

알고리즘 멘토링

- Stack, Queue, Deque -

- 주민찬 -

Stack

- 후입선출

- ➔ Last In First Out (LIFO)

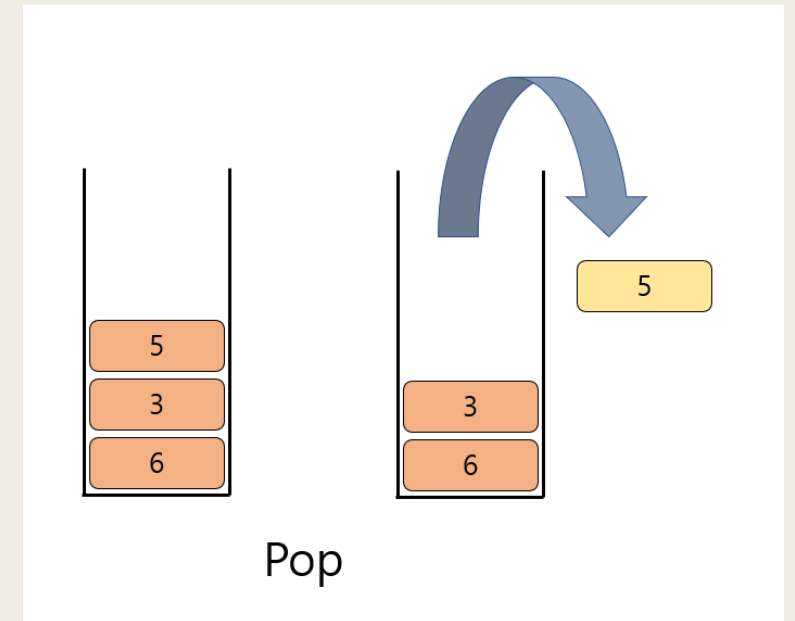
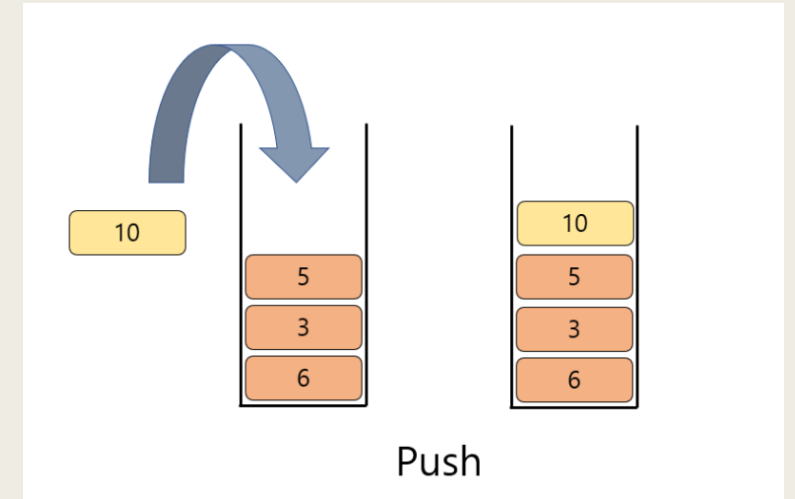
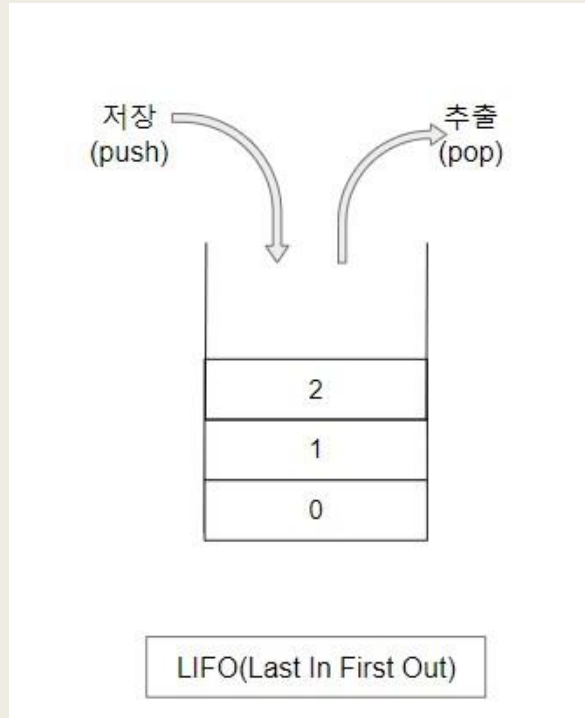
- 스택

- ➔ 책을 쌓는 것과 유사

- ➔ 제일 나중에 들어간 자료가 제일 먼저 나온다.

- ➔ 리스트의 뒤에서 자료를 넣고 빼는 것

- Push(append), pop



Stack

- `A = [1,2,3,4]`
- `A.append(4)`
- ➔ `A = [1,2,3,4,4]`
- `A.pop()`
- ➔ `A = [1,2,3,4]`
- `A.pop()`
- ➔ `A = [1,2,3]`
- `A.append(-2)`
- ➔ `A = [1,2,3,-2]`

Queue

- 선입선출

- ➔ First In First Out (FIFO)

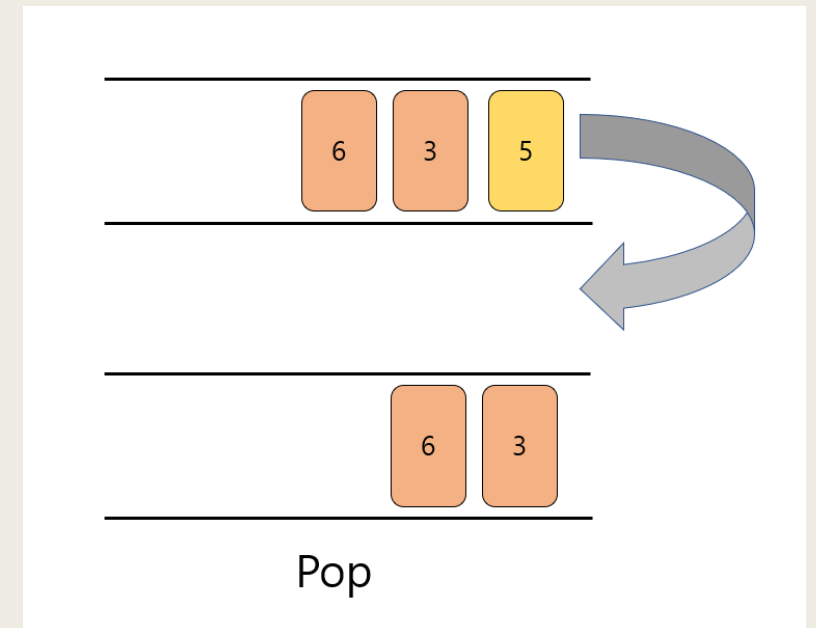
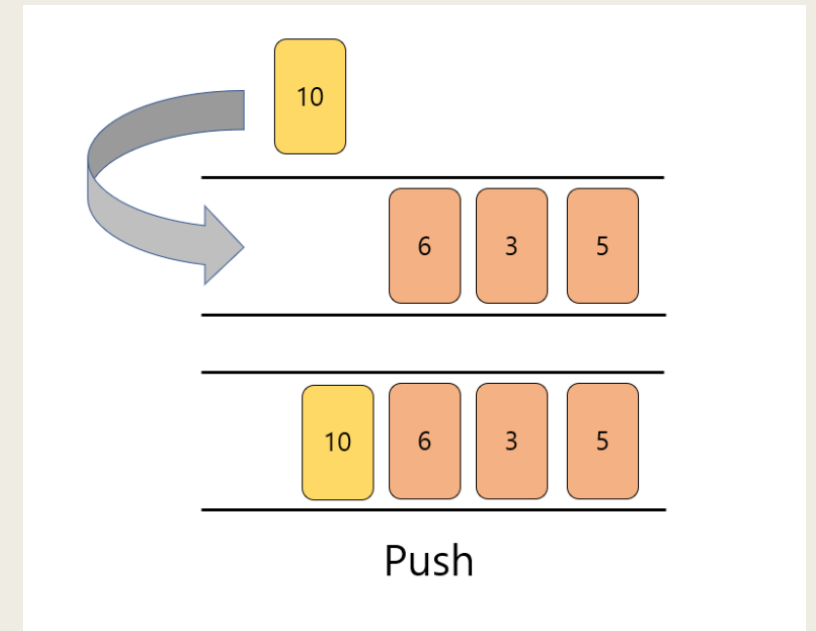
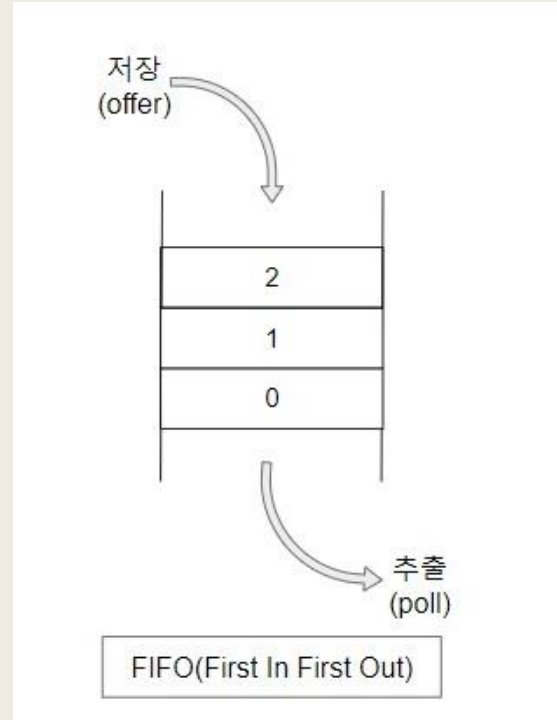
- 큐

- ➔ 줄서기와 편의점과 유사

- ➔ 제일 먼저 들어간 자료가 제일 먼저 나온다.

- ➔ 리스트의 뒤에서 자료를 넣고 앞에서 빼는 것

- Enqueue(append), Dequeue(popleft)



Queue

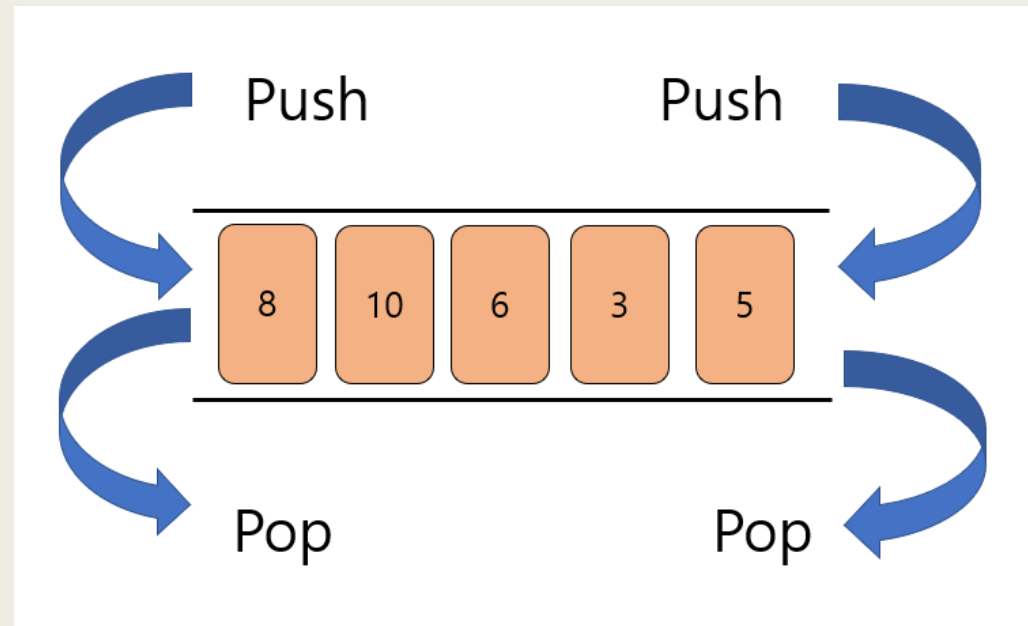
- `A = [1,2,3,4]`
- `A.append(4)`
- ➔ `A = [1,2,3,4,4]`
- `A.popleft()`
- ➔ `A = [2,3,4,4]`
- `A.popleft()`
- ➔ `A = [3,4,4]`
- `A.append(-2)`
- ➔ `A = [3,4,4,-2]`

Deque

- 덱

➔ 맨뒤와 맨앞에서 자료를 넣고 빼는 것이 모두 가능하다.

- append
- appendleft
- pop
- popleft



Deque

- `A = [1,2,3,4]`
- `A.append(4)`
- ➔ `A = [1,2,3,4,4]`
- `A.popleft()`
- ➔ `A = [2,3,4,4]`
- `A.appendleft(9)`
- ➔ `A = [9,2,3,4,4]`
- `A.pop()`
- ➔ `A = [9,2,3,4]`

자료구조 구현

- Stack 같은 경우 리스트의 내장함수만으로도 구현 가능하다!!
- 다만 Queue, Deque는 popleft와 appendleft가 필요하지만 리스트의 내장함수에는 이러한 것들은 없다. 그래서 새롭게 만들어 줘야 한다.
- 하지만 Python은 강력한 라이브러리가 있어 직접 모든 걸 만들 필요는 없다!
- `from collections import deque`
- `deque()`

Stack

```
1  ls = [1,2,3,4]
2  print(ls)
3
4  ls.append(4)
5  print(ls)
6
7  ls.pop()
8  print(ls)
9
10 ls.pop()
11 print(ls)
12
13 ls.append(-2)
14 print(ls)
```

```
[1, 2, 3, 4]
[1, 2, 3, 4, 4]
[1, 2, 3, 4]
[1, 2, 3]
[1, 2, 3, -2]
```

Queue

```
1  from collections import deque
2
3  ls = deque([1,2,3,4])
4  print(ls)
5
6  ls.append(4)
7  print(ls)
8
9  ls.popleft()
10 print(ls)
11
12 ls.popleft()
13 print(ls)
14
15 ls.append(-2)
16 print(ls)
```

```
deque([1, 2, 3, 4])
deque([1, 2, 3, 4, 4])
deque([2, 3, 4, 4])
deque([3, 4, 4])
deque([3, 4, 4, -2])
```

Deque

```
1  from collections import deque
2
3  ls = deque([1,2,3,4])
4  print(ls)
5
6  ls.append(4)
7  print(ls)
8
9  ls.popleft()
10 print(ls)
11
12 ls.appendleft(9)
13 print(ls)
14
15 ls.pop()
16 print(ls)
```

```
deque([1, 2, 3, 4])
deque([1, 2, 3, 4, 4])
deque([2, 3, 4, 4])
deque([9, 2, 3, 4, 4])
deque([9, 2, 3, 4])
```

A lifebuoy with orange and white segments is floating in dark, rippling water. A large splash of water is rising from the center of the lifebuoy. The background is a dark, overcast sky.

실습!!