교수의 파이썬

01_4 다차원 리스트의 참조

창원대학교 정보통신공학과 교수 박동규

널널한 교수의 파이썬

01_4 다차원 리스트의 참조

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널널한 교수의 고급 파이썬

01_4 다차원 리스트의 참조

창원대학교 정보통신공학과 교수 박동규

파이썬 리스트

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>>> b = a
>>> print(b)
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>>> id(a)
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>>> id(b)
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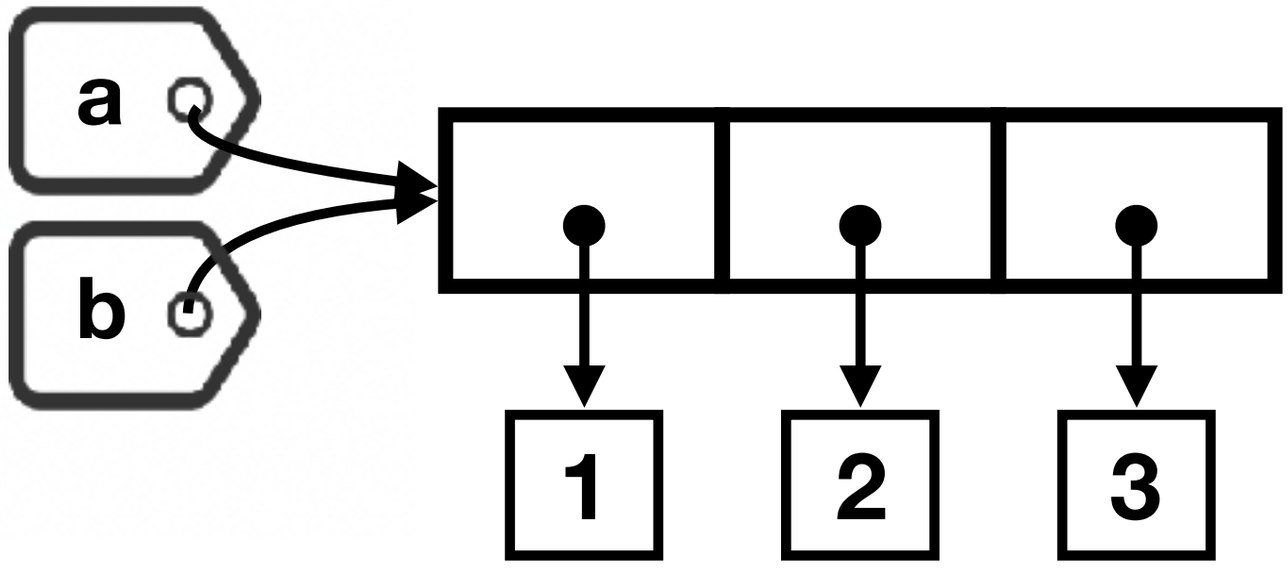

파이썬 리스트

- 리스트는 변경가능(mutable) 자료형이다

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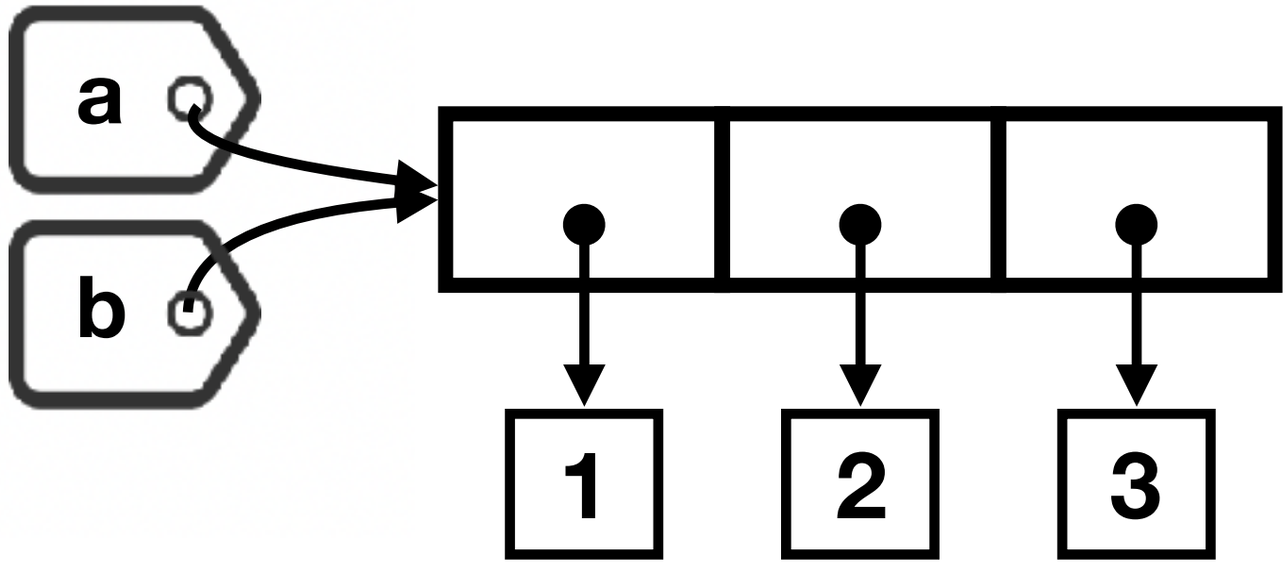

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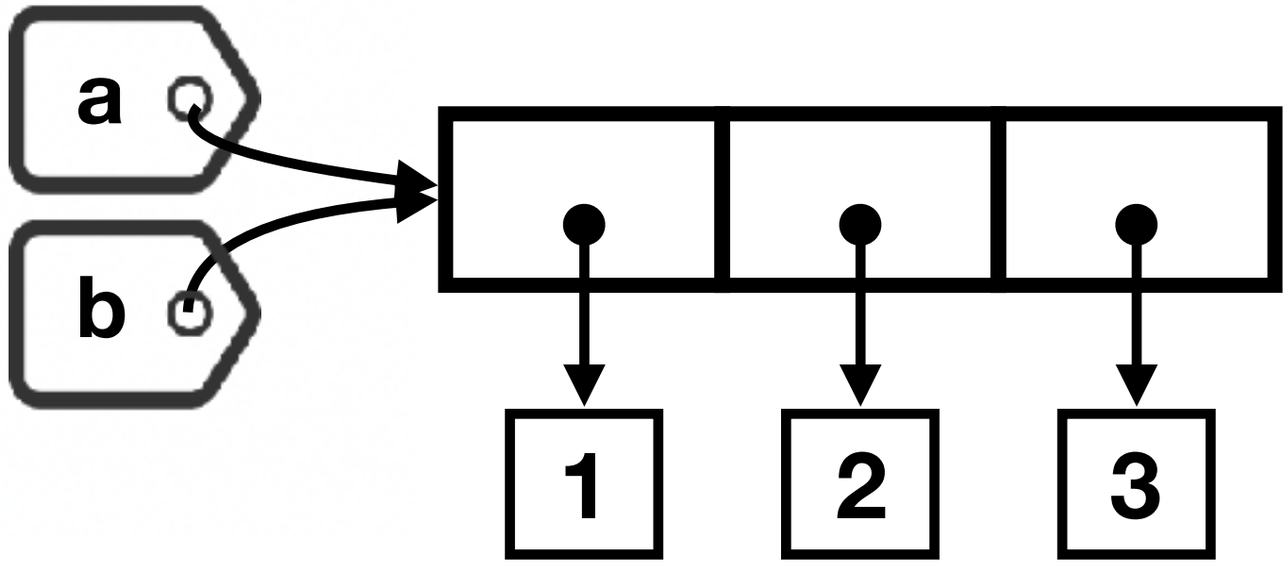

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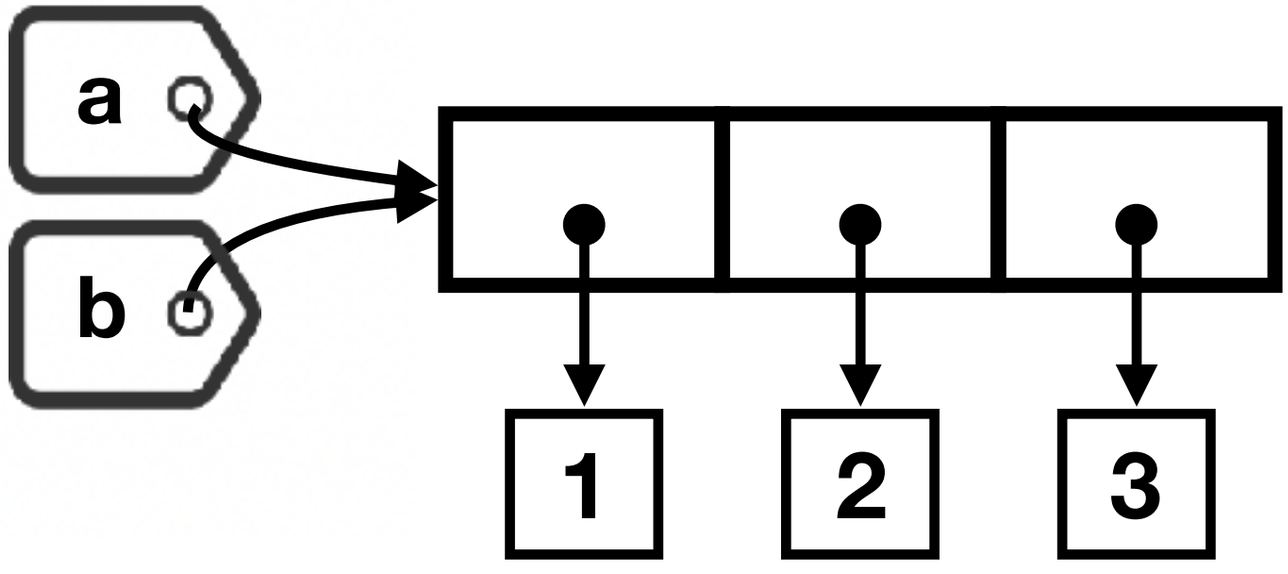

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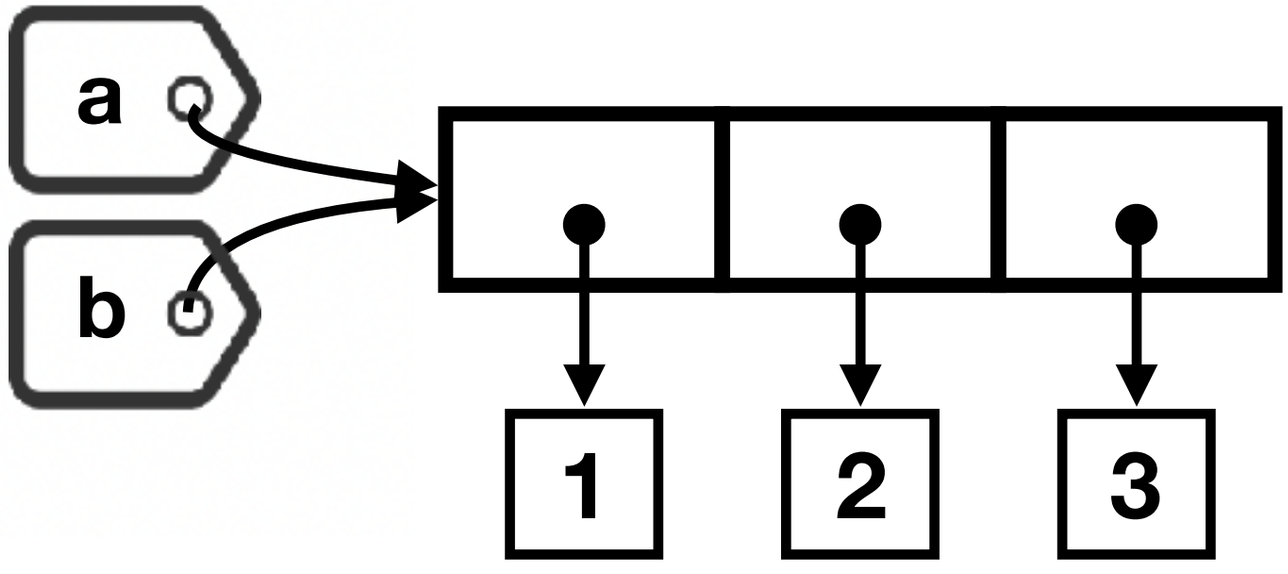

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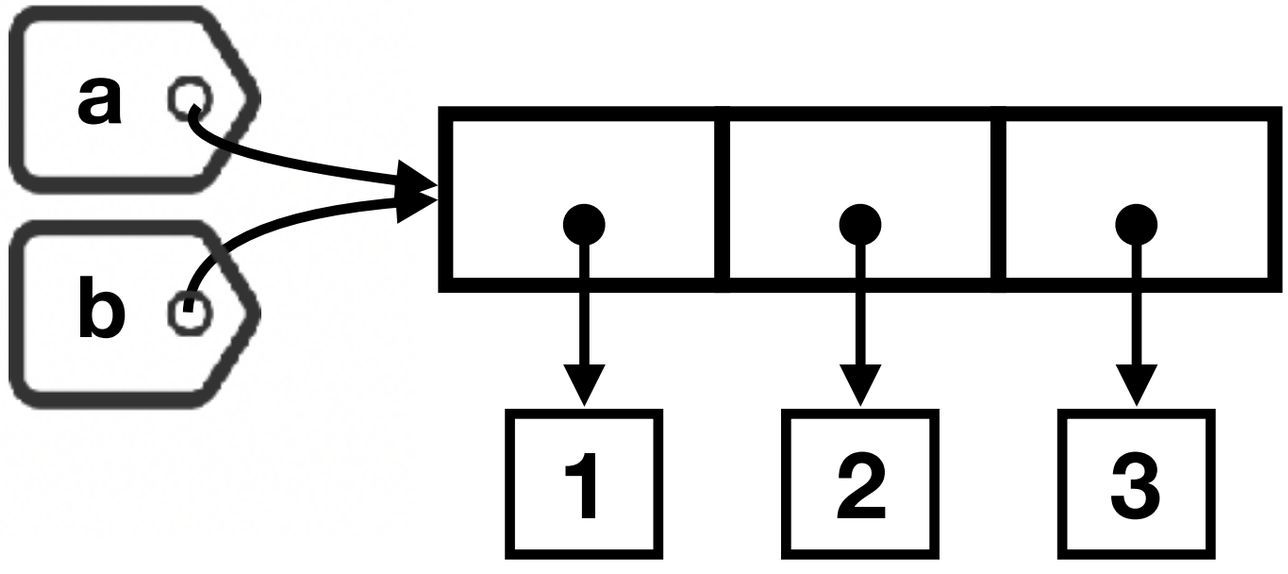

다차원 리스트를 만들어 보자

1 : board = [[0] * cols] * rows

2 : board = [[0] * cols for _ in range(rows)]

두 가지 방법을 비교해보자!!

어떤 차이점이 있을까?

어느쪽이 더 빠를까?

```python
import time, sys

rows, cols = 300, 3000
start = time. time()
board = [[0] * cols] * rows
end = time. time()
print("수행시간 : {:10.6f}".format(end - start))
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수행시간 : 0.000068

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1번이 더 빠른 이유는

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2 : board = [[0] * cols for _ in range(rows)]

rows, cols = 3, 3인 경우에 대해 살펴보자

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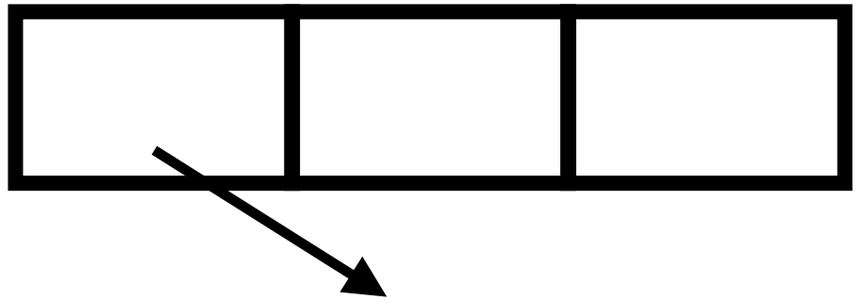

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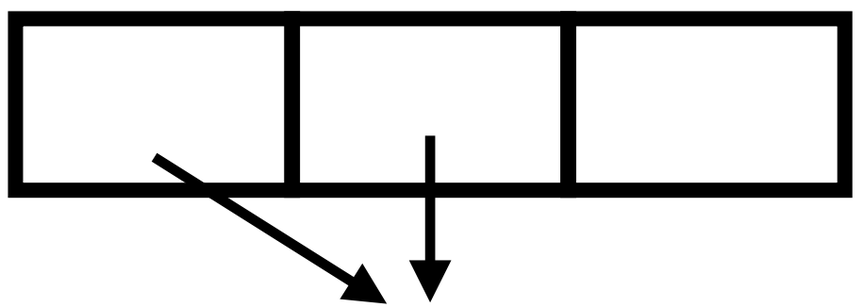

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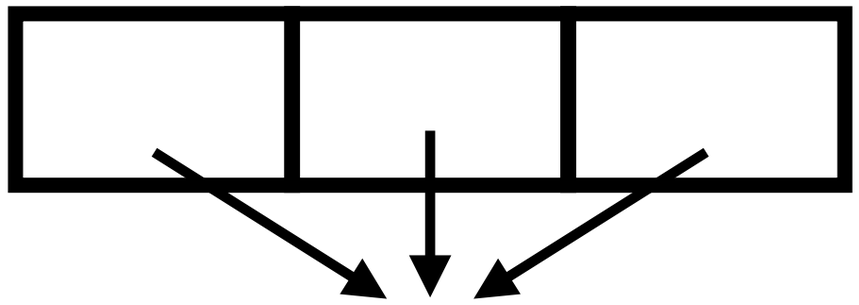

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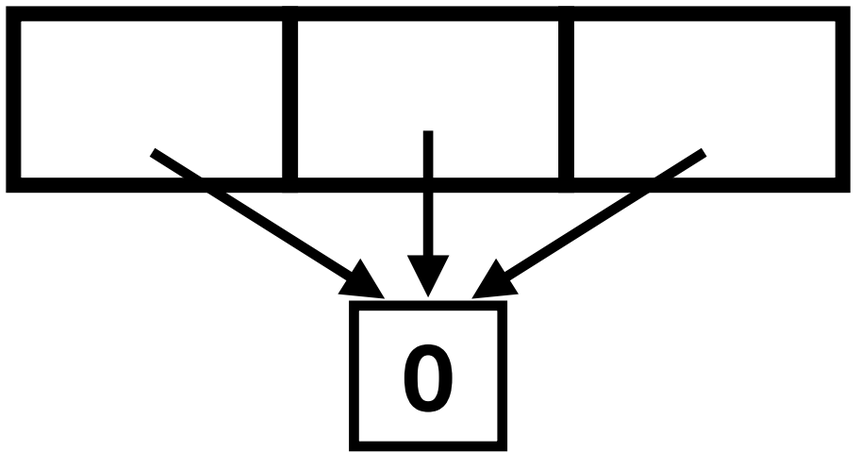

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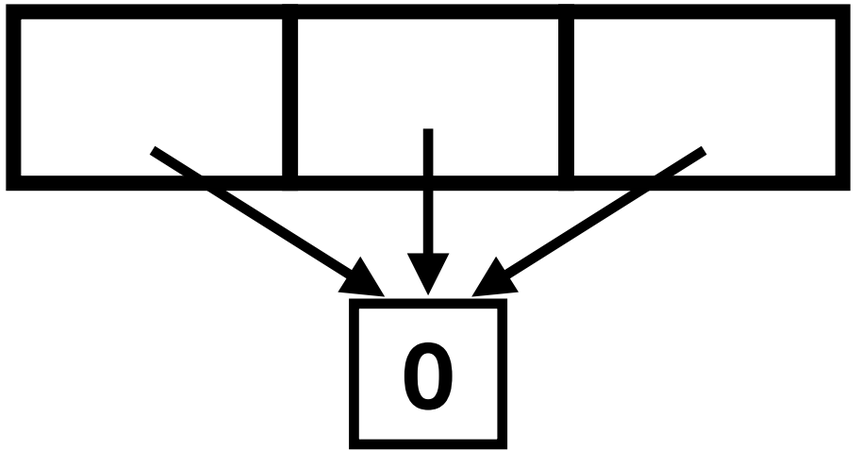

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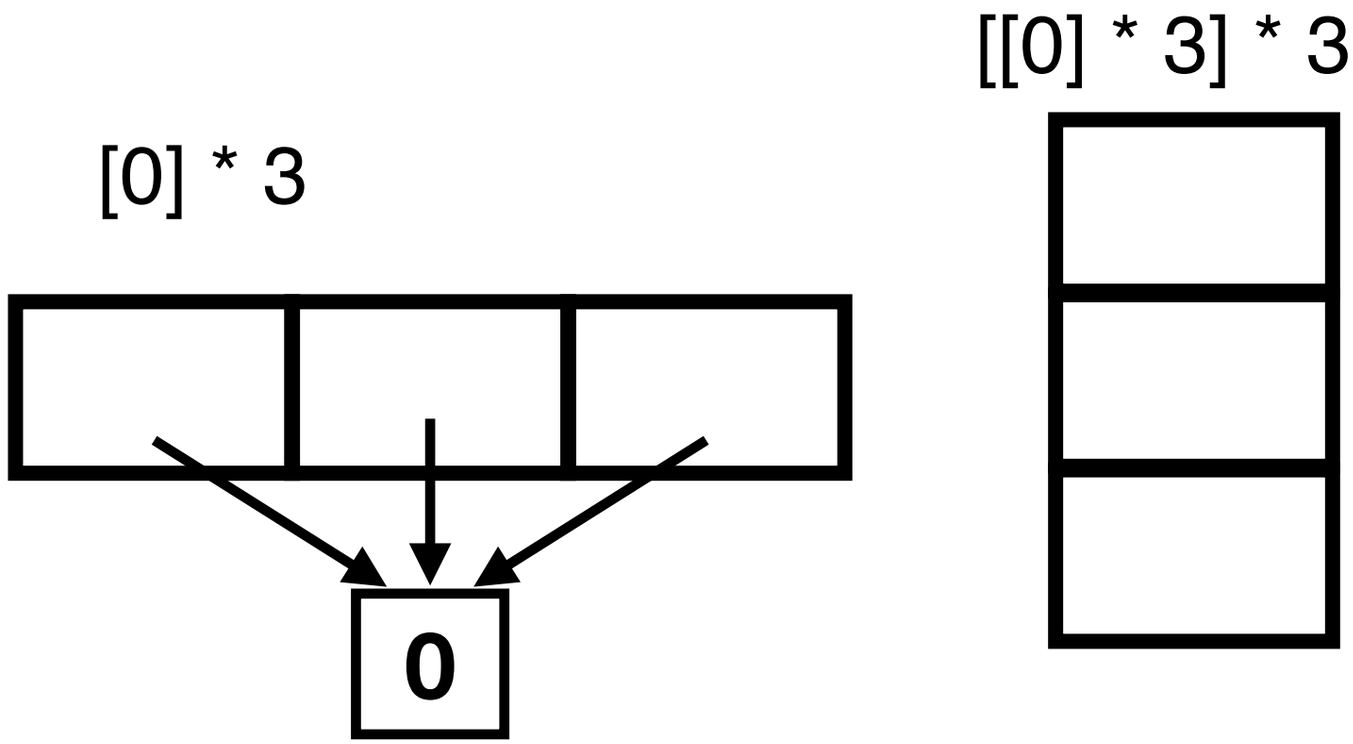

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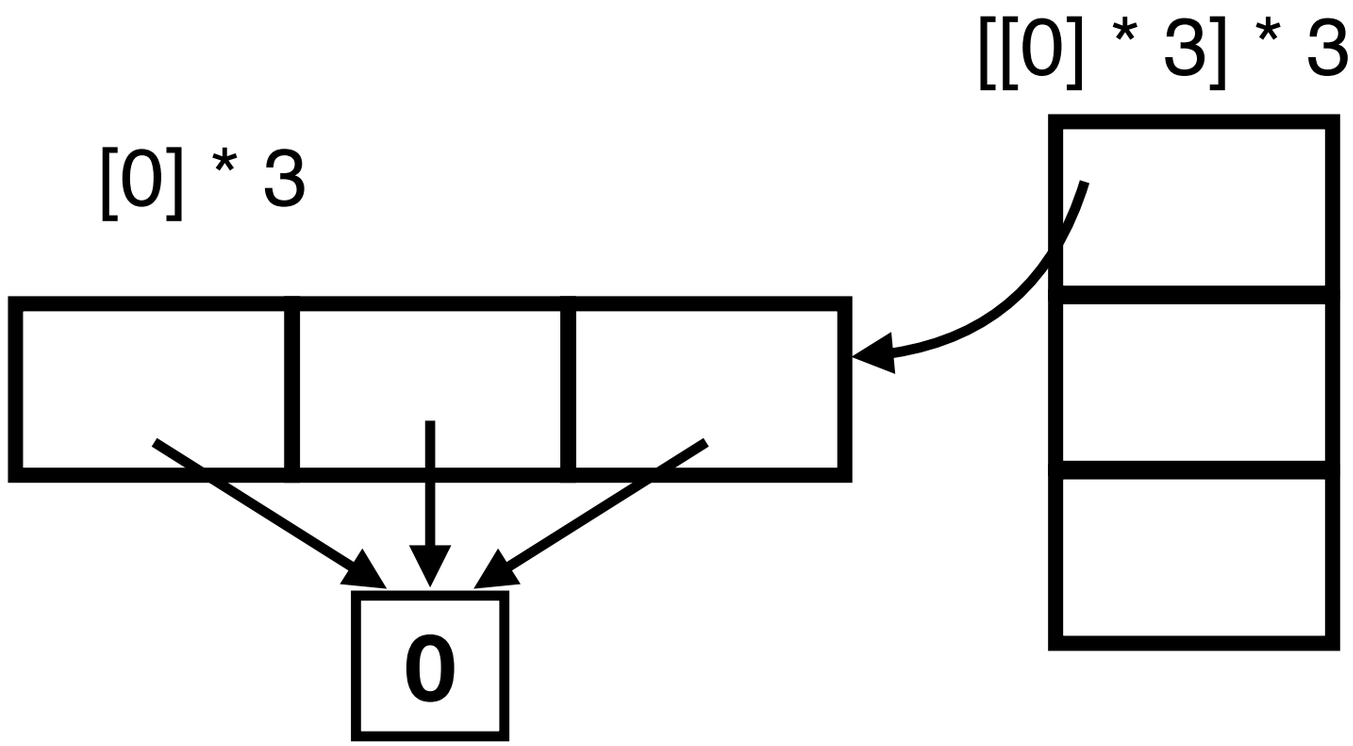

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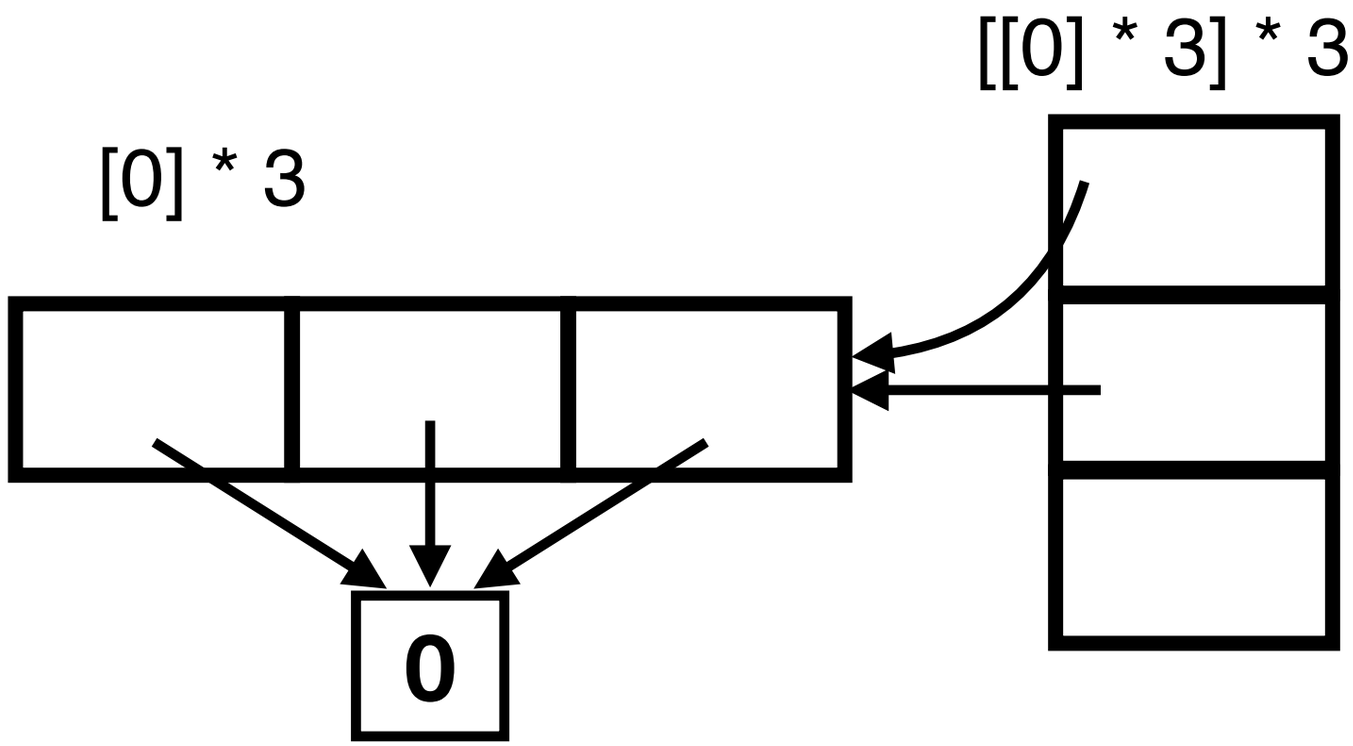

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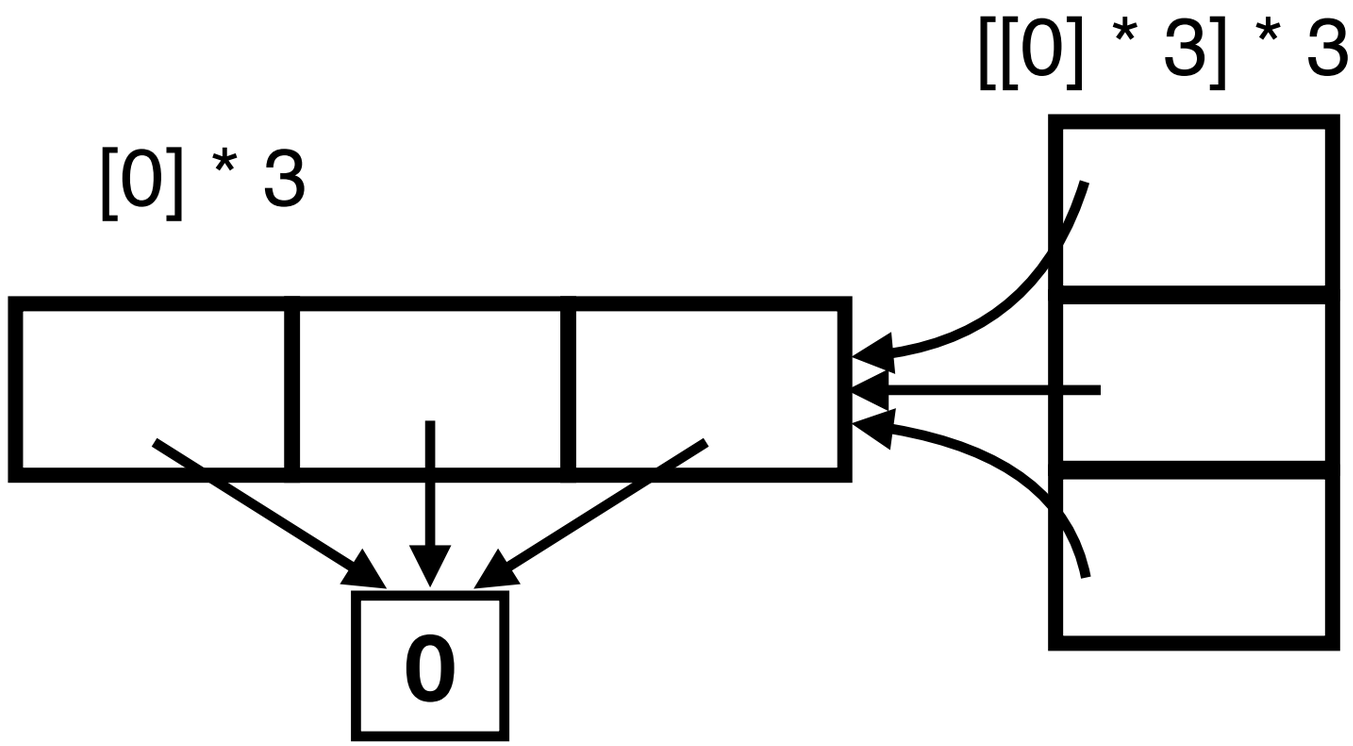

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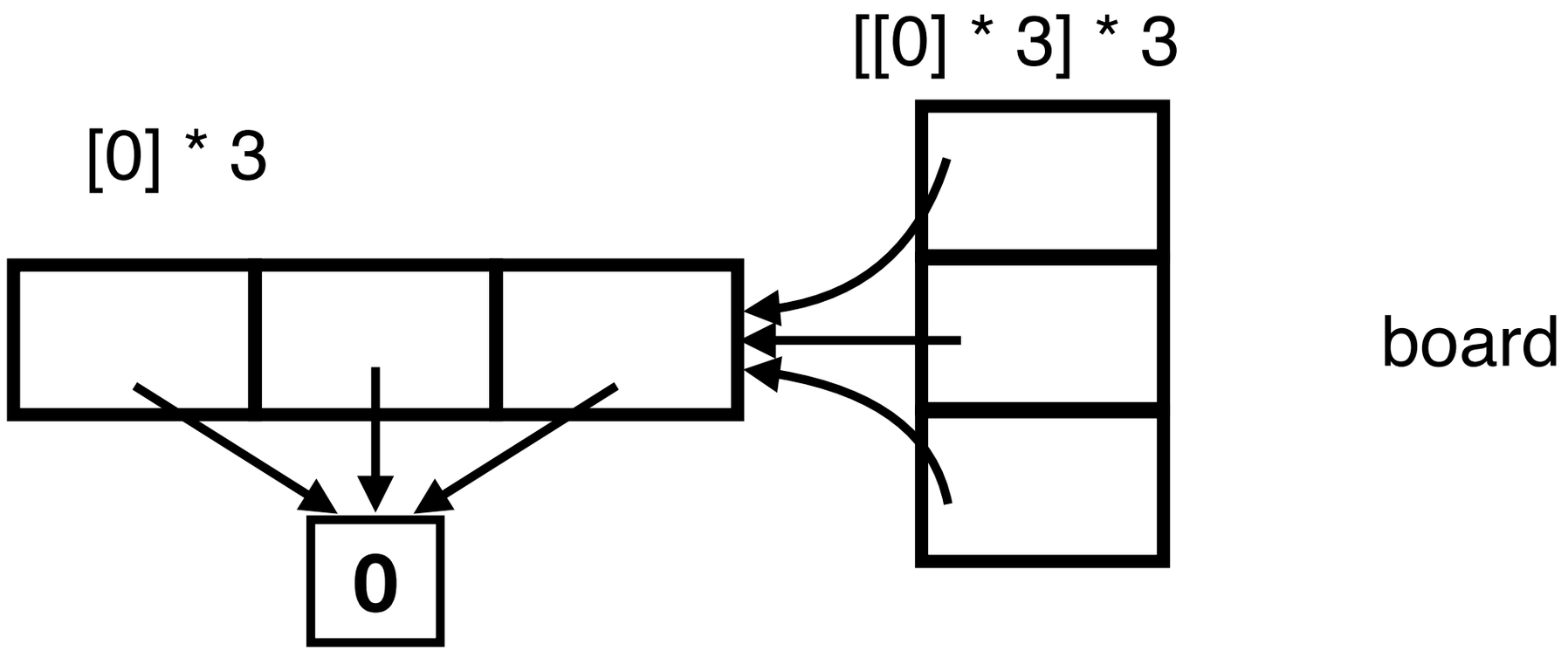

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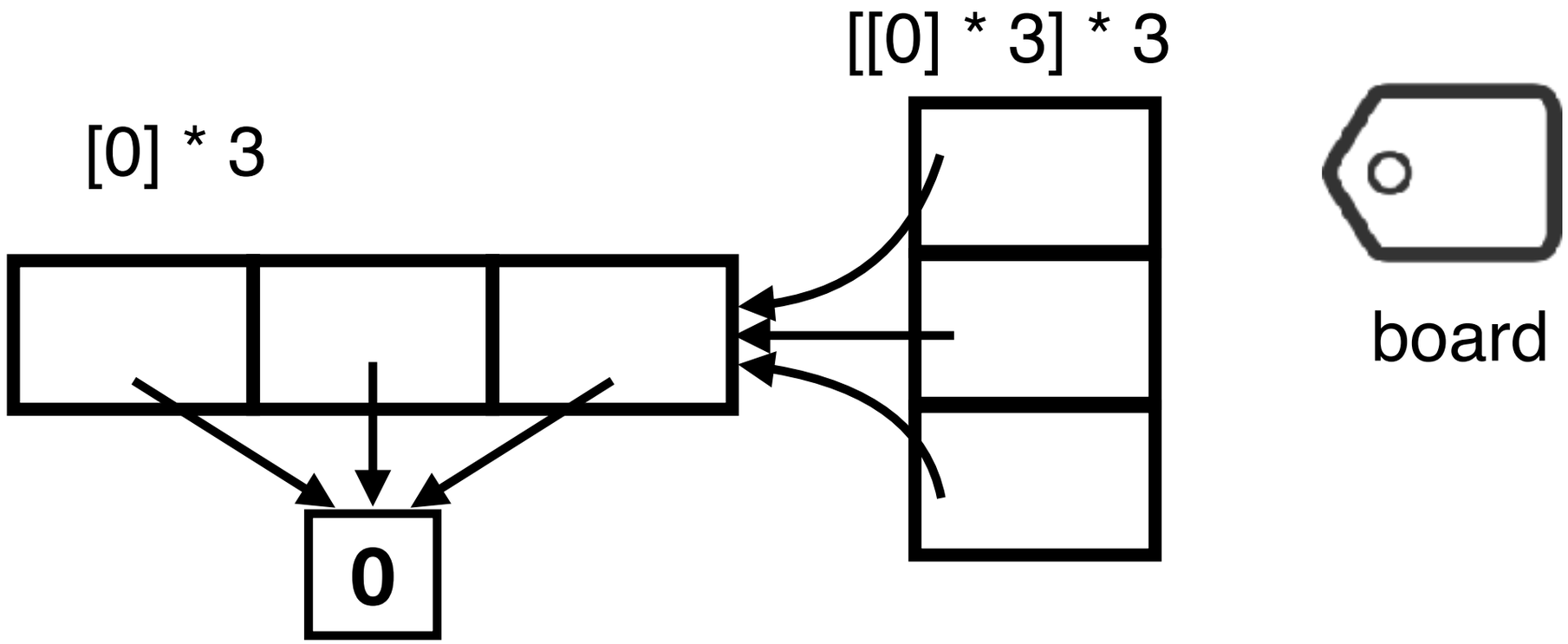

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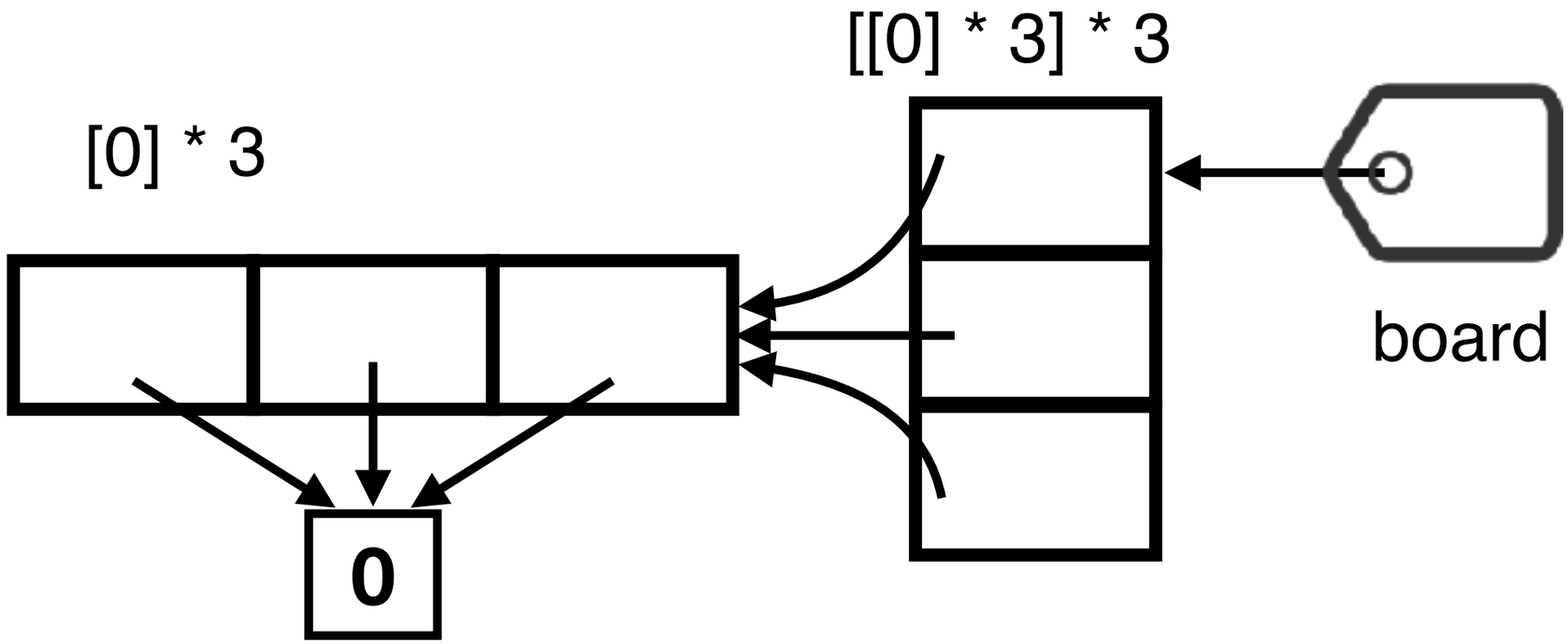

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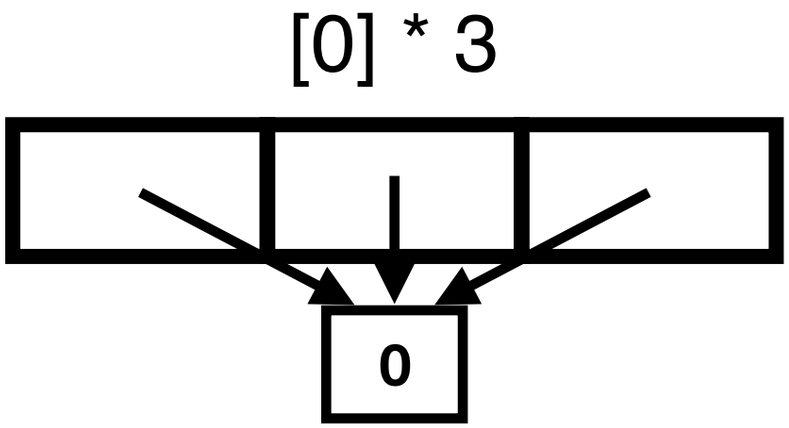

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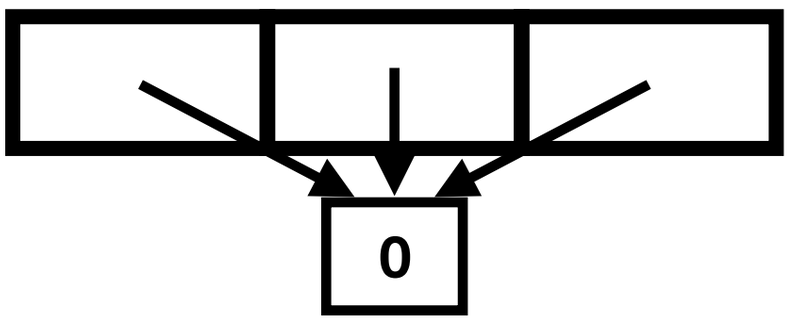

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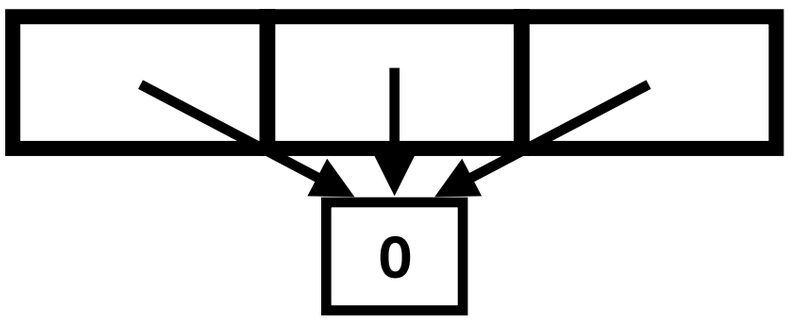

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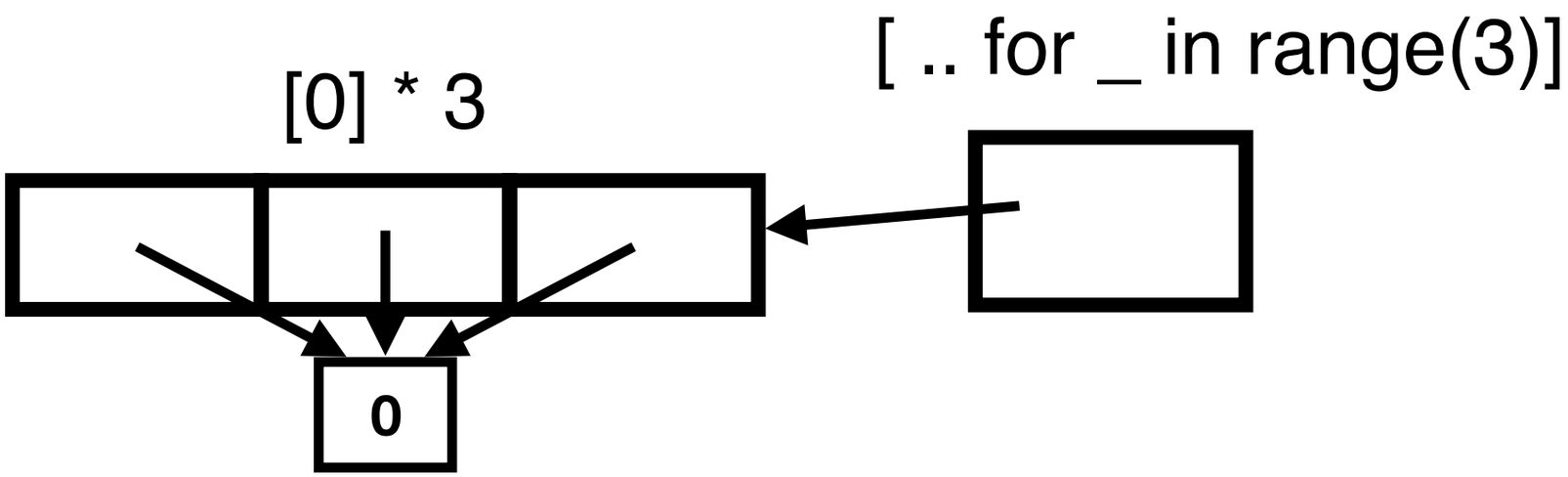

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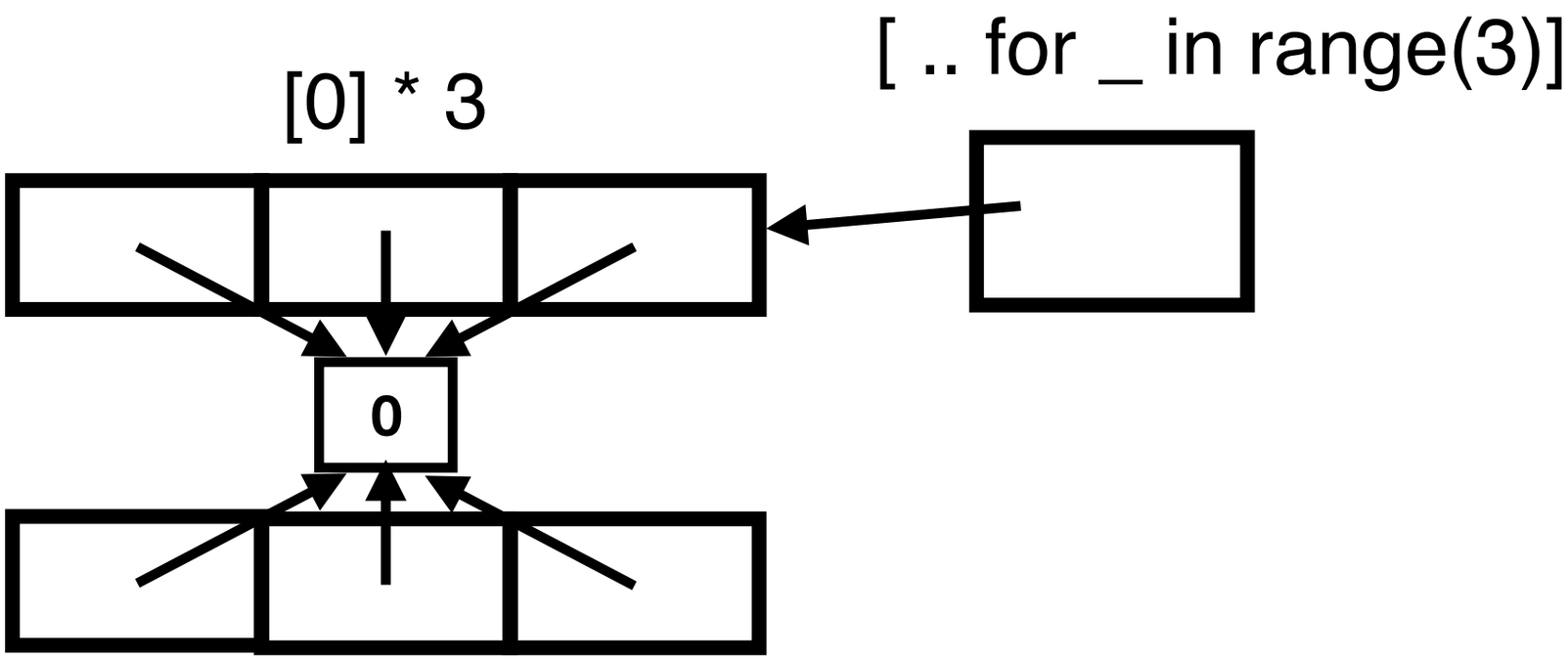

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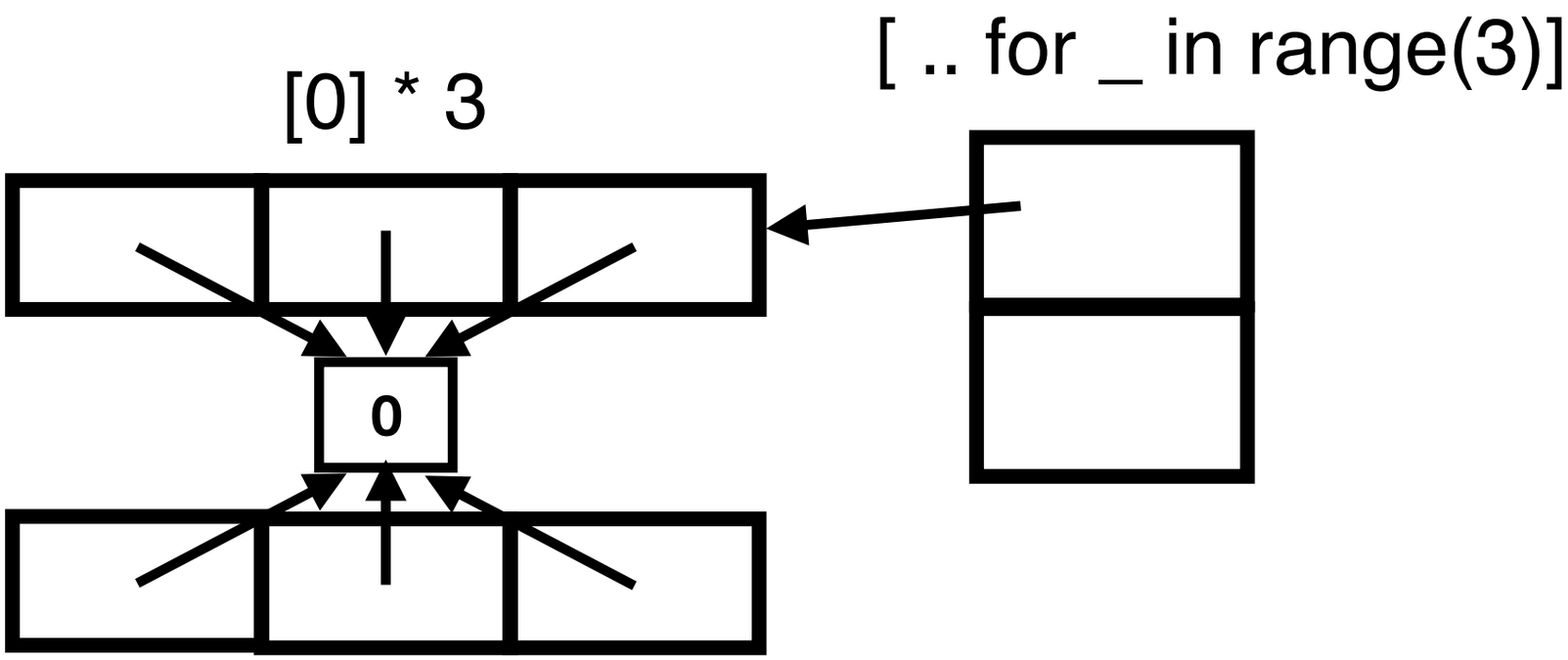

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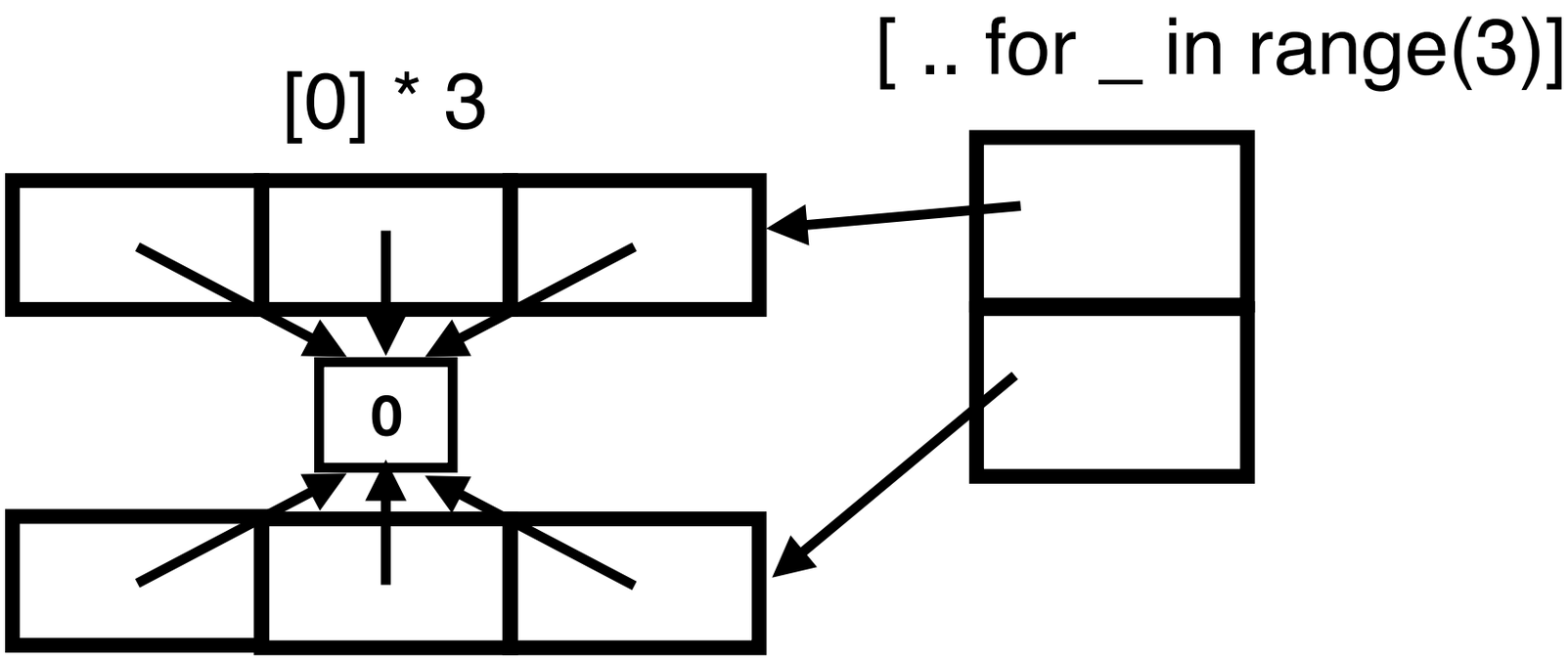

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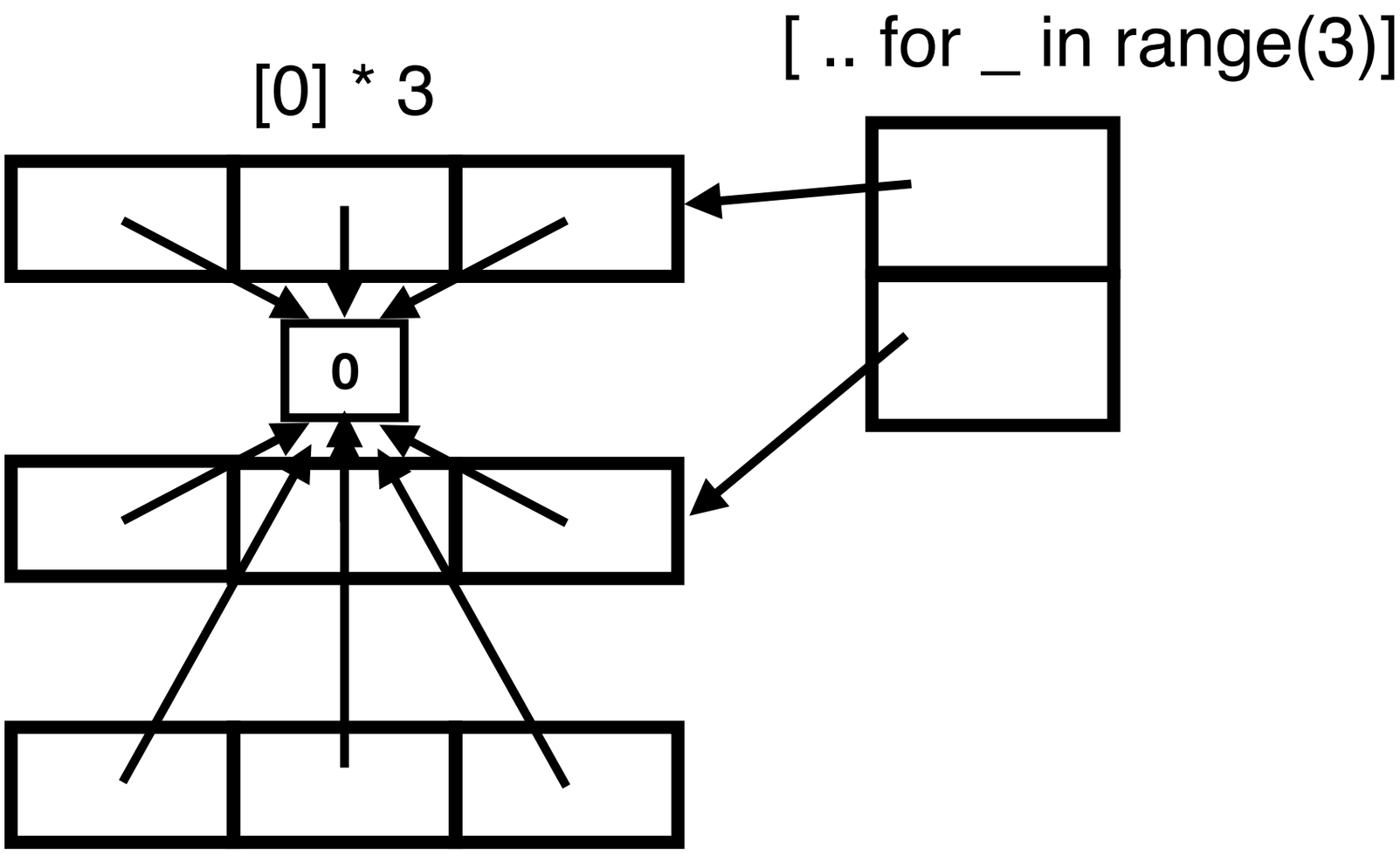

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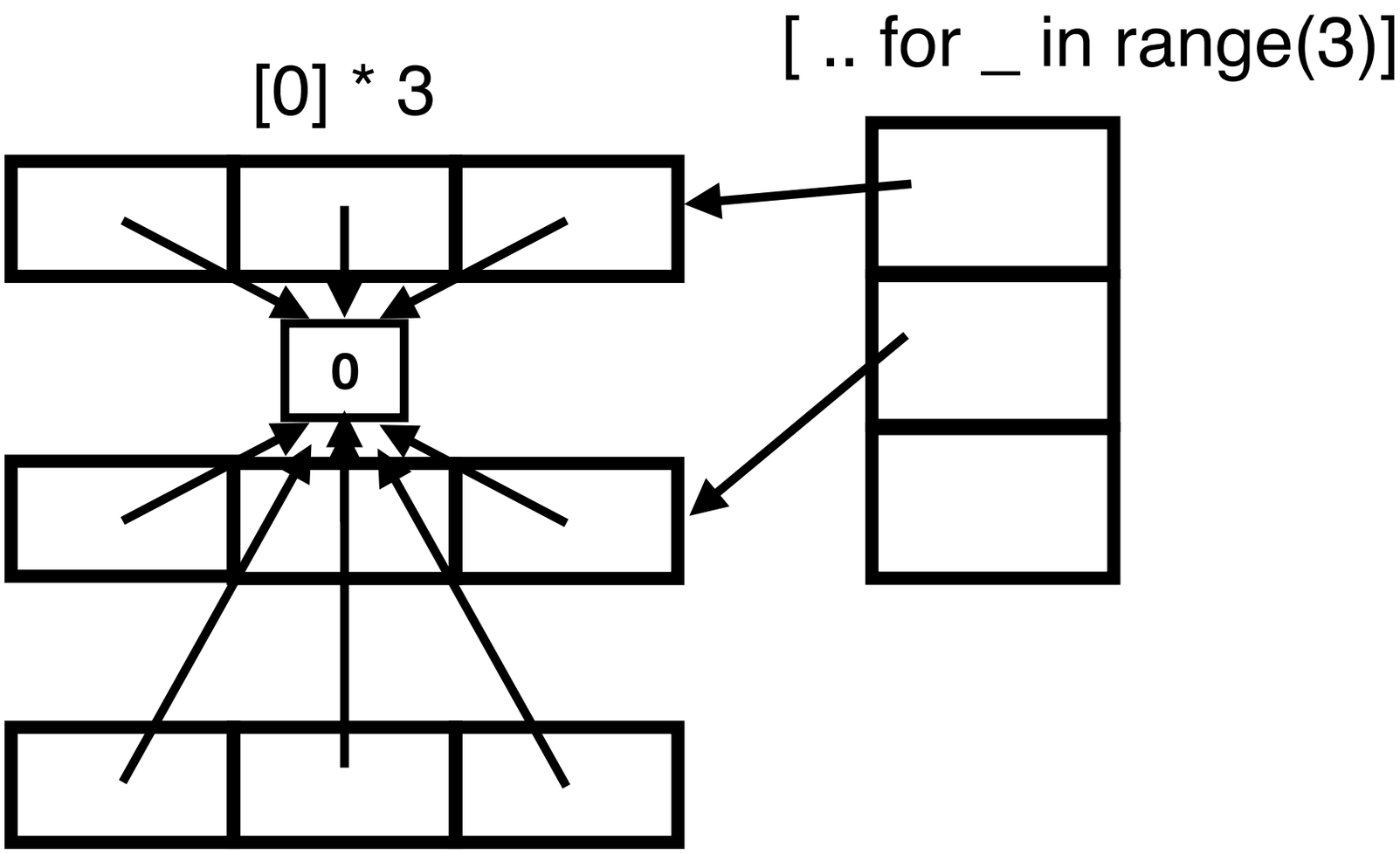

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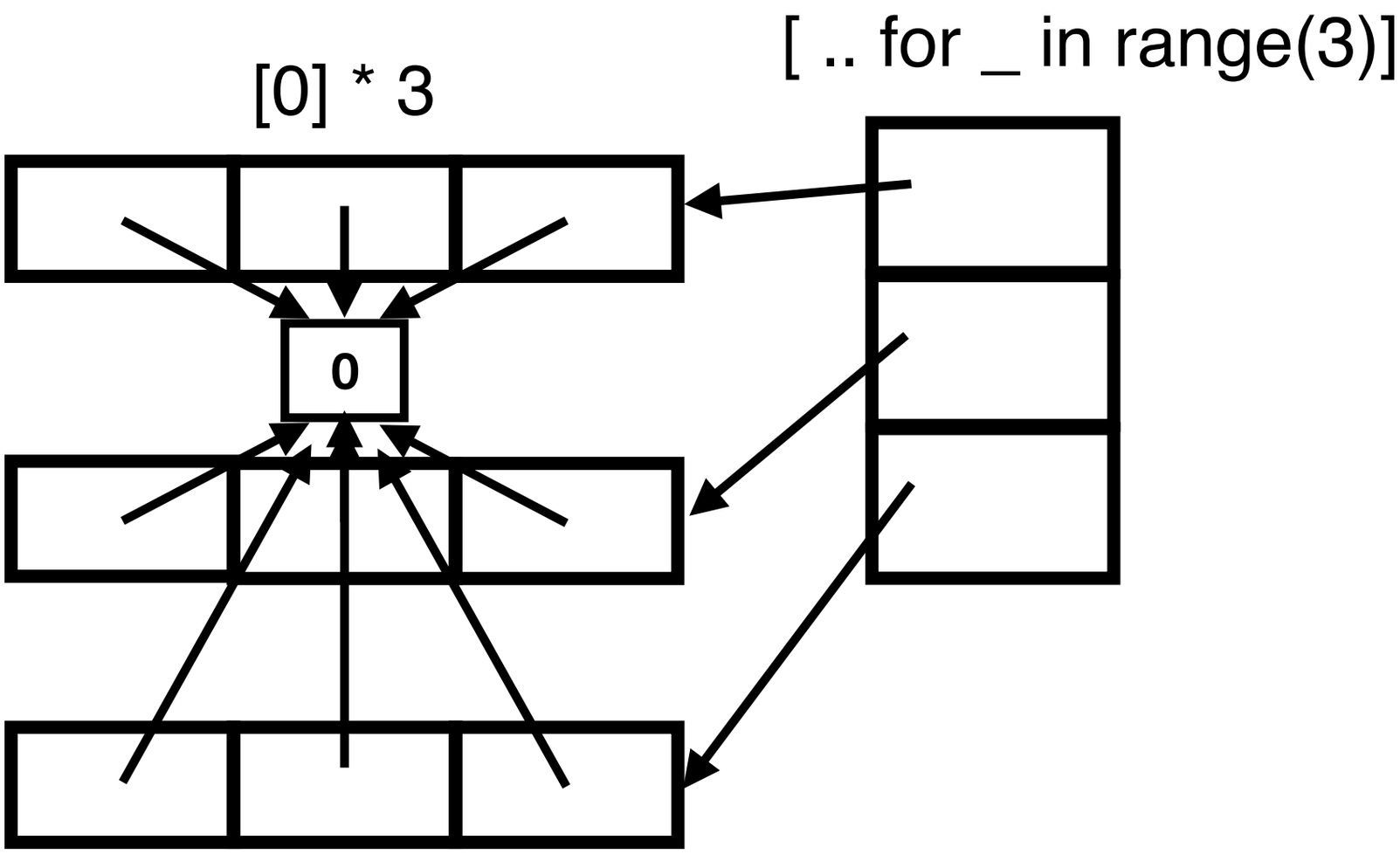

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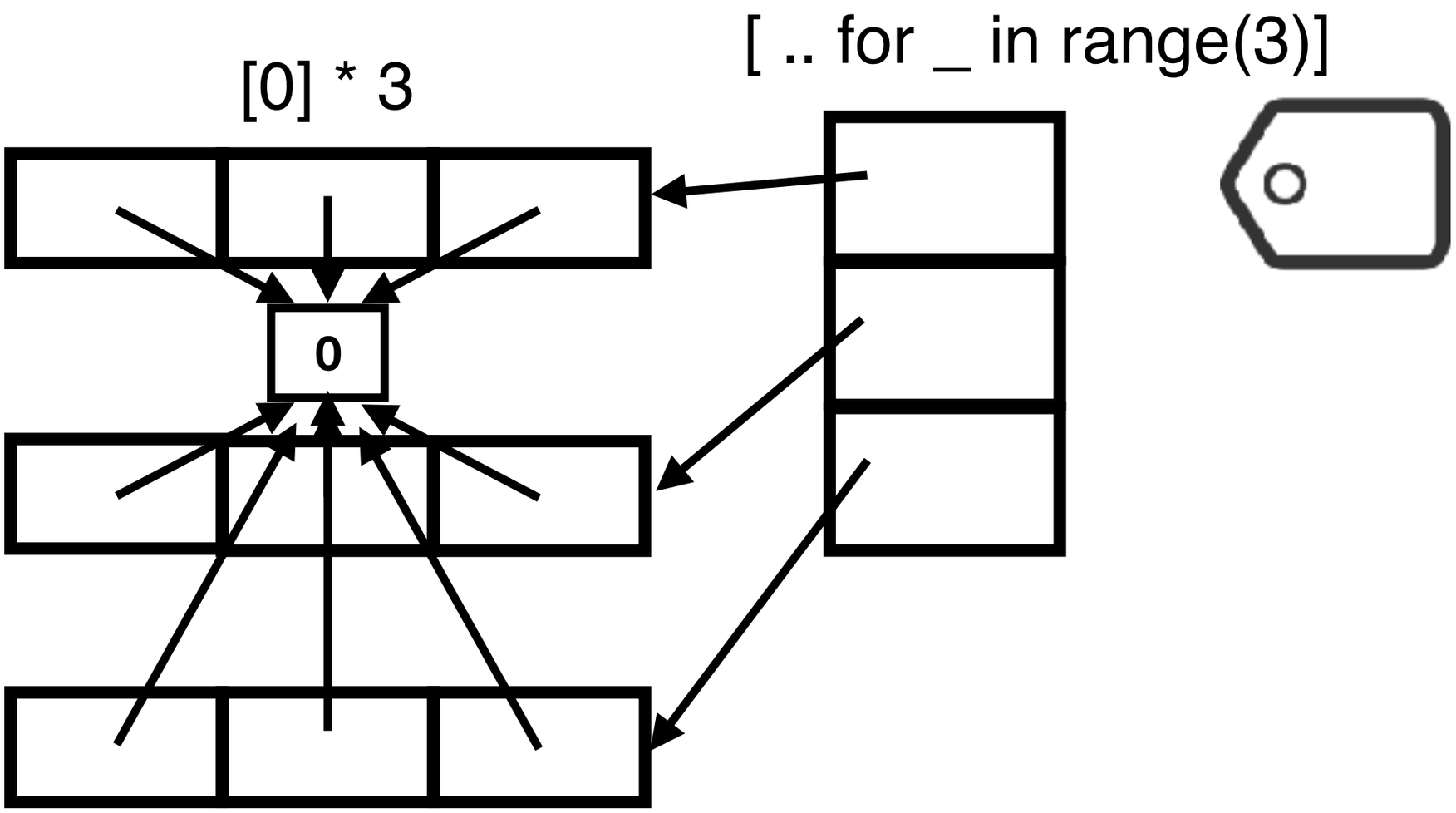

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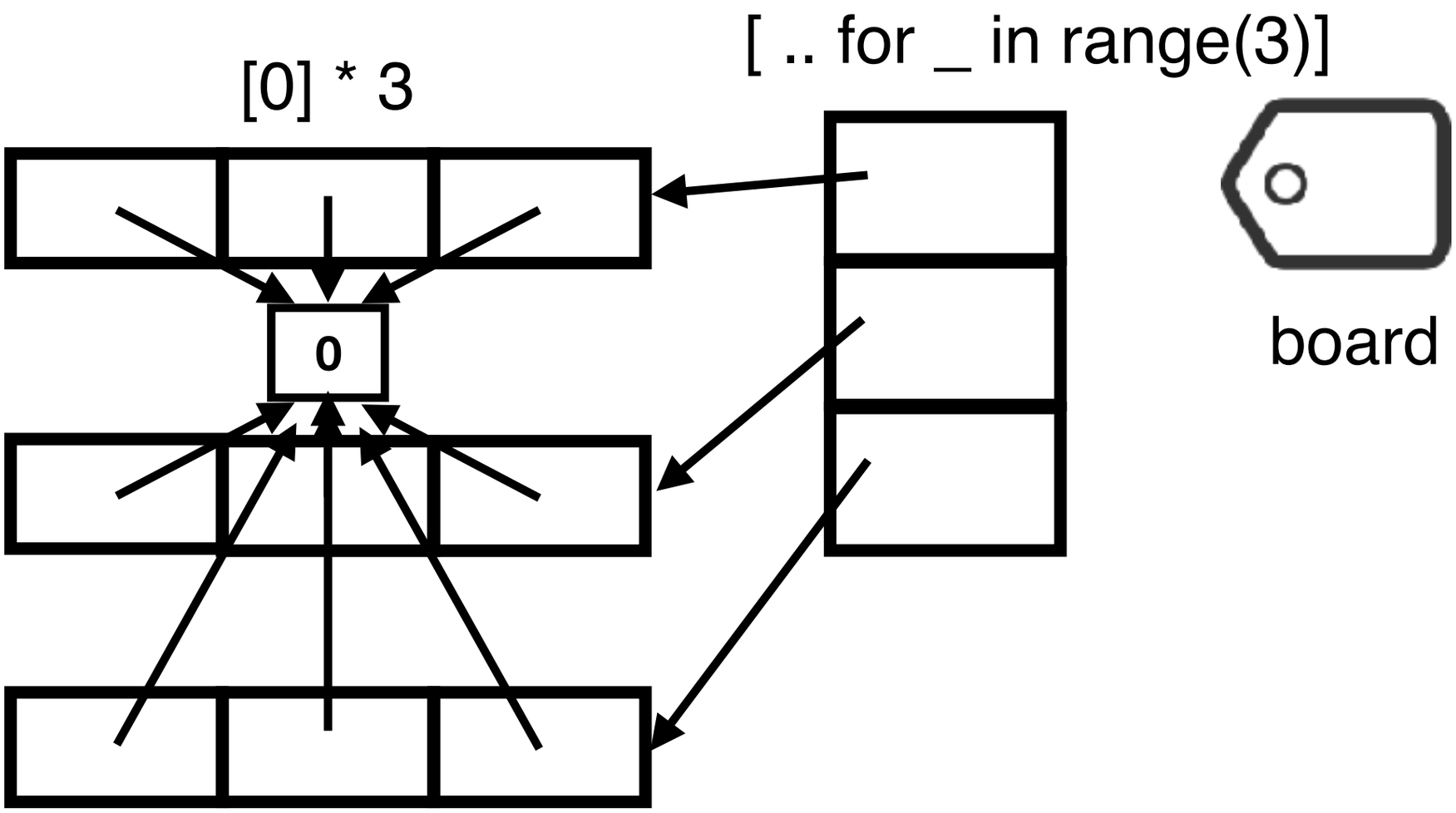

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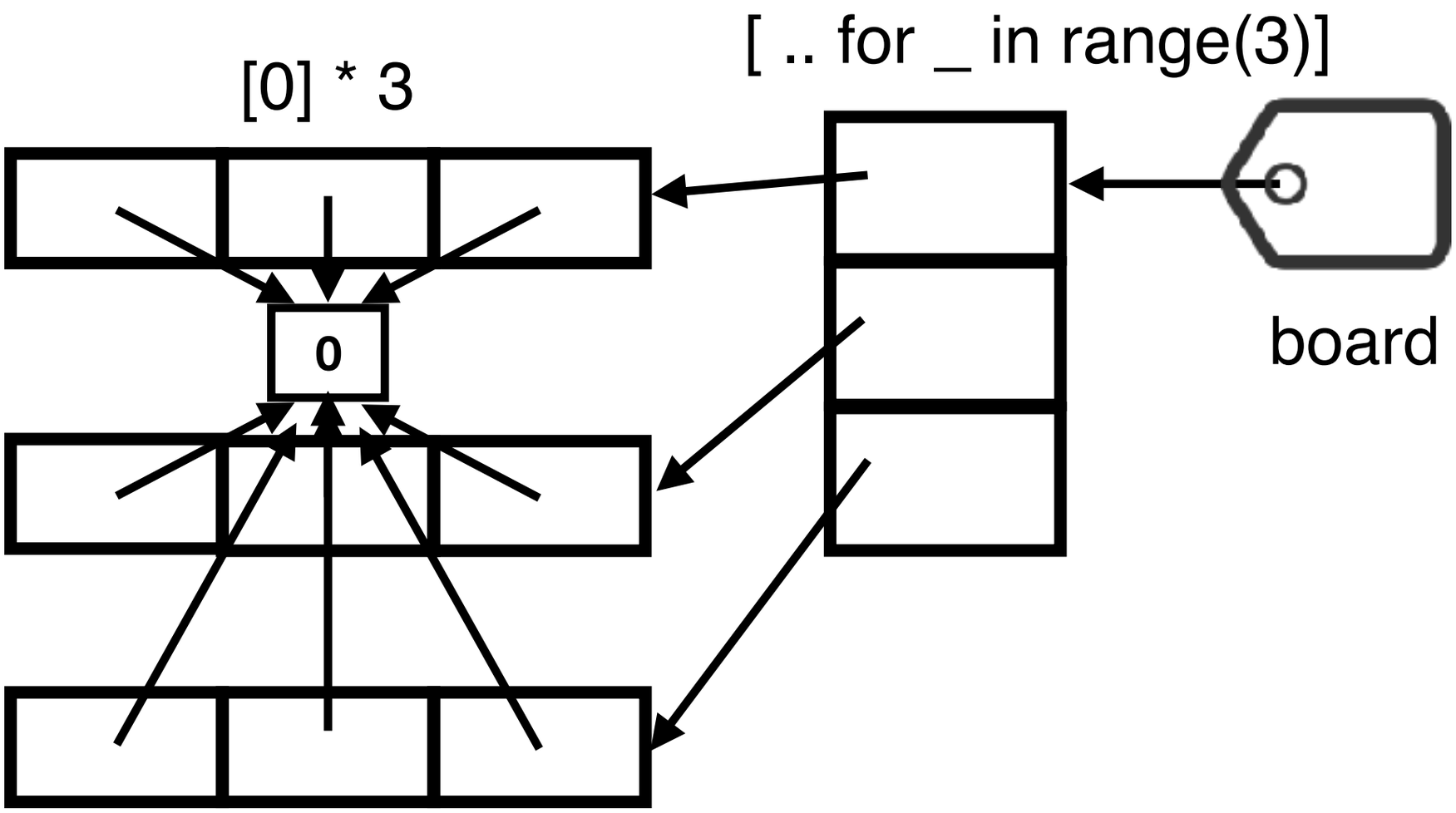

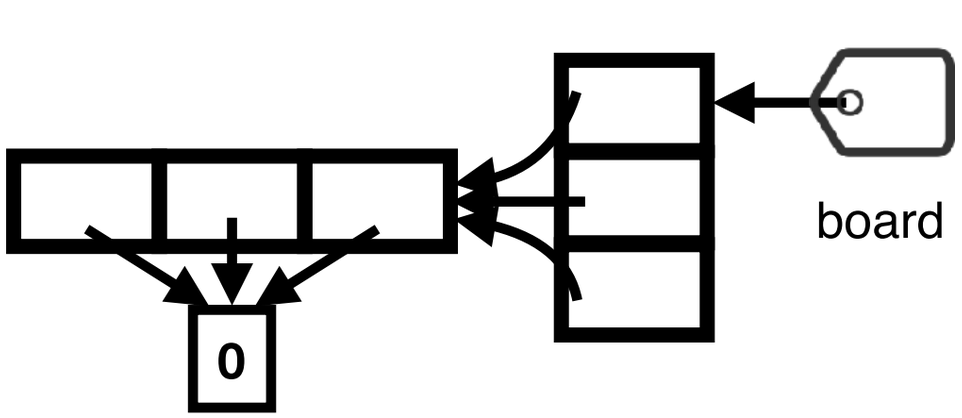
board
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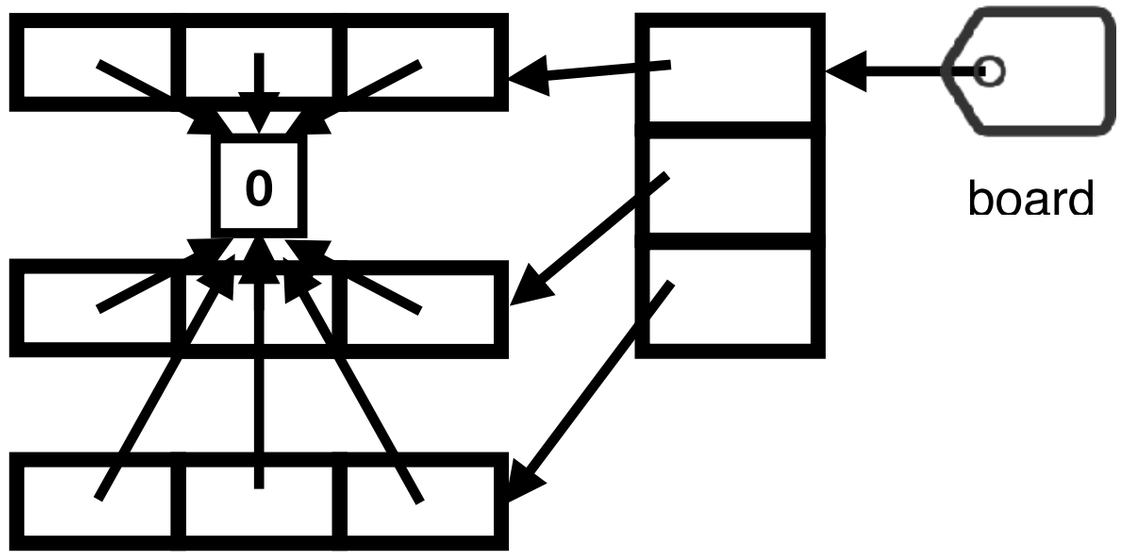
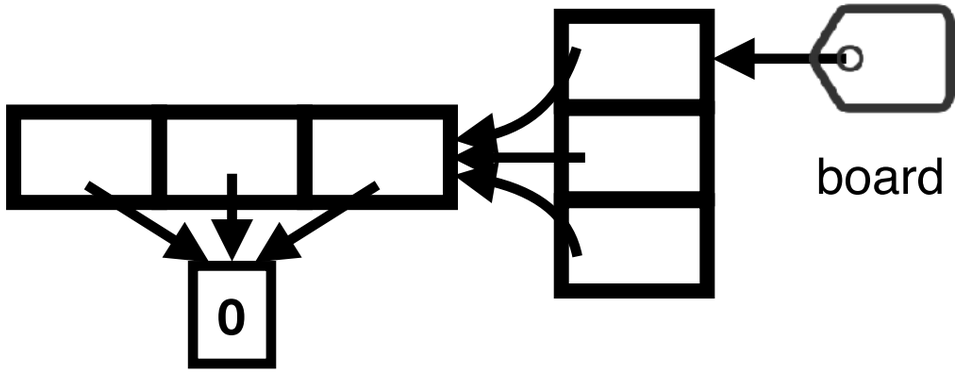
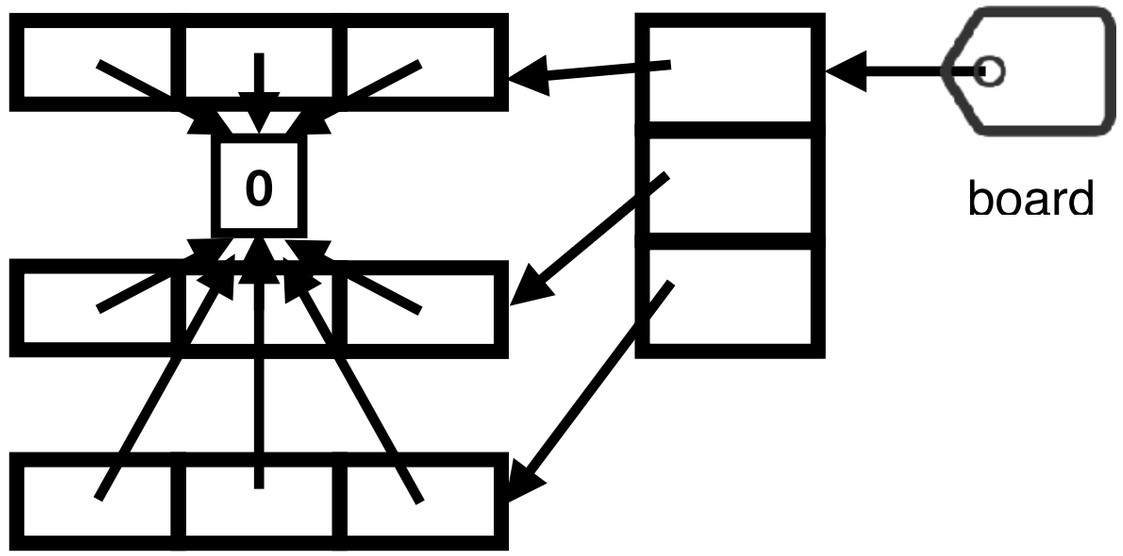
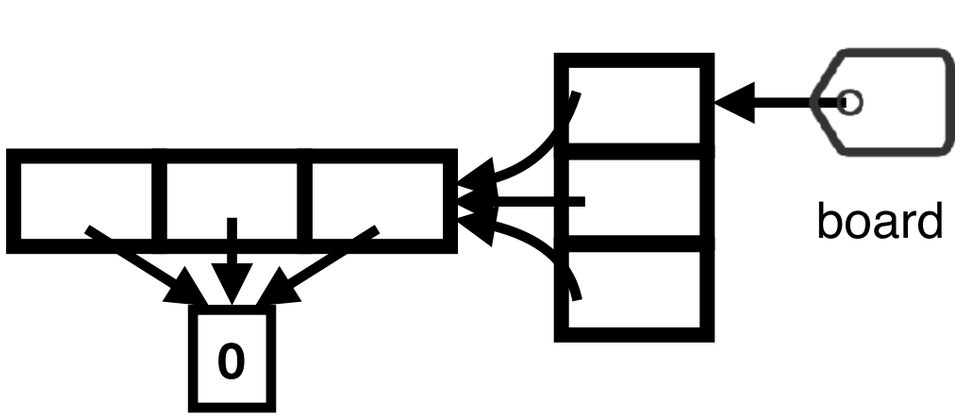

board
0

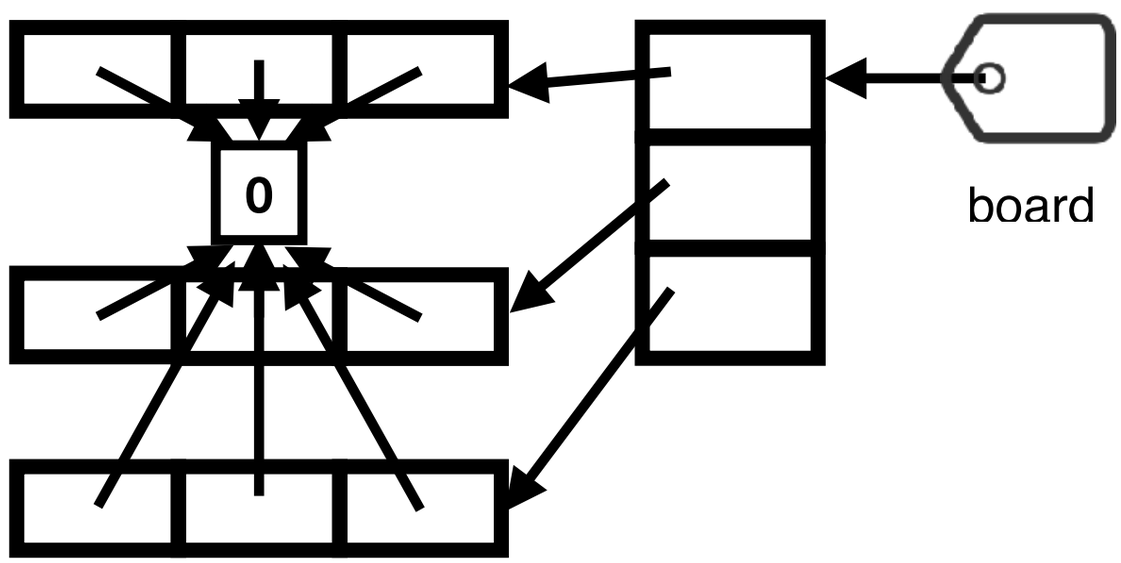


board = [[0] * cols] * rows

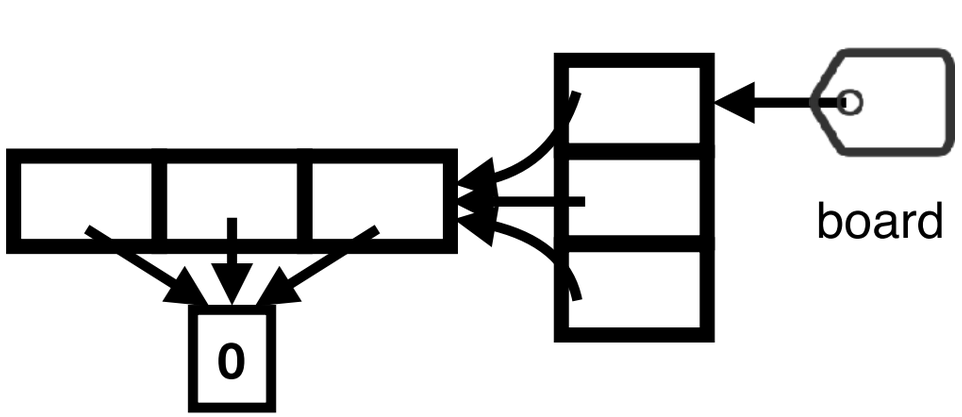




board = [[0] * cols] * rows



board = [[0] * cols for _ in range(rows)]



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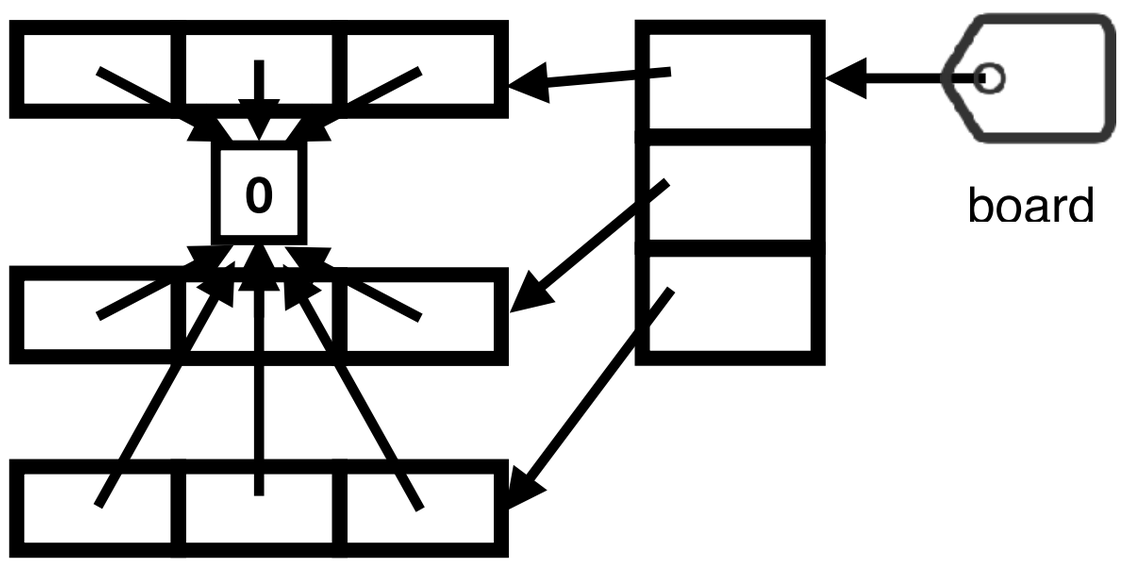
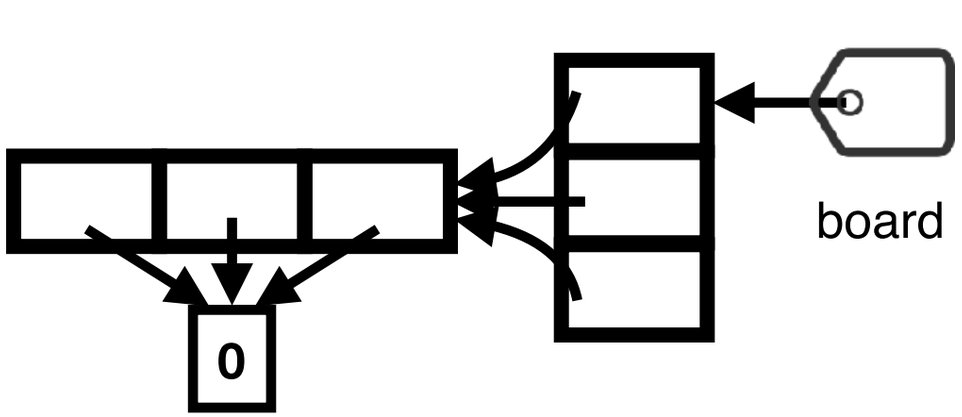
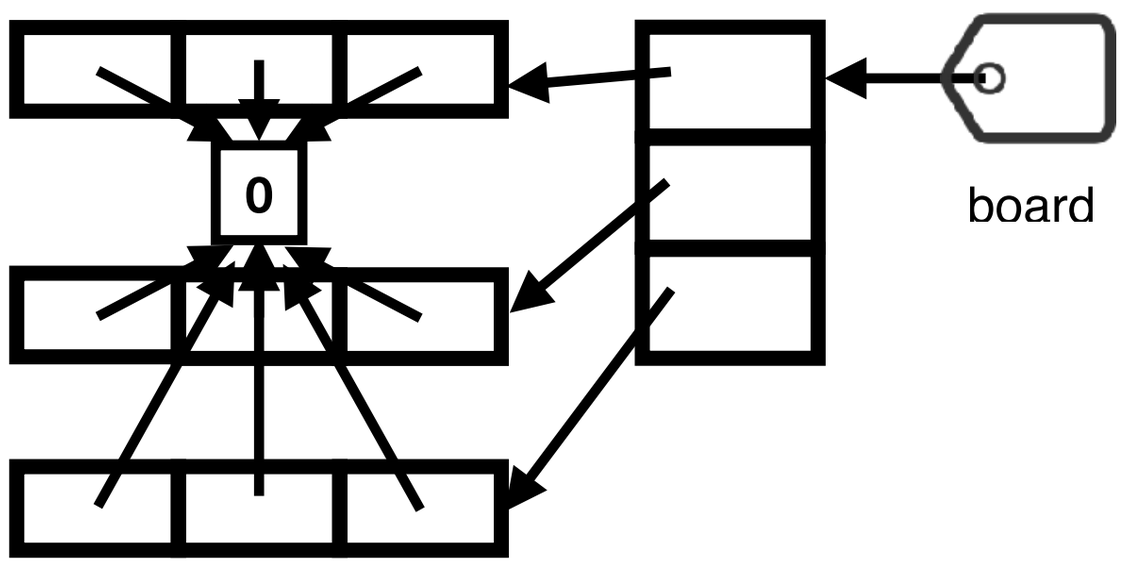


board = [[0] * cols for _ in range(rows)]



board = [[0] * cols] * rows



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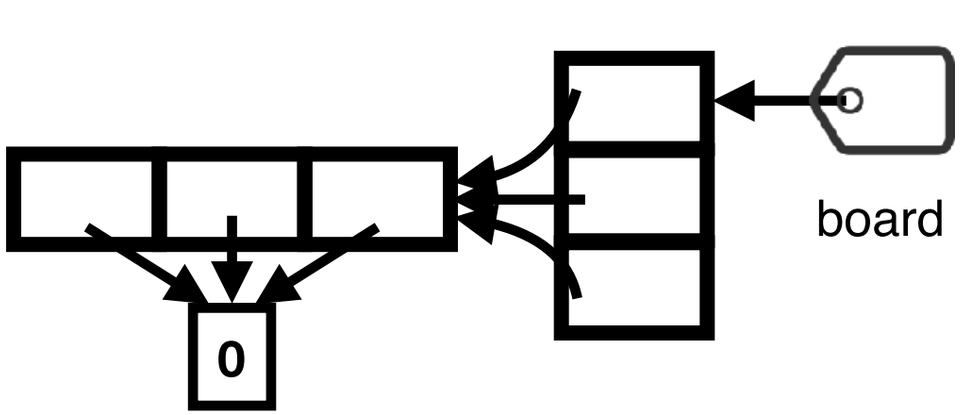
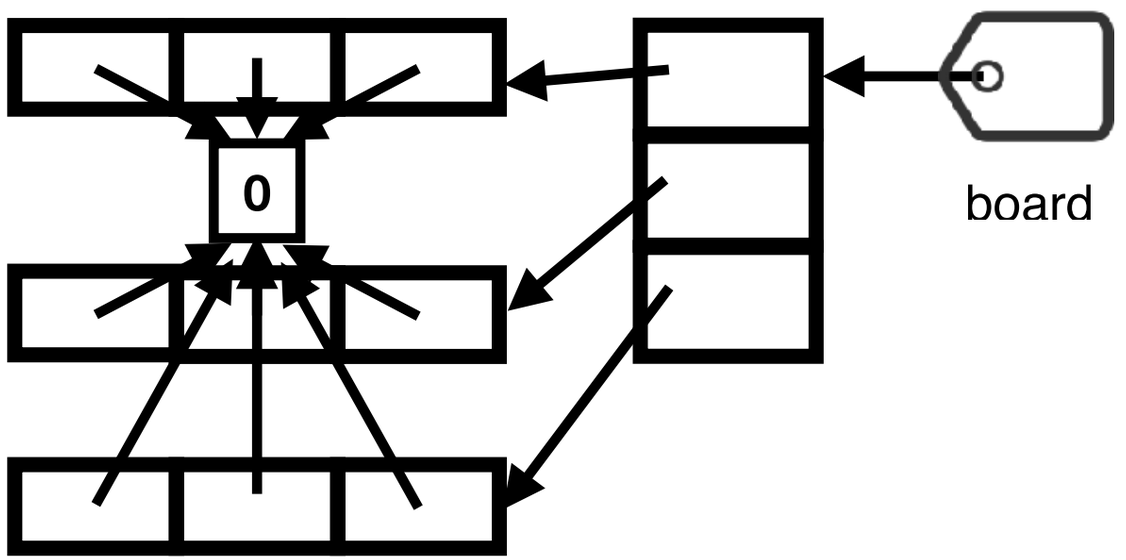


board = [[0] * cols] * rows

객체의 수도 적고
참조도 적게한다
= 속도가 빠른 이유



board = [[0] * cols for _ in range(rows)]

Why Bad?

```python
board = [[0] * 3] * 3  # 나쁜 결과
print(board)
print(id(board[0])) # 아래 객체와 동일함
print(id(board[1]))

print(id(board[0][0]))
print(id(board[0][1]))
print(id(board[0][2]))
print(id(board[1][0]))
print(id(board[1][1]))
print(id(board[1][2]))

# 첫 항목 값만 고침
board[0][0] = 1
print(board)
```

```
[[0, 0, 0], [0, 0, 0], [0, 0, 0]]
139869936803144
10910368
10910368
10910368
10910368
10910368
10910368
10910368
[[1, 0, 0], [1, 0, 0], [1, 0, 0]]
```

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```

Why Good?

```python
board = [[0] * 3 for _ in range(3)]
print(board)
print(id(board[0]))      # 아래 객체와 다름
print(id(board[1]))
print(id(board[0][0]))
print(id(board[0][1]))
print(id(board[0][2]))
print(id(board[1][0]))
print(id(board[1][1]))
print(id(board[1][2]))

# 첫 항목 값만 고침
board[0][0] = 1
print(board)
```

```
[[0, 0, 0], [0, 0, 0], [0, 0, 0]]
139869936802568
139869936802888
10910368
10910368
10910368
10910368
10910368
10910368
10910368
[[1, 0, 0], [0, 0, 0], [0, 0, 0]]
```

Why Good?

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print(id(board[0][0]))
print(id(board[0][1]))
print(id(board[0][2]))
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10910368
10910368
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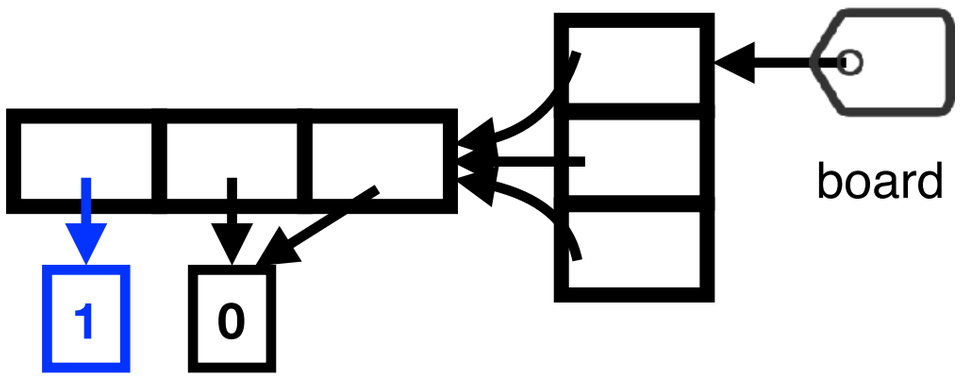
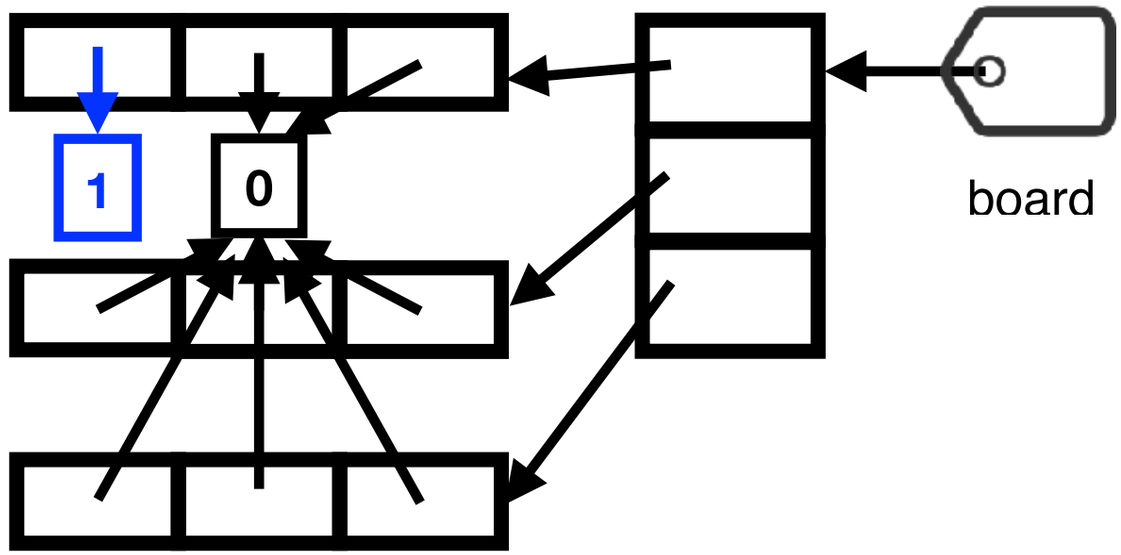
[[1, 0, 0], [0, 0, 0], [0, 0, 0]]
```

board[0][0] = 1 결과

board = [[0] * cols] * rows

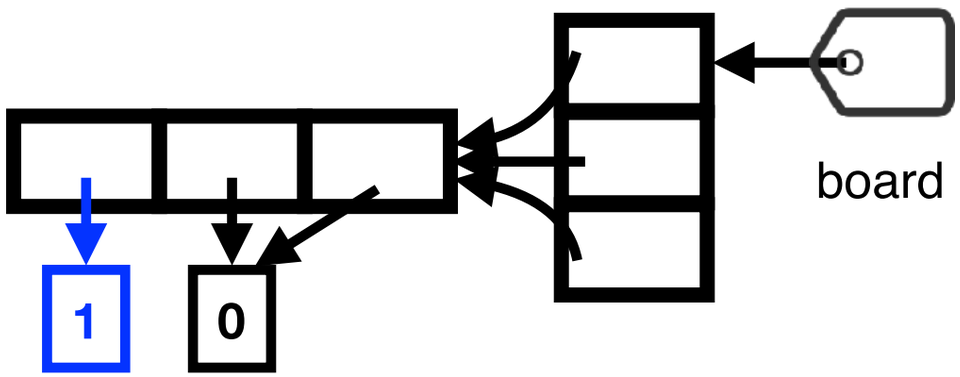


board = [[0] * cols for _ in range(rows)]



board[0][0] = 1 결과

board = [[0] * cols] * rows



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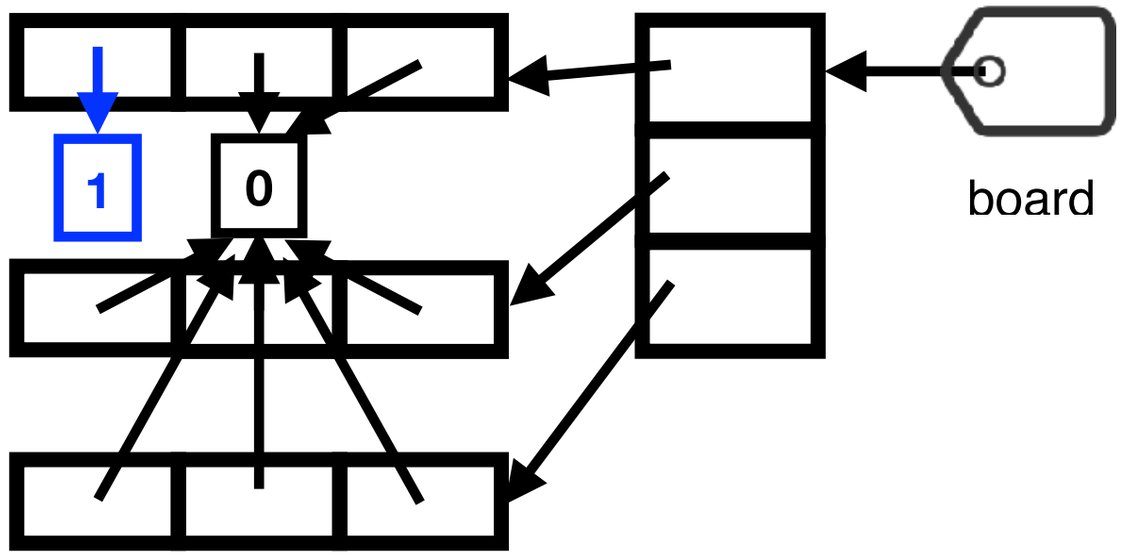

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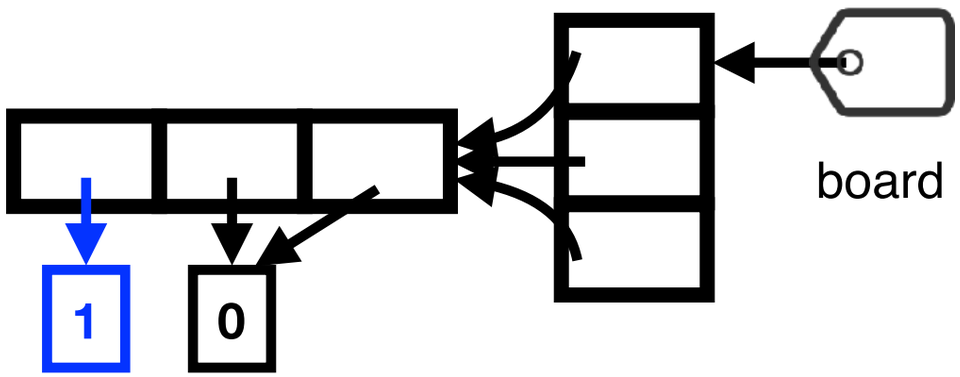

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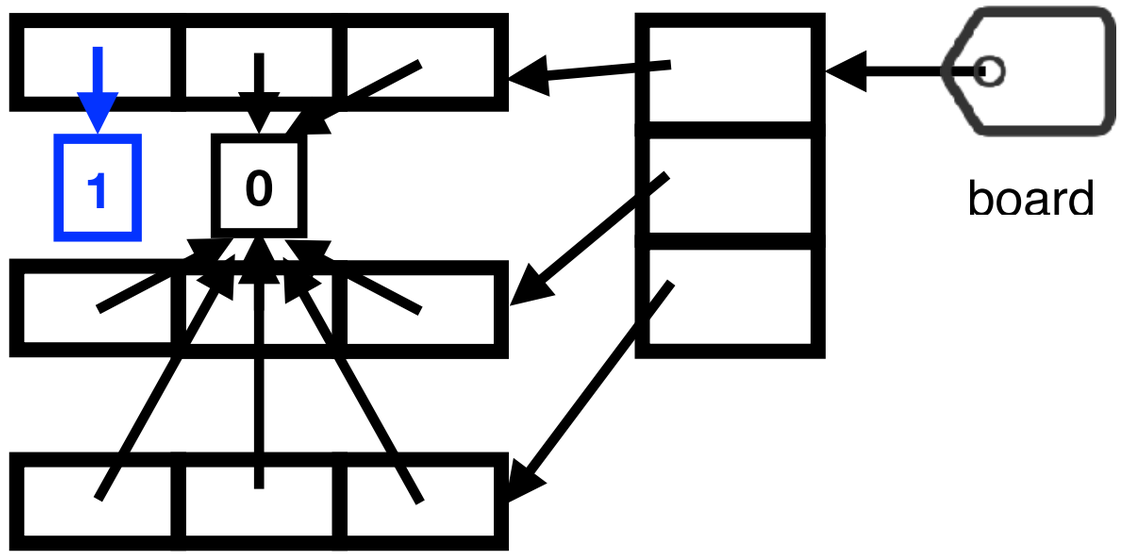

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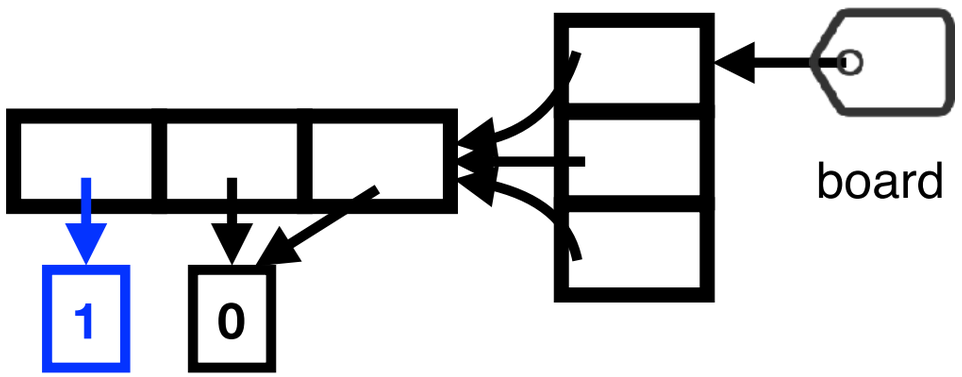
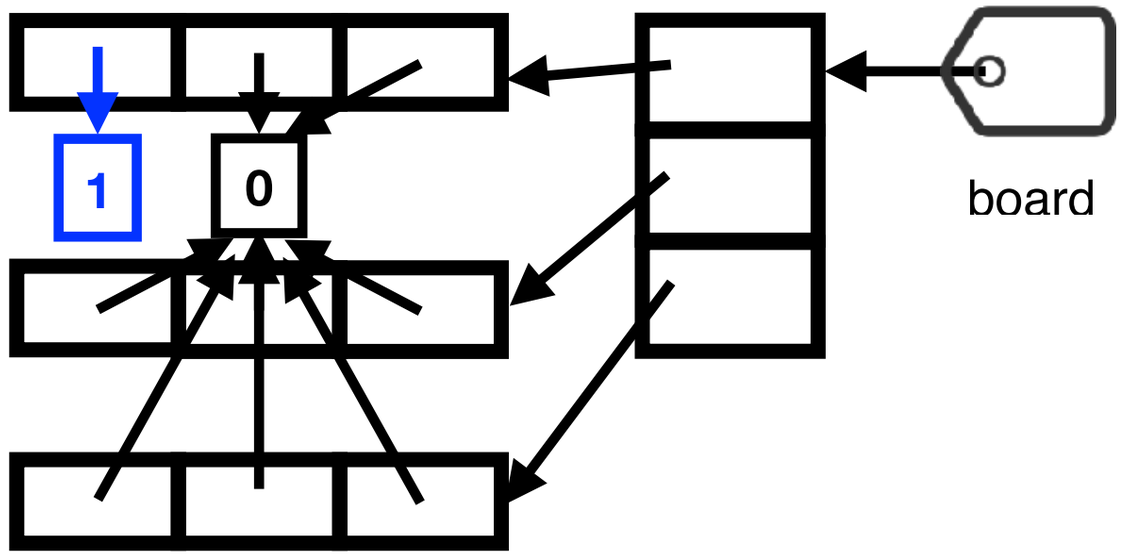


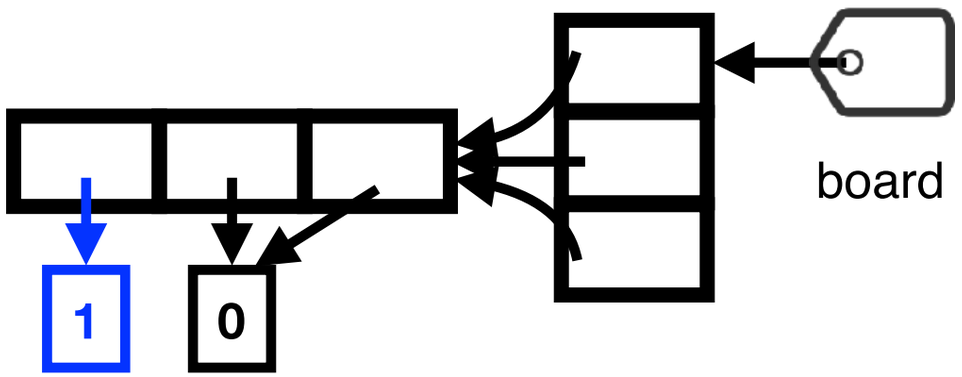
board = [[0] * cols for _ in range(rows)]



board[0] = [1, 0, 0]
board[1] = [1, 0, 0]
board[2] = [1, 0, 0]

board[0][0] = 1 결과

board = [[0] * cols] * rows



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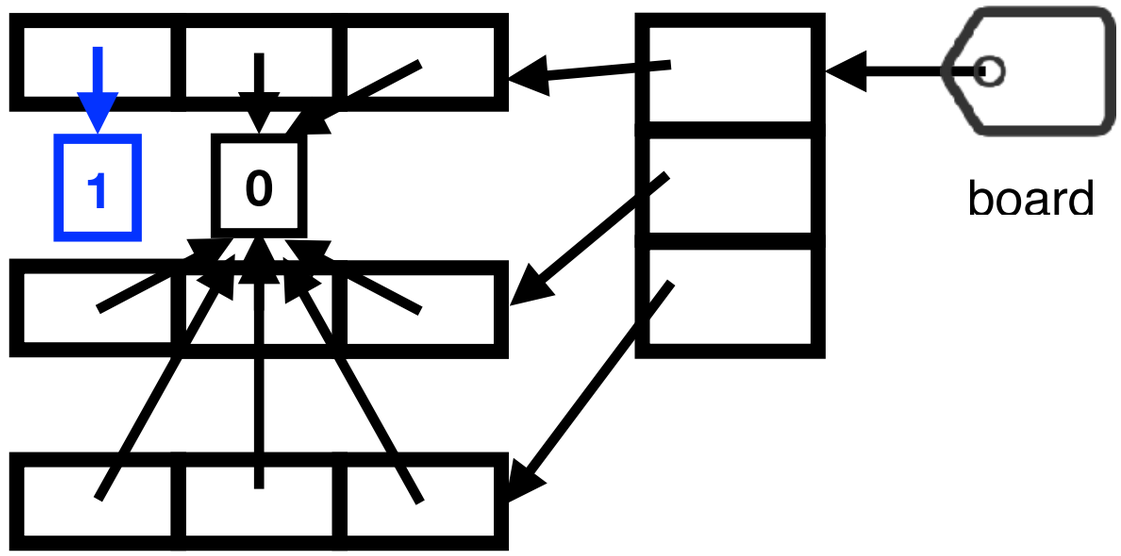

board[0] = [1, 0, 0]
board[1] = [1, 0, 0]
board[2] = [1, 0, 0]

Bad!!

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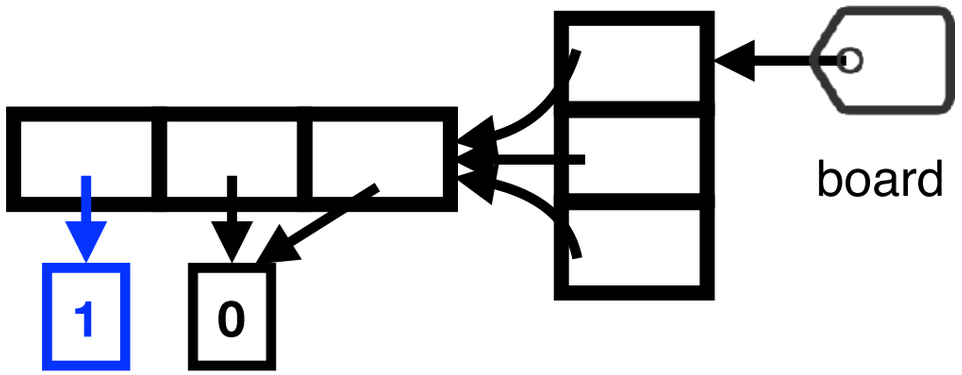

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Bad!!

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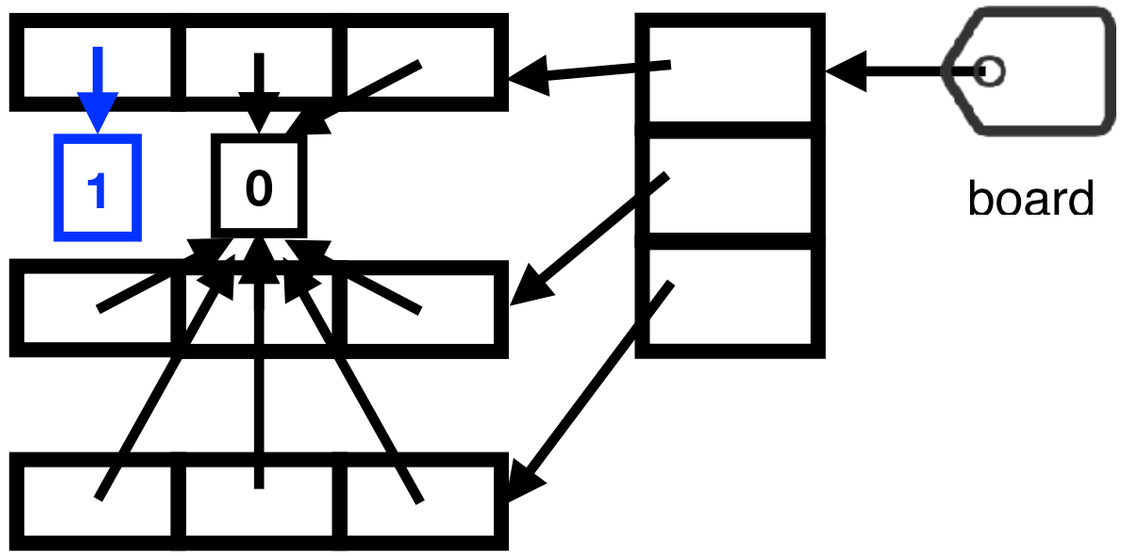

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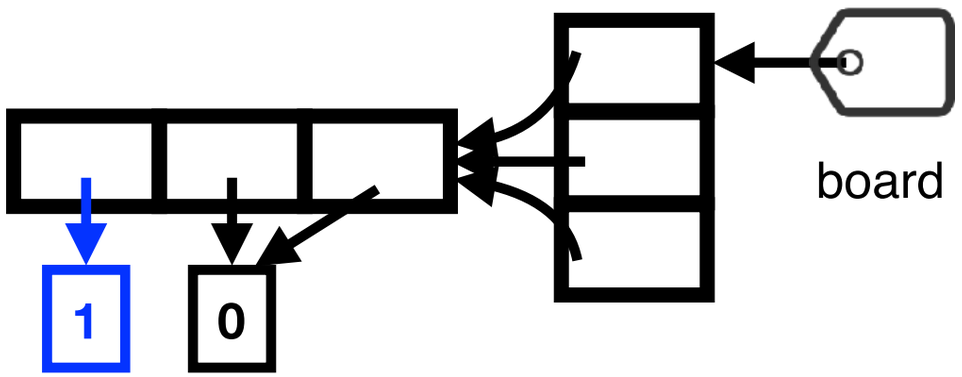

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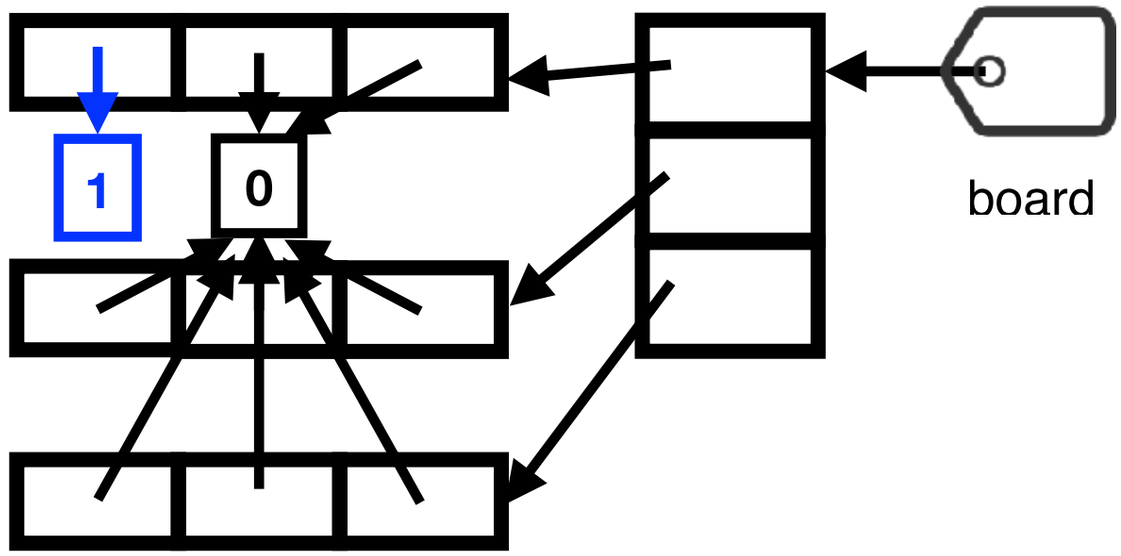

board[0] = [1, 0, 0]
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Good!!

Lab

감사합니다.