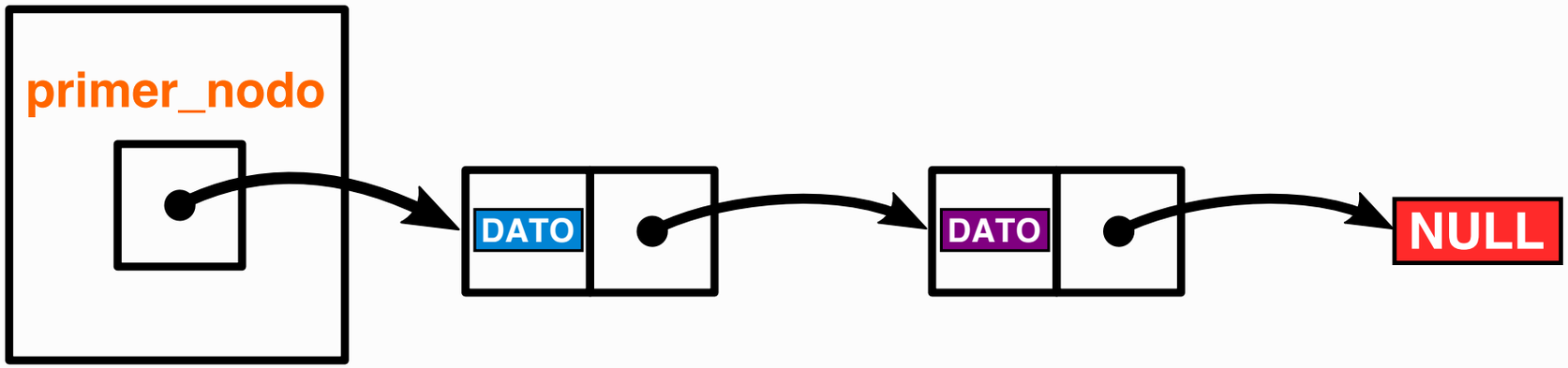

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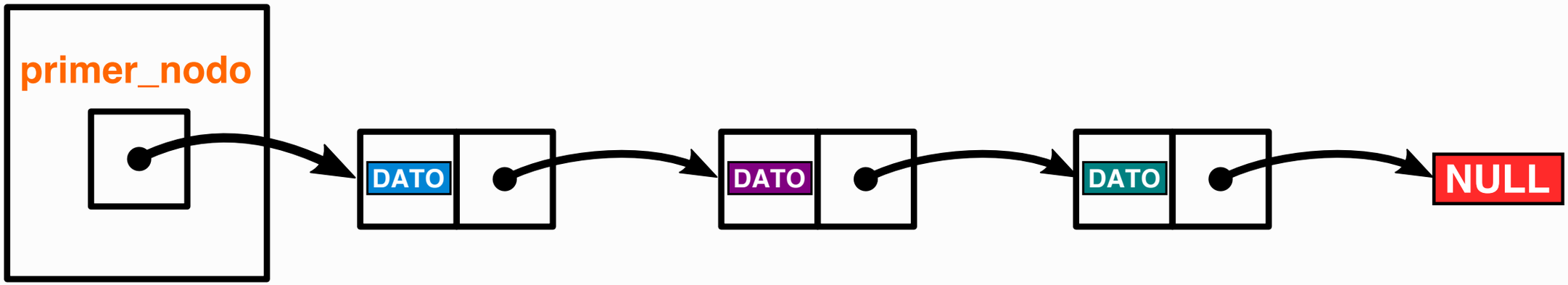

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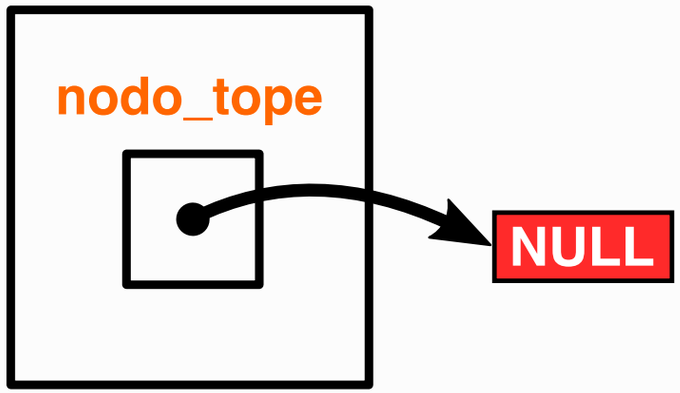

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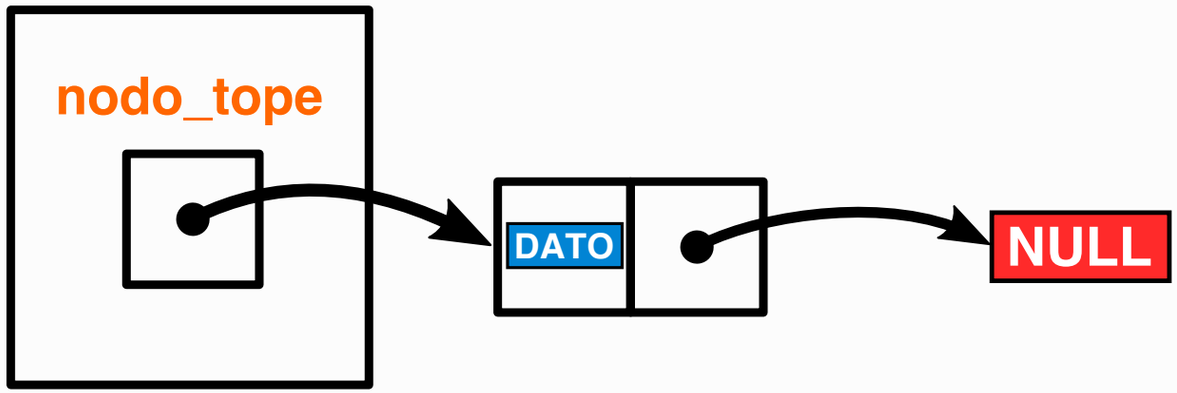

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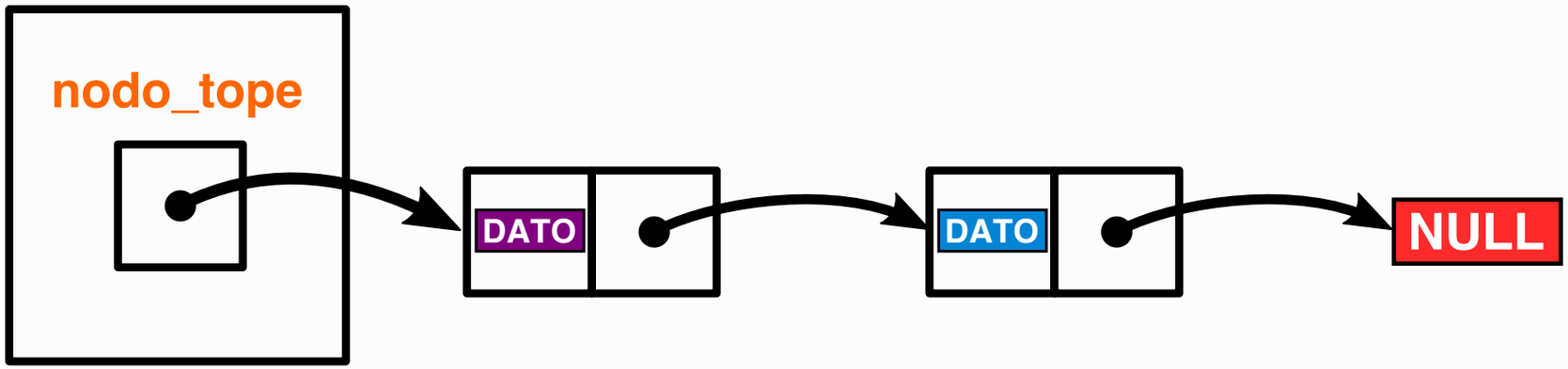

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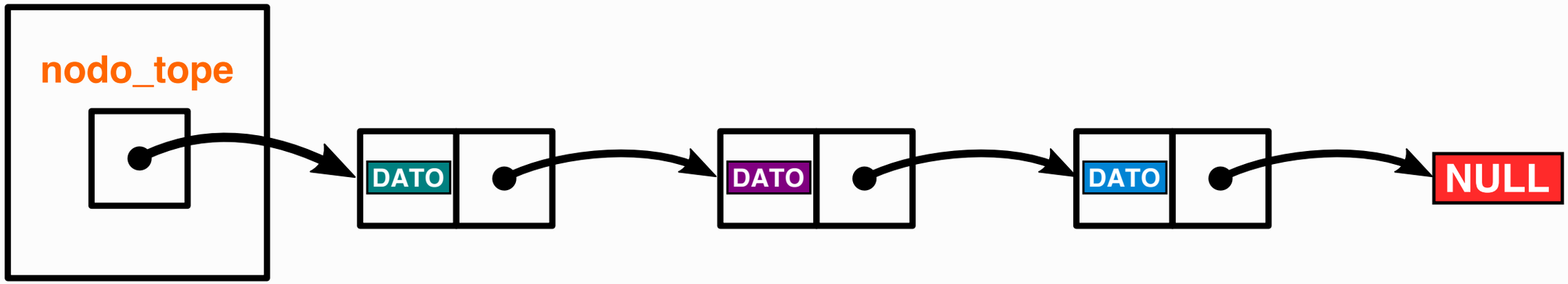

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  nodo_t* nodo = malloc(sizeof(nodo_t));
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  pila->nodo_tope = nodo;
  return 0;
}
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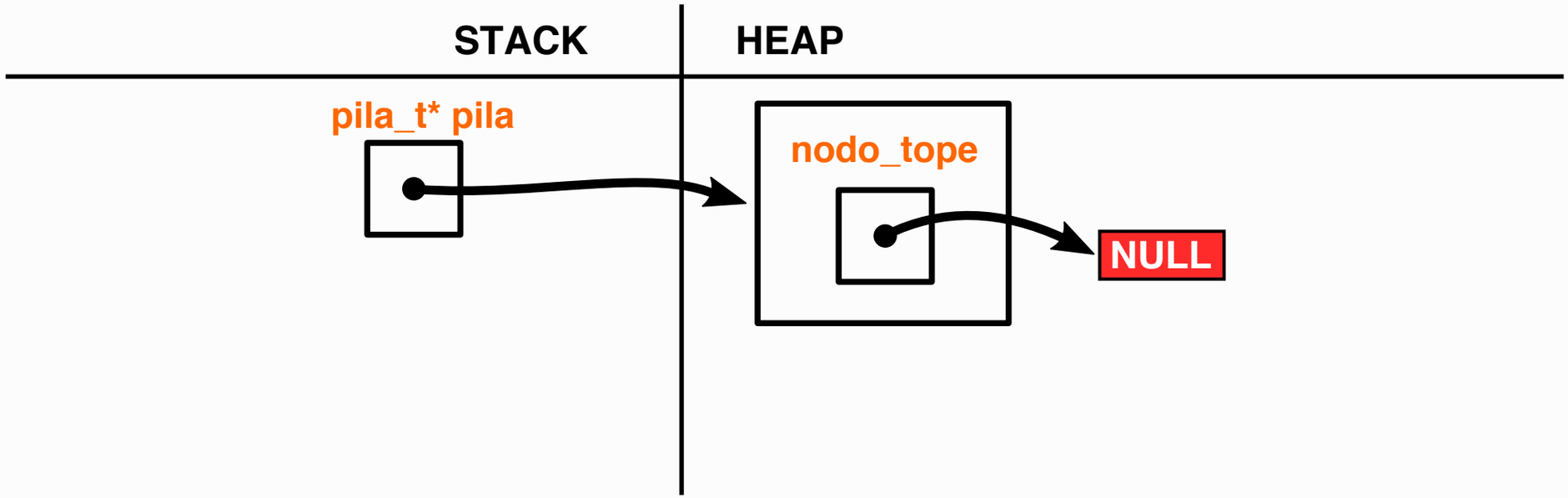

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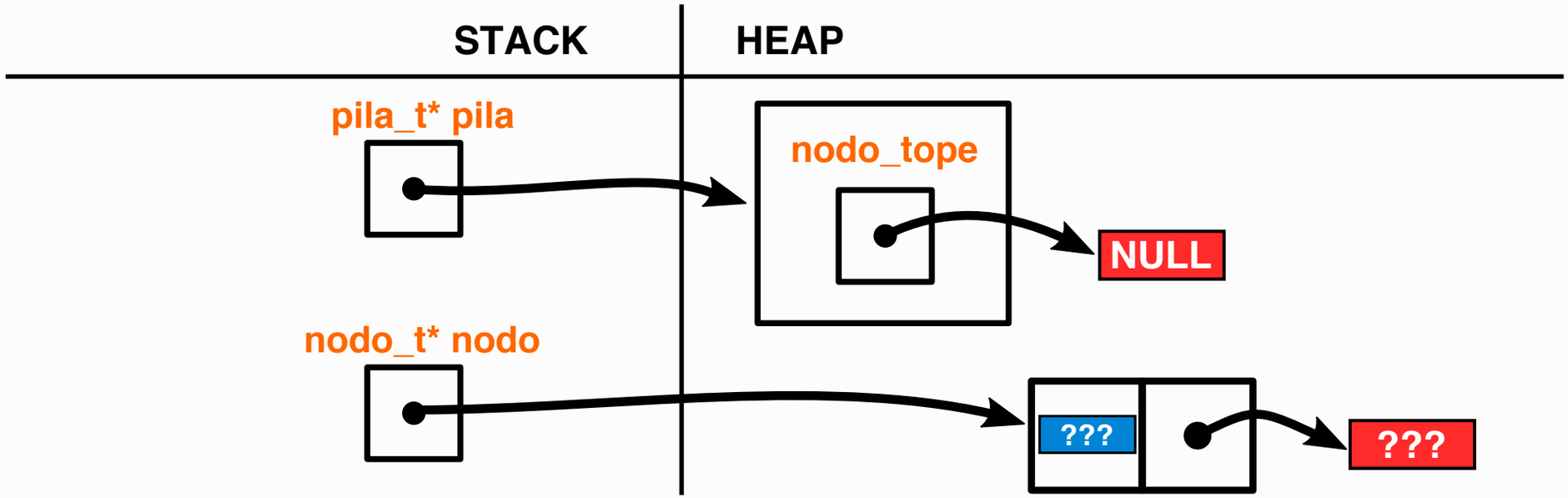

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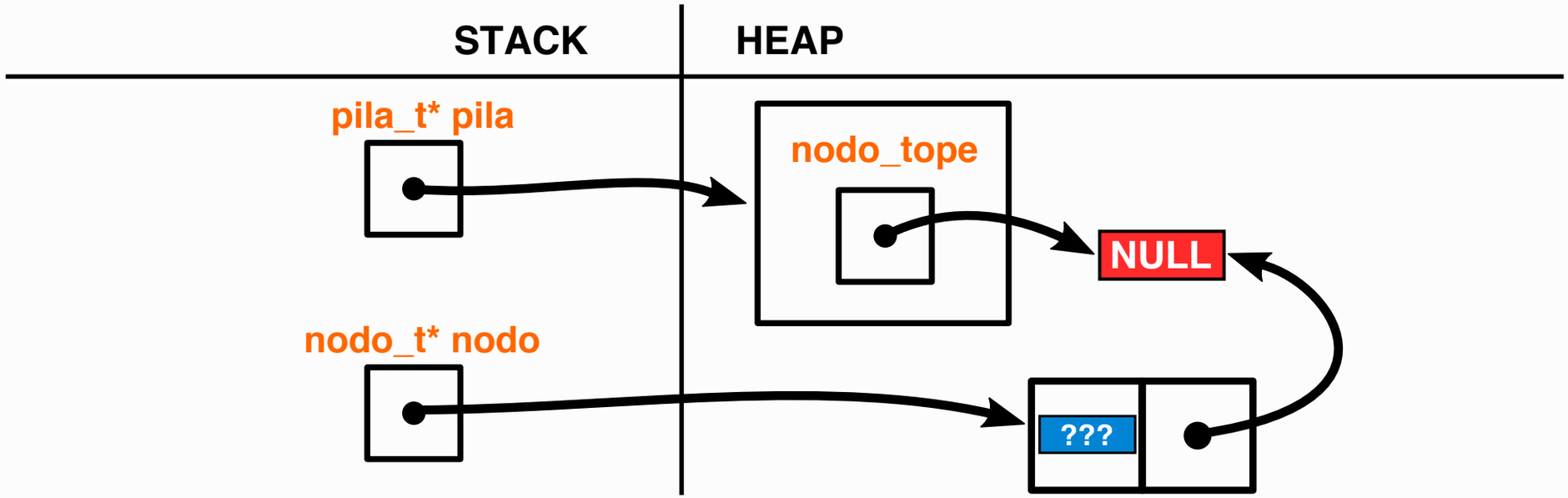

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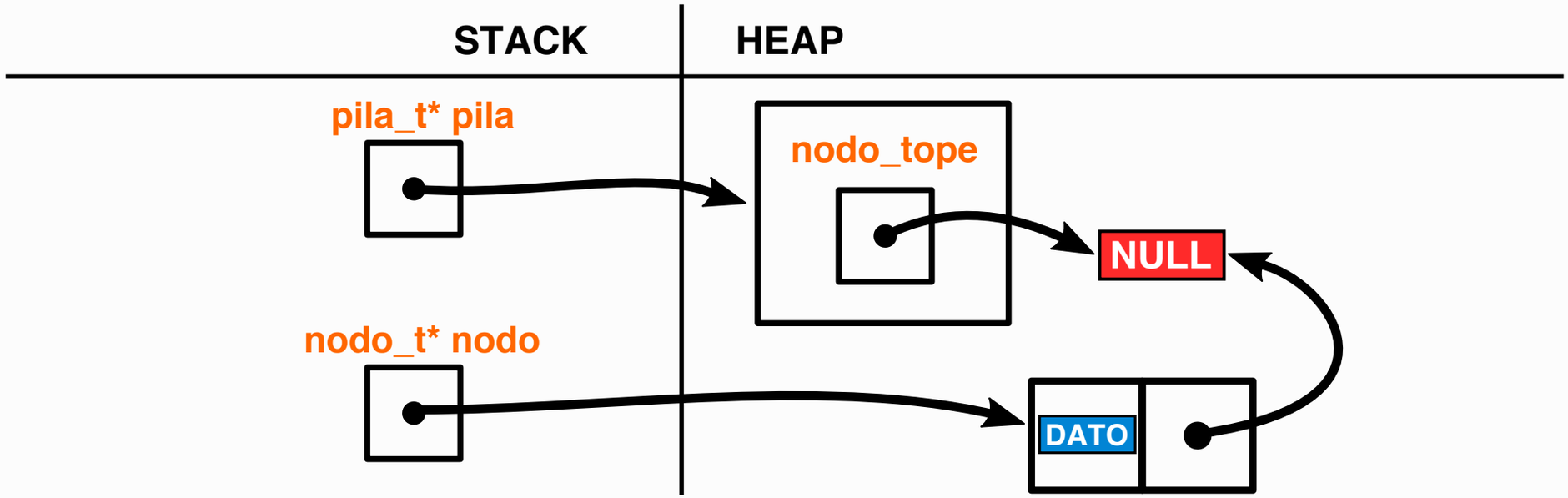

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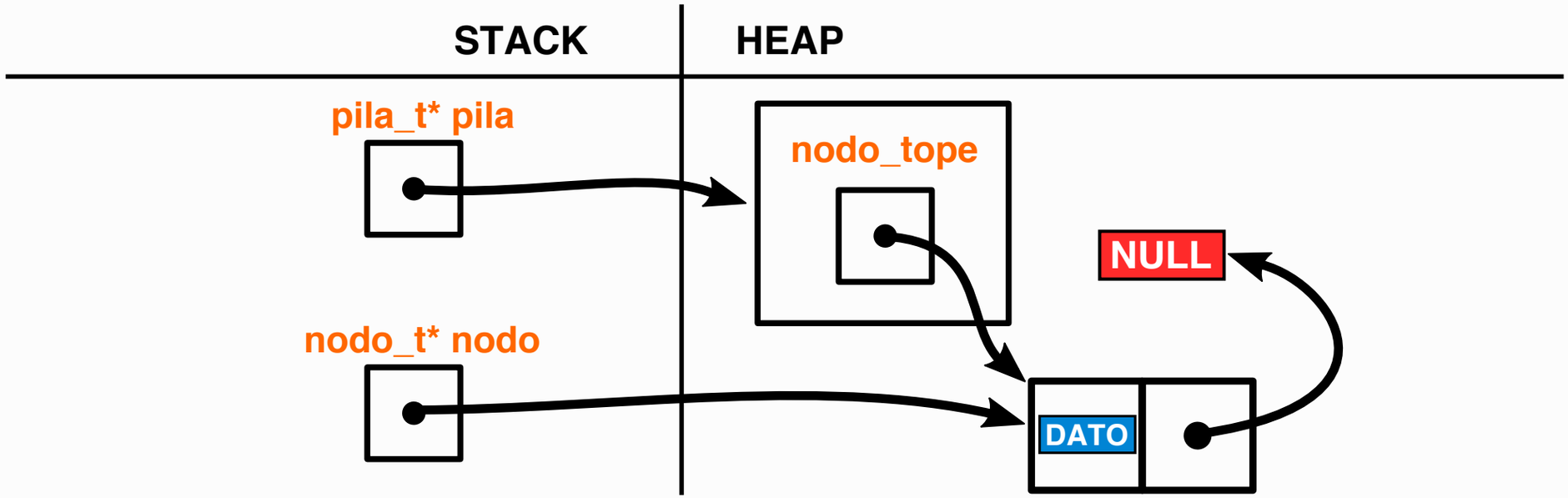

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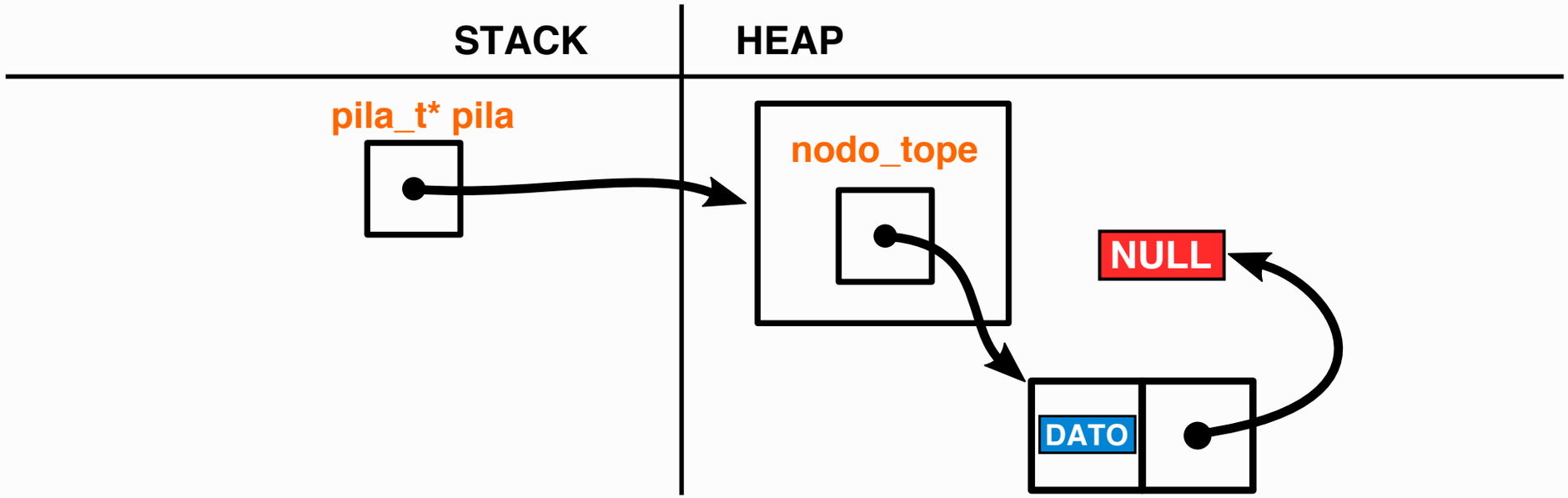

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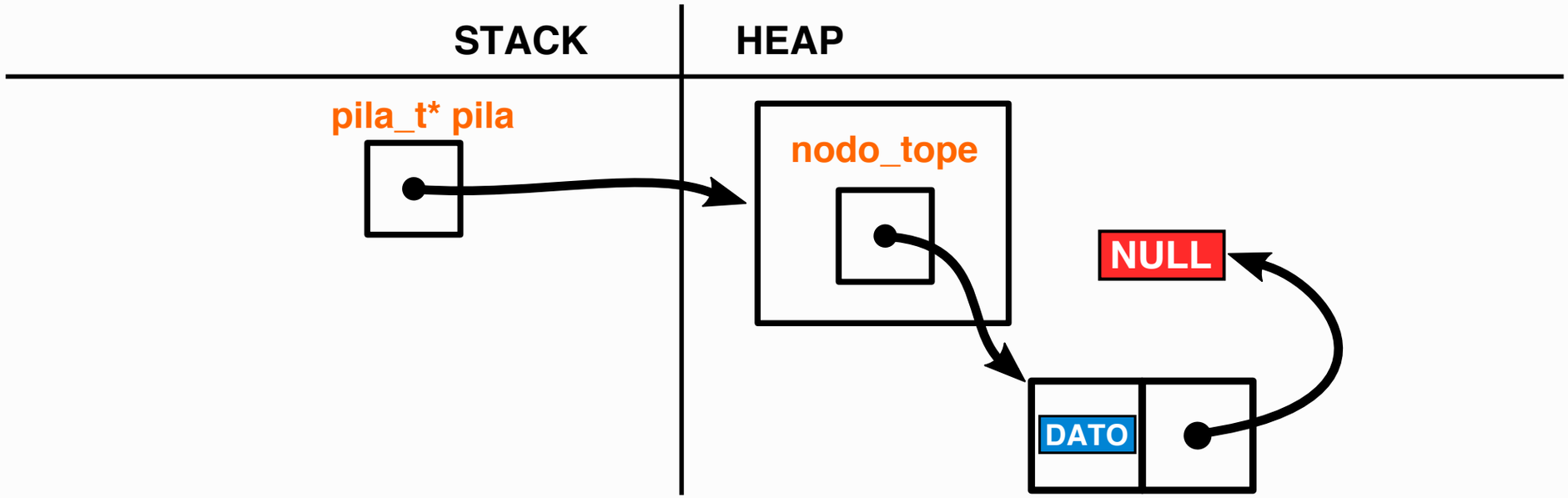

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VERIFICAR NULL

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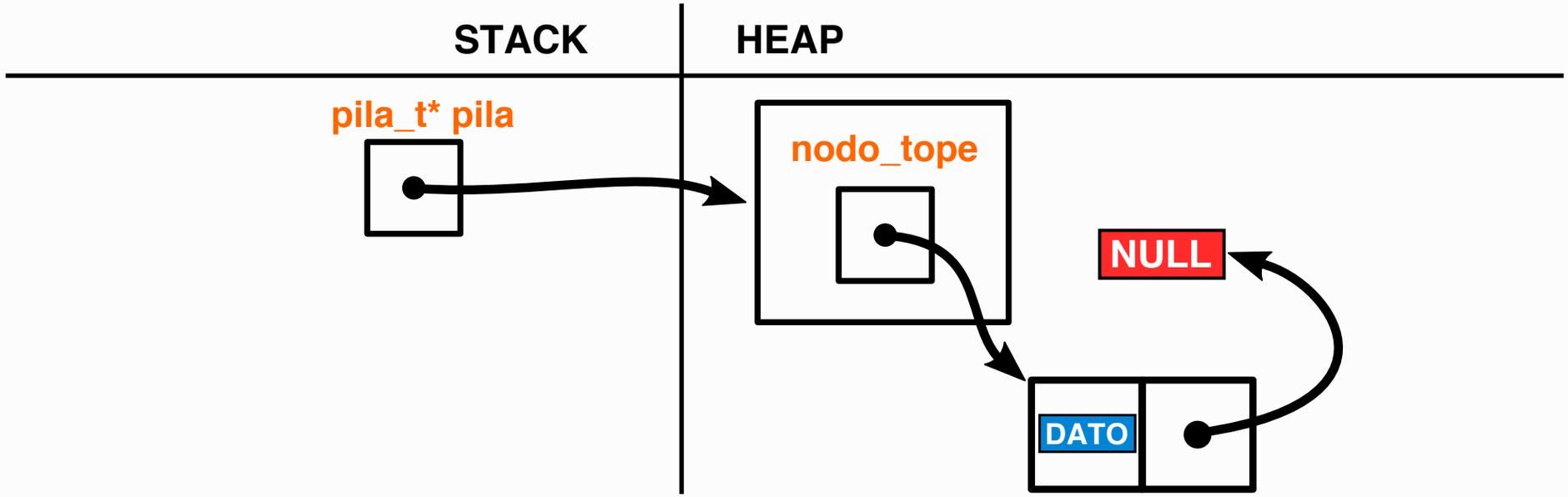

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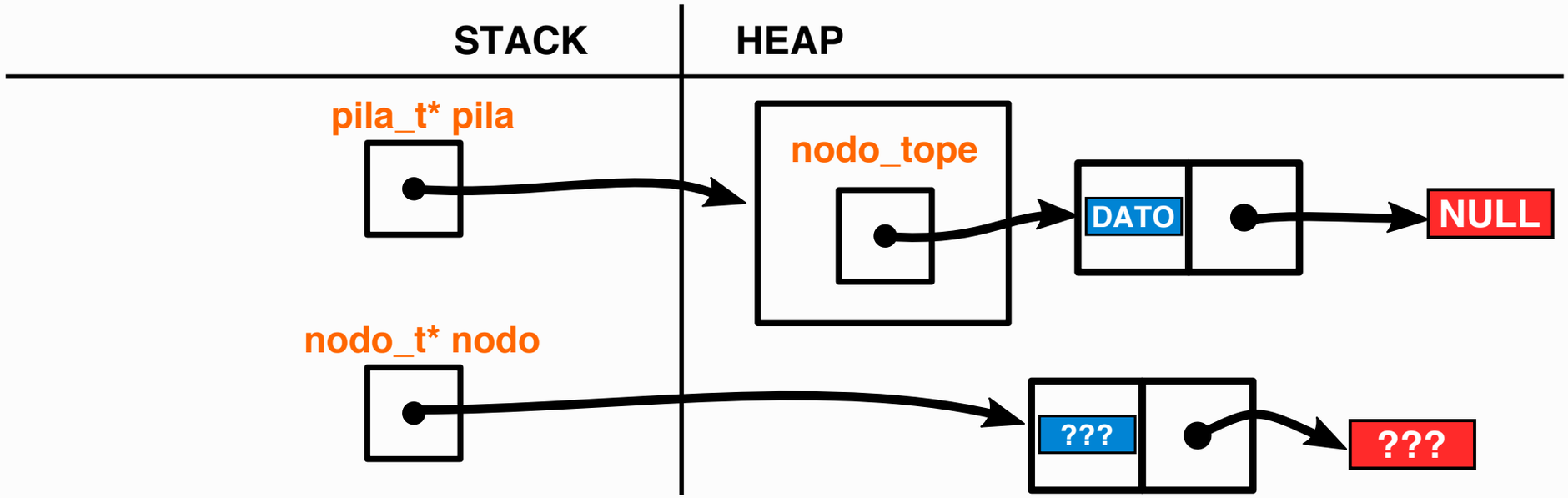

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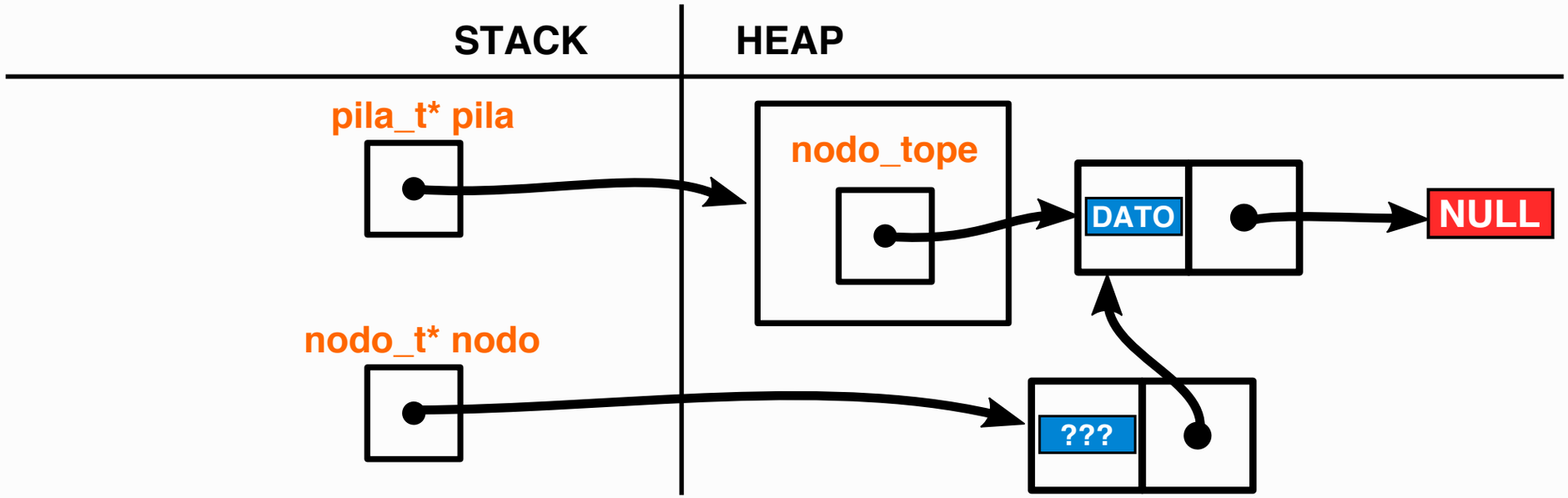

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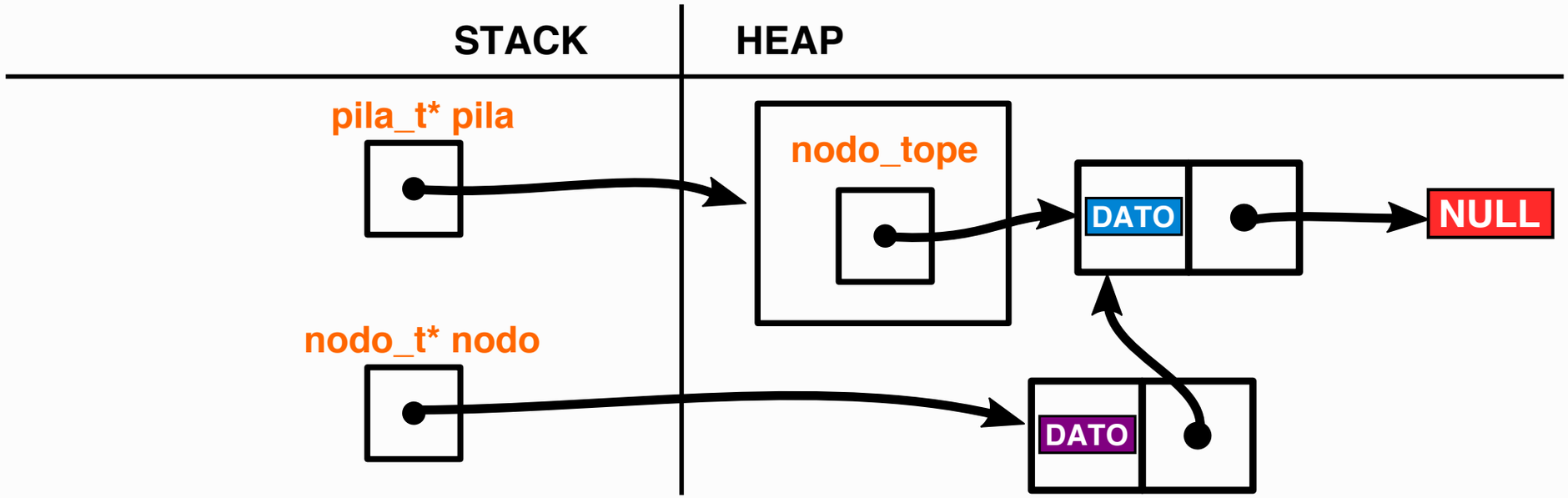

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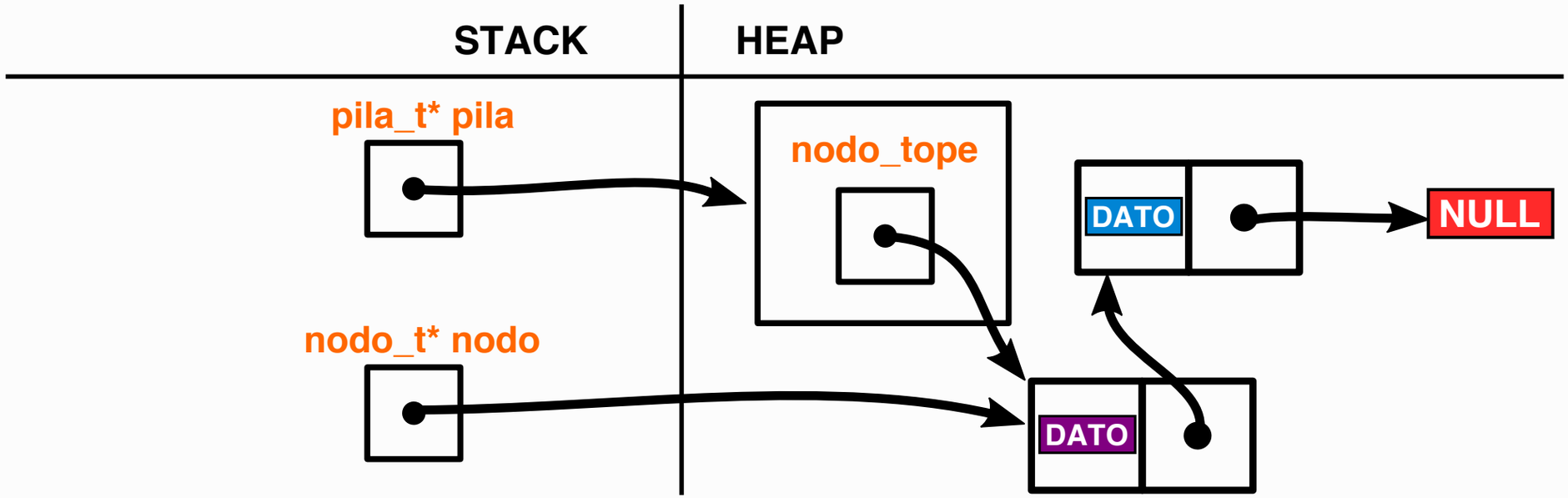

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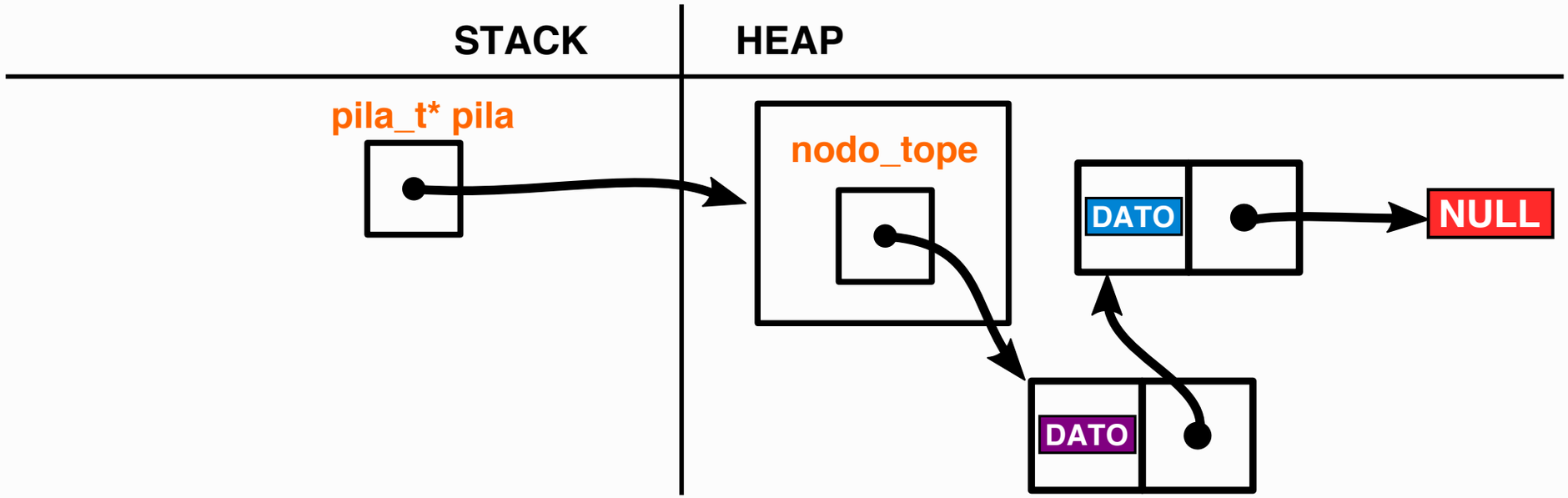
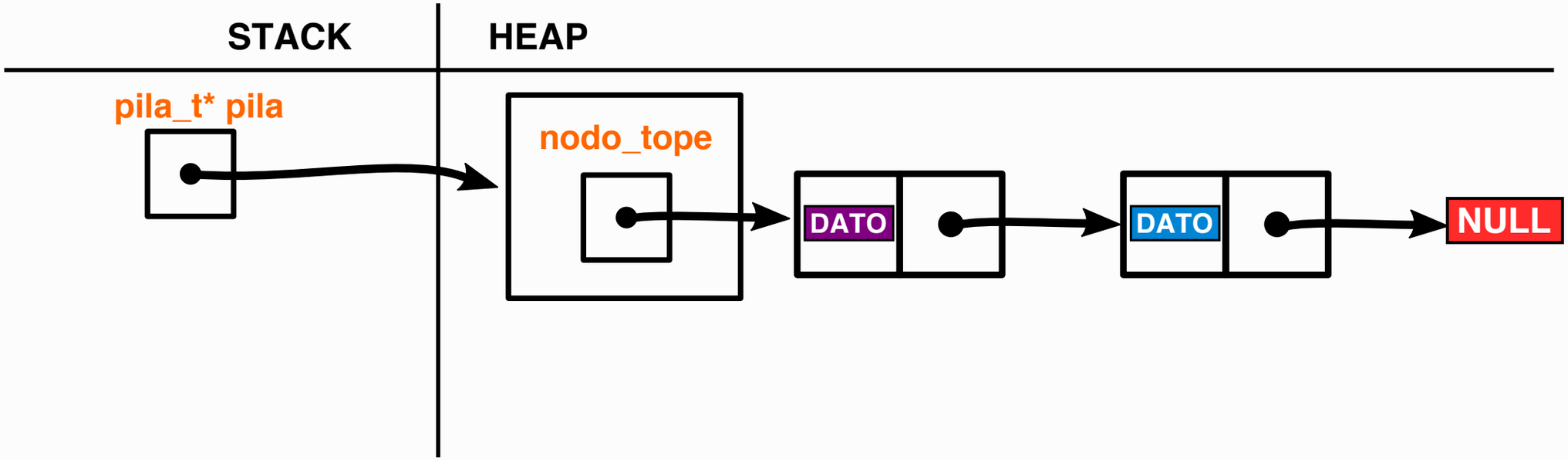


POP

```
int pila_desapilar(pila_t* pila){
   nodo_t* nodo_aux = (pila->nodo_tope);
   pila->nodo_tope = nodo_aux->siguiente;
   free(nodo_aux);
   return 0;
}
```



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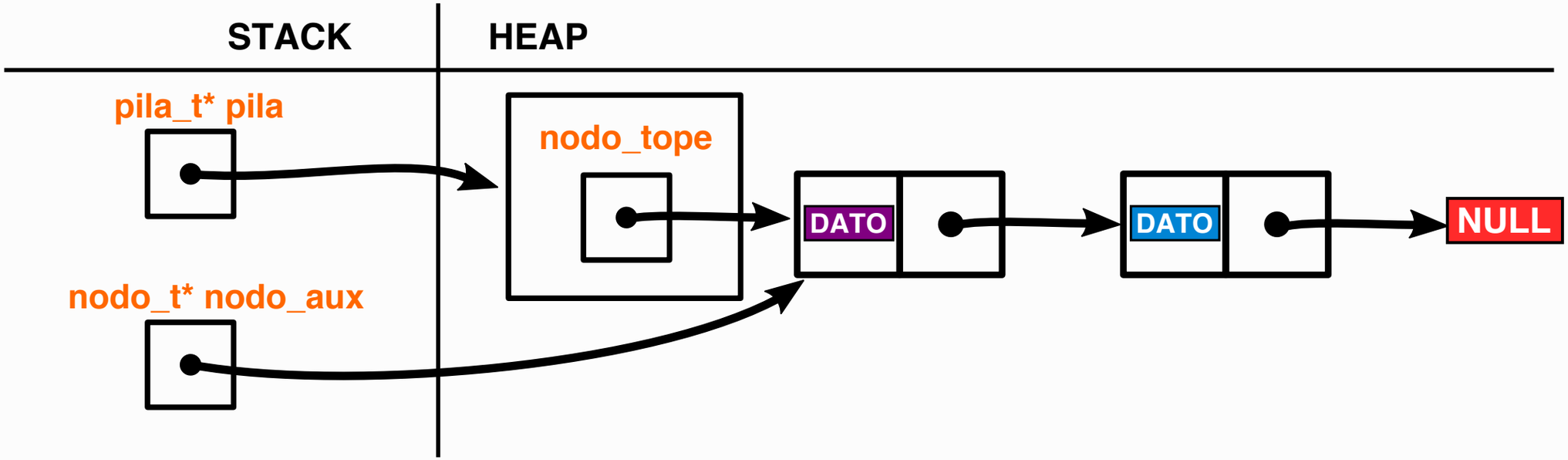

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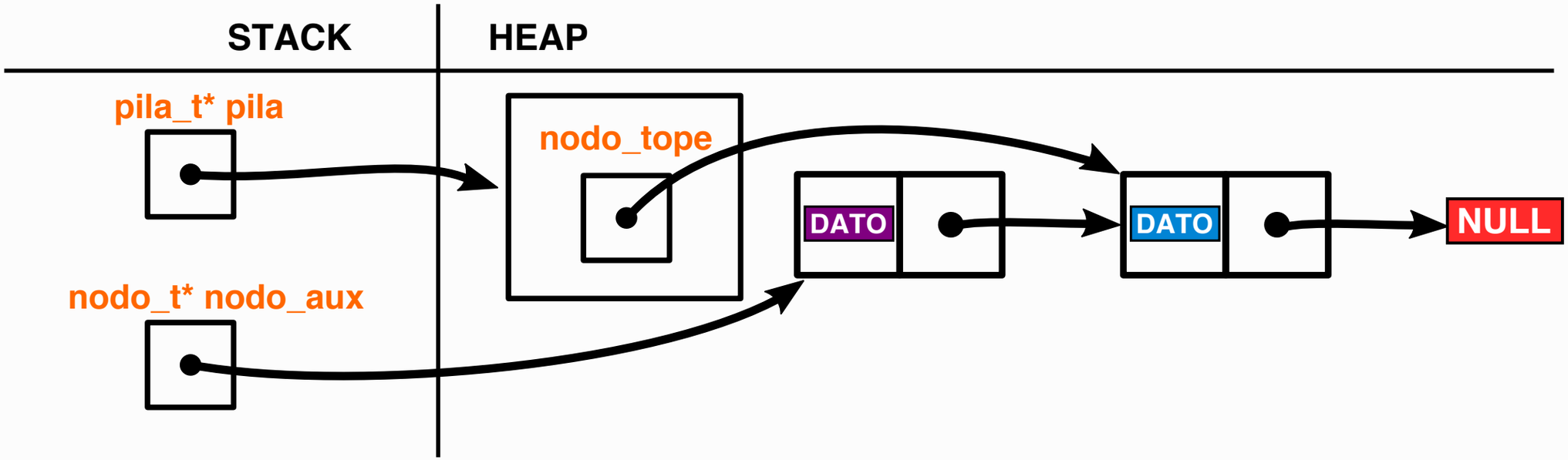

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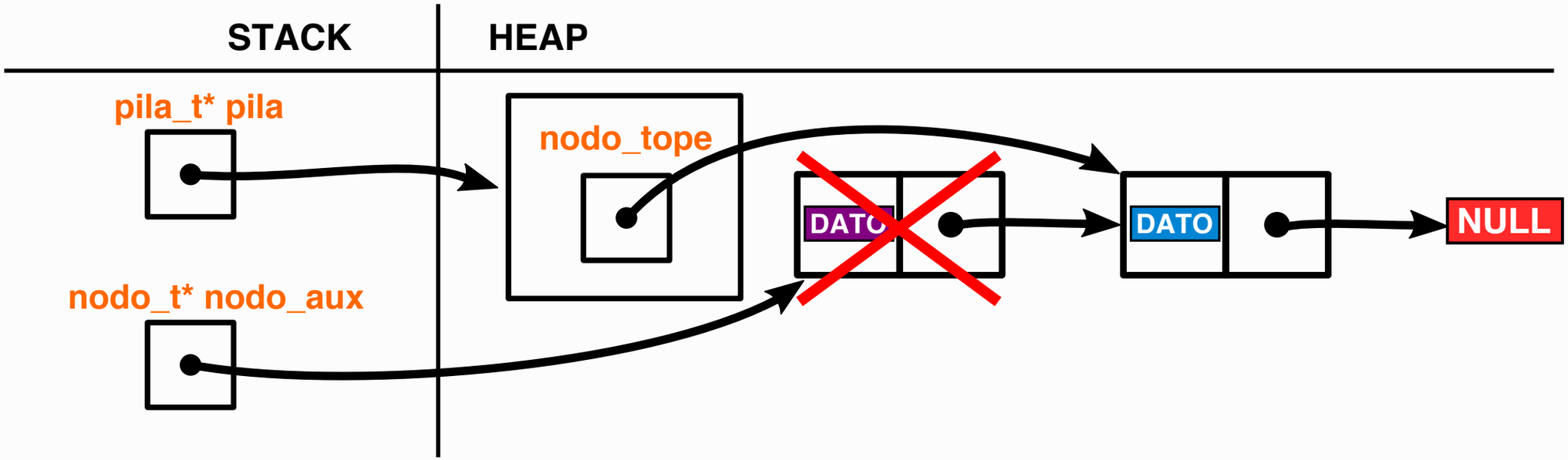

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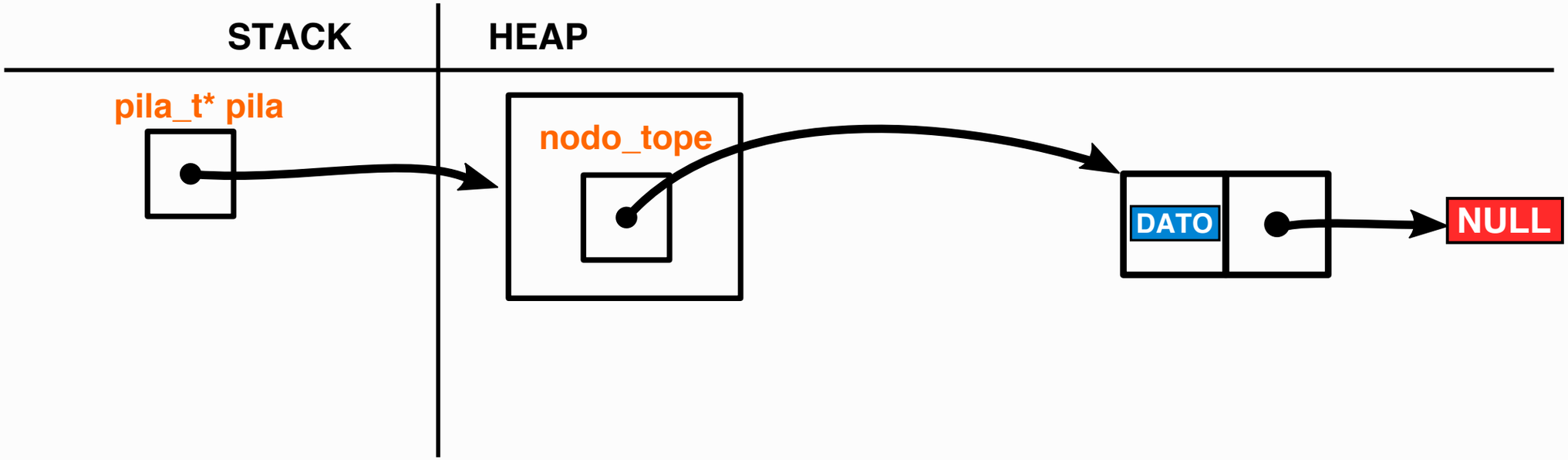

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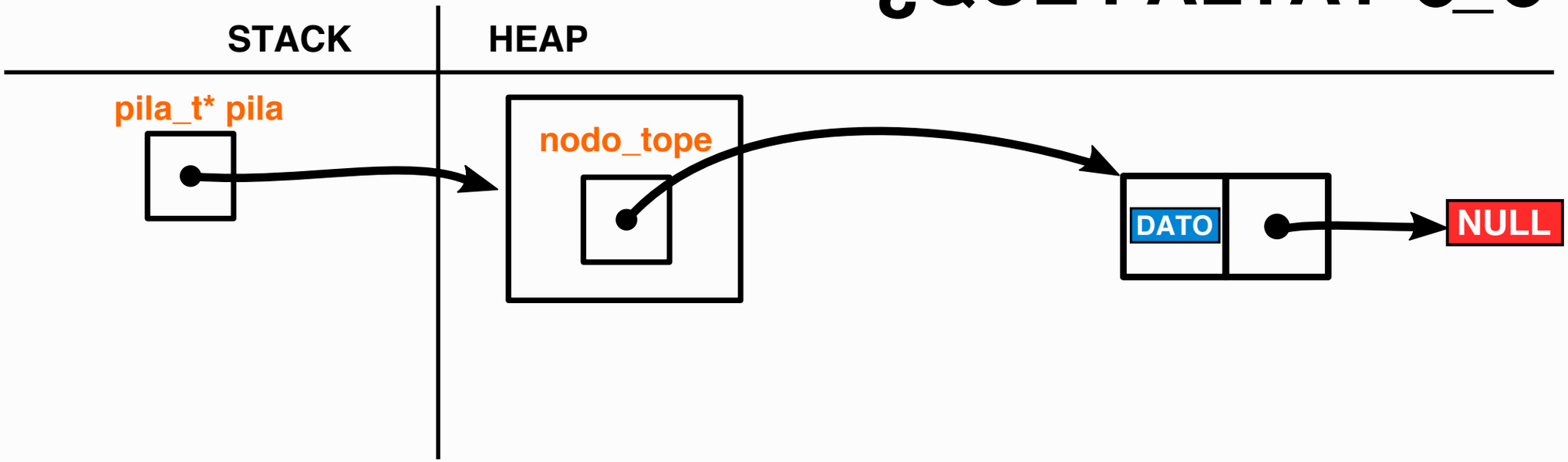

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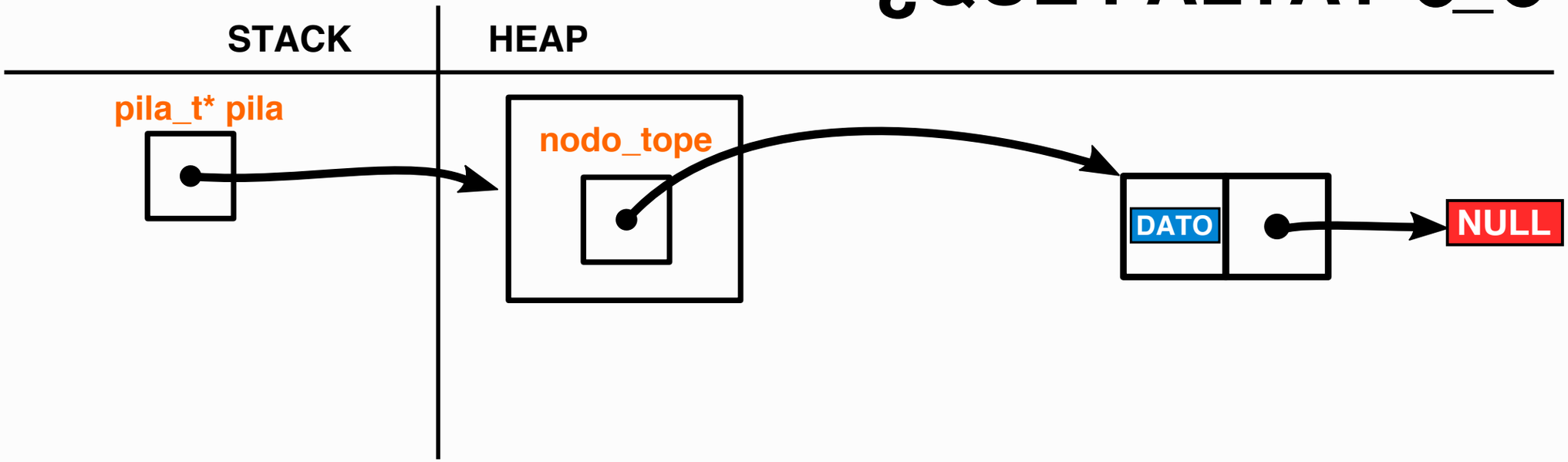
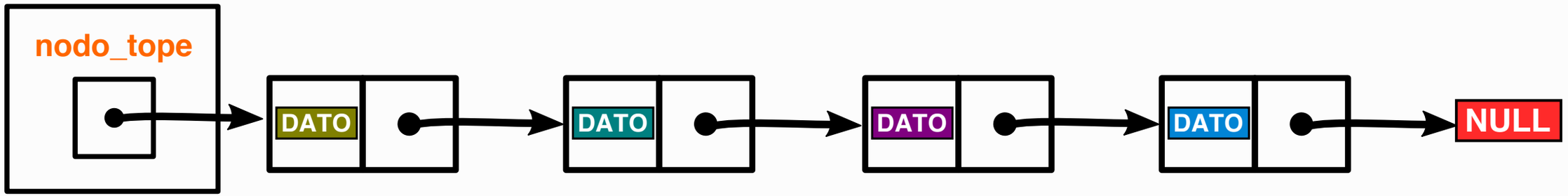


TAMAÑO, TOPE, VACÍA

¿CUÁNTOS ELEMENTOS HAY?



TAMAÑO, TOPE, VACÍA

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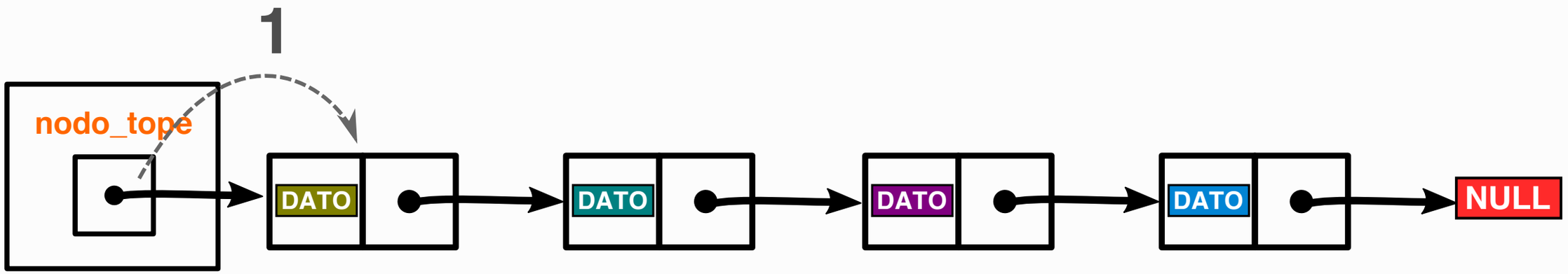

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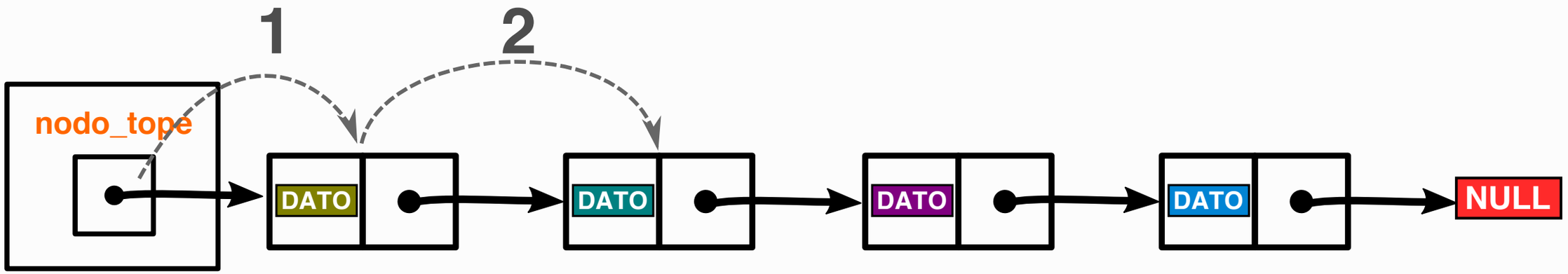

TAMAÑO, TOPE, VACÍA

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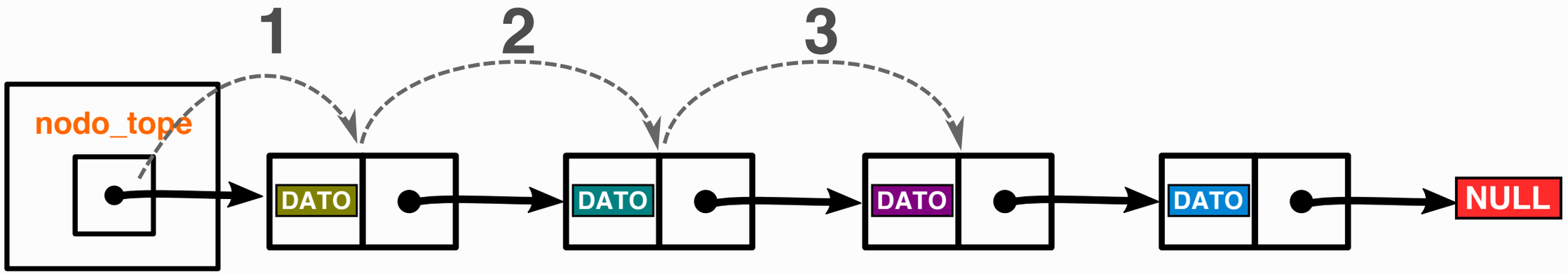

TAMAÑO, TOPE, VACÍA

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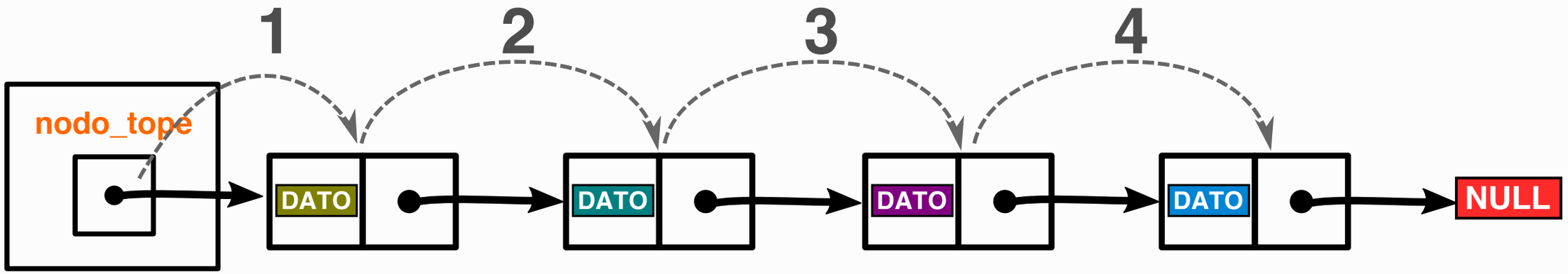

TAMAÑO, TOPE, VACÍA

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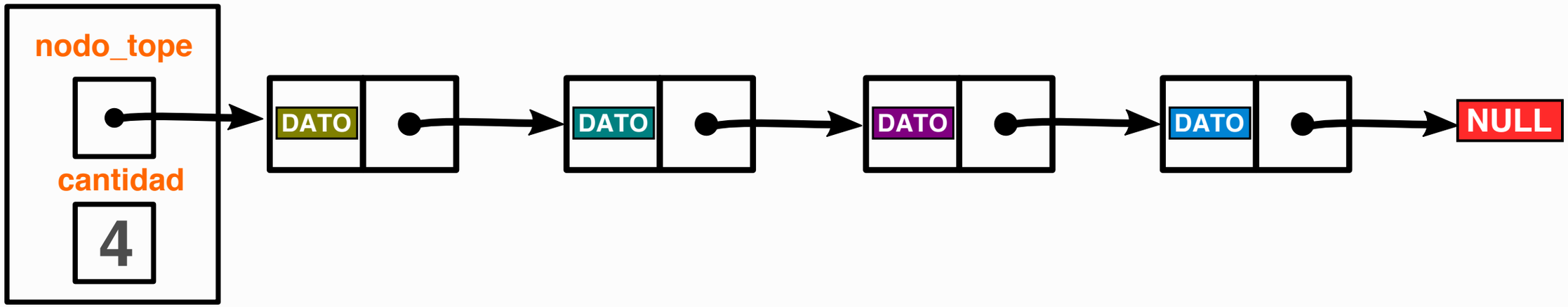
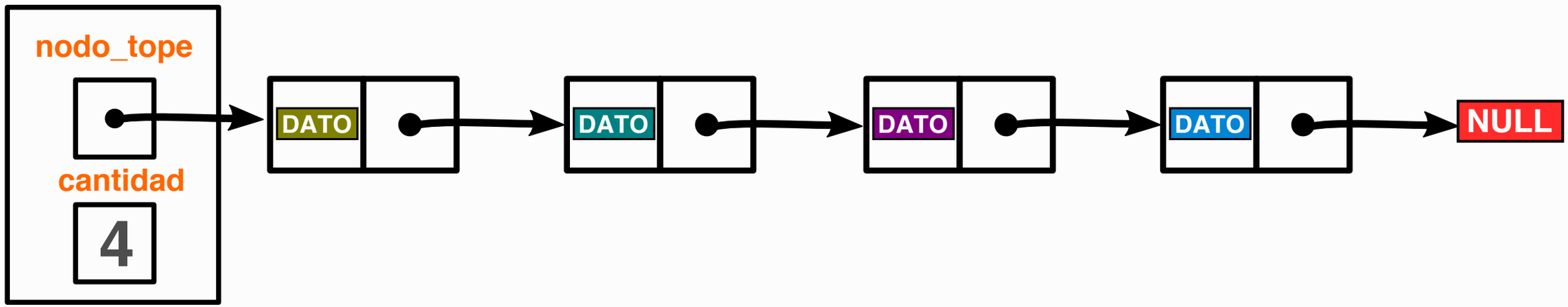


TAMAÑO, TOPE, VACÍA

```c
bool pila_vacia(pila_t* pila){
  if(!pila)
    return true;
  return (pila->nodo_tope == NULL);
}

void* pila_tope(pila_t* pila){
  if(!pila || pila_vacia(pila))
    return NULL;
  return pila->nodo_tope->elemento;
}
```

```c
int pila_cantidad(pila_t* pila){
  if(!pila)
    return 0;
  return pila->cantidad;
}
```



DESTRUIR

```
void pila_destruir(pila_t* pila){
  if(!pila)
    return;
  while (!pila_vacia(pila) && pila_desapilar(pila)==0);
  free(pila);
}
```

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¿PREGUNTAS?

FIN

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