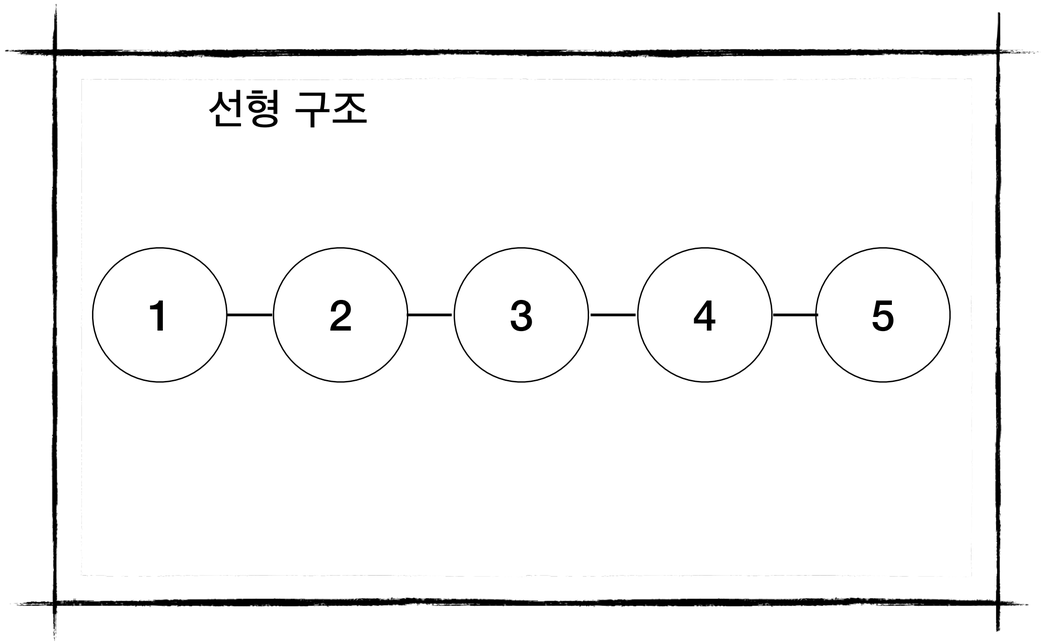
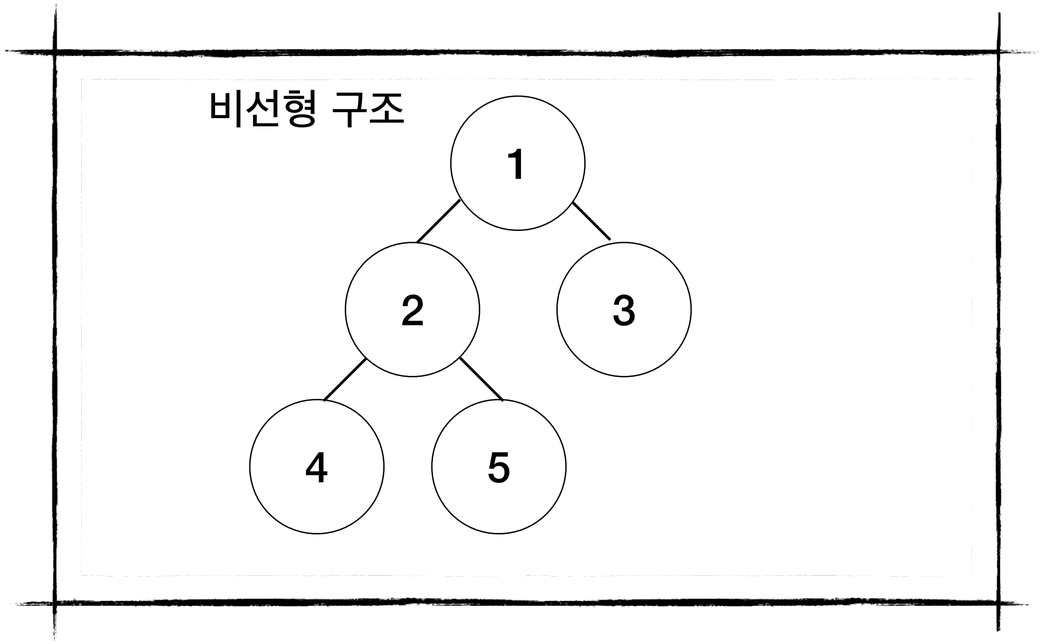
자료 구조

자료 구조란 ?

- 자료를 효율적으로 관리하기 위한 방법





선형 구조

- 배열 (Arrays)

Index	0	1	2	3
Data	6	8	1	9

N

탐색

Index를 알 경우 : O(1)

Index -> 3

Index	0	1	2	3	4
Data	6	8	1	9	11

0

Index를 모를 경우 : O(N)

Data-> 9

Index	0	1	2	3	4
Data	6	11	8	1	9

0 1 2 3 4

추가/삭제

배열의 끝에 추가/삭제 : O(1)

Index	0	1	2	3	4
Data	6	8	1	9	11

0

배열의 중간에 추가/삭제 : O(N)

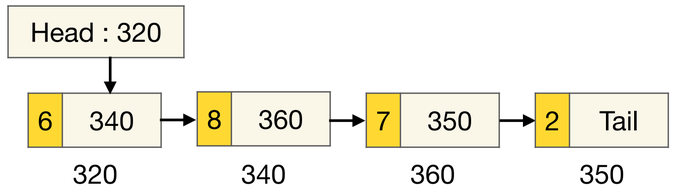
Index	0	4	1	2	3
Data	6	11	8	1	9

0 1 2

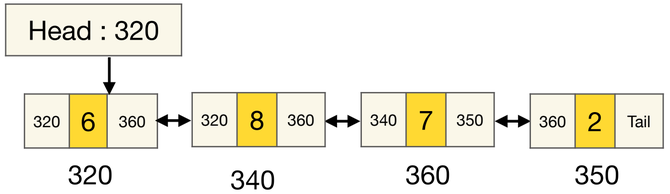
선형 구조

- 연결 리스트 (Linked List)

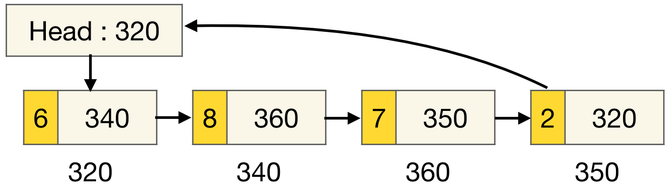
단방향 구조



양방향 구조

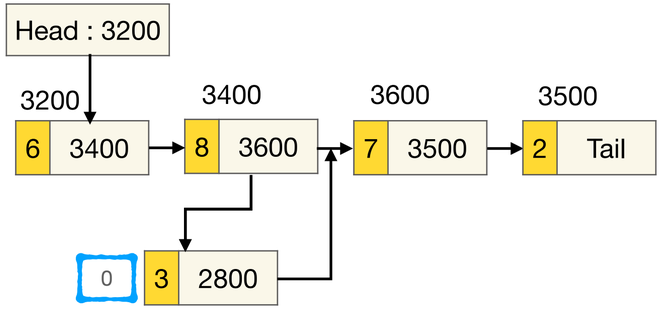


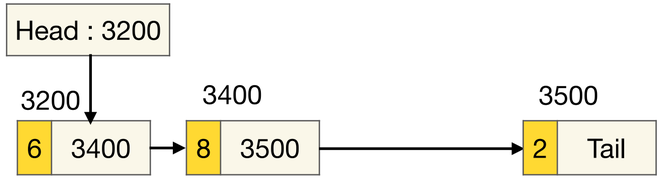
원형 구조



추가/삭제

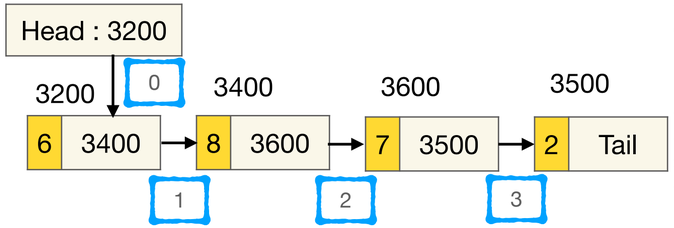
추가/삭제 : O(1)





탐색

탐색 : O(N)

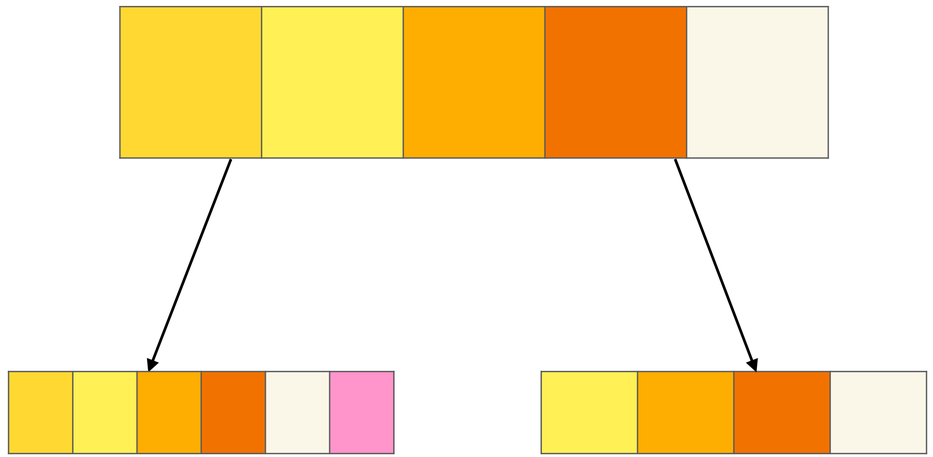


선형 구조

- 큐와 스택

큐

추가/삭제 O(1) / 탐색 O(N)



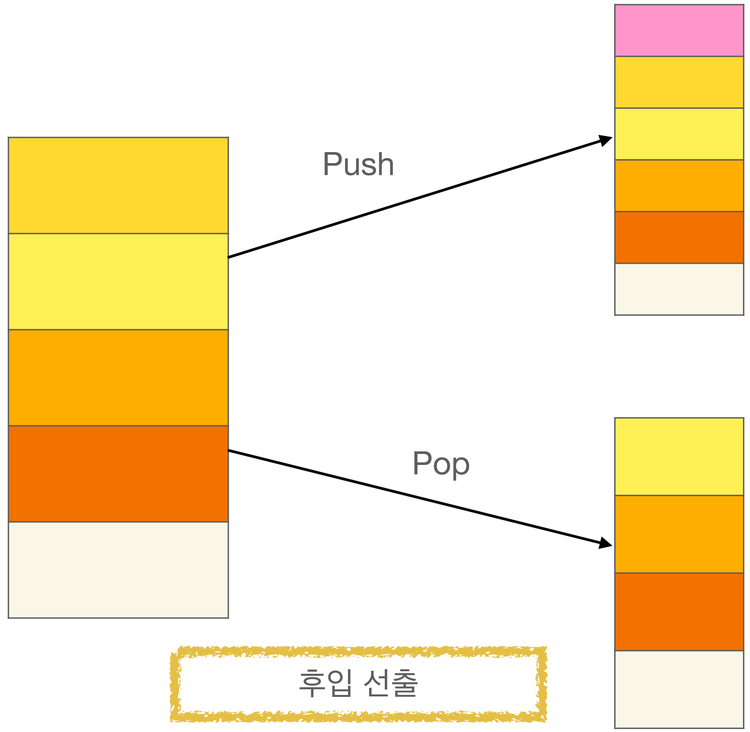
Enqueue

Dequeue

선입 선출

스택

추가/삭제 O(1) / 탐색 O(N)

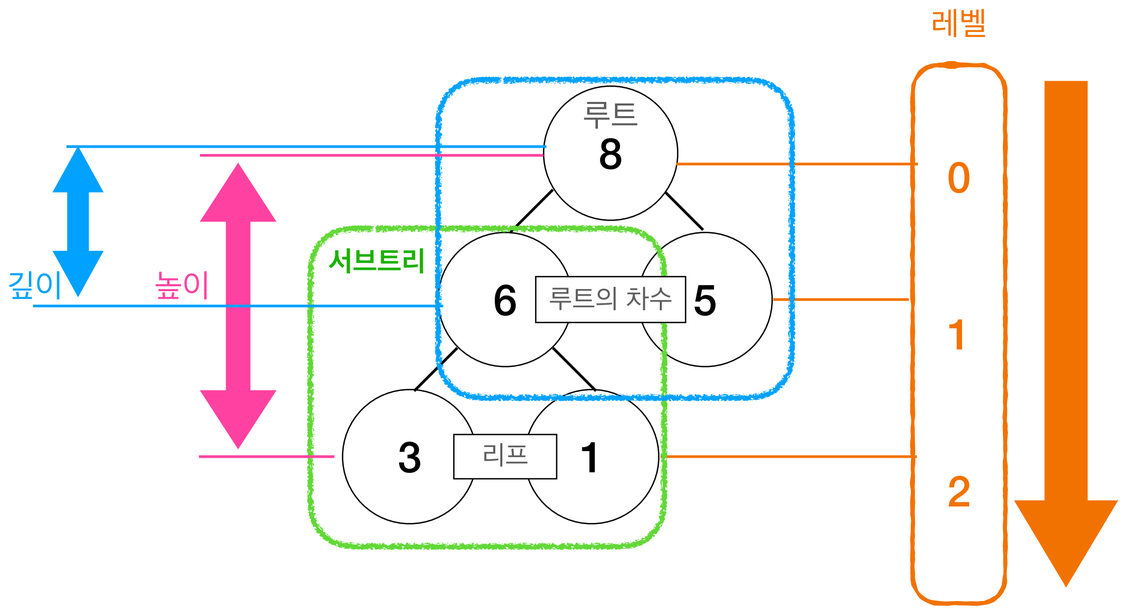


후입 선출

비선형 구조

-트리 구조

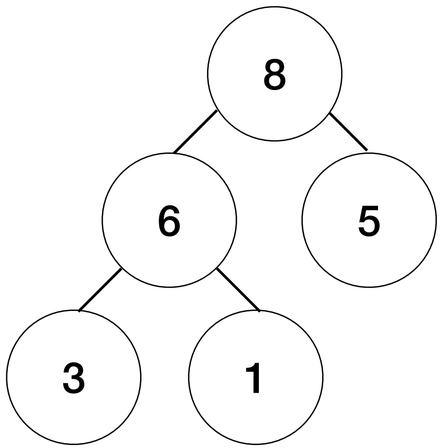
N → 노드



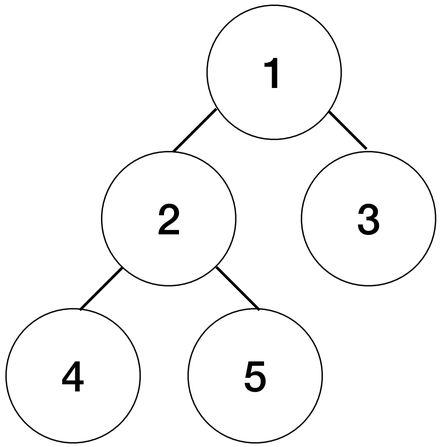
비선형 구조

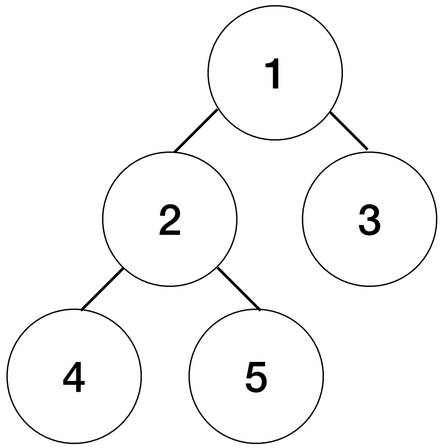
-트리 구조

binary max-heap



binary min-heap





전위 순회
1 -> 2 -> 4 -> 5 -> 3

중위 순회
4 -> 2 -> 5 -> 1 -> 3

후위 순회
4 -> 5 -> 2 -> 3 -> 1