DSA using Python
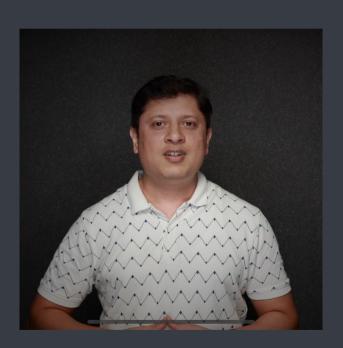
Stack

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Agenda

1. What is a stack?

2. Operations on Stack

3. Real world examples

4. Programming examples

5. Implementation of stack

What is a Stack?

Stack is a linear data structure.

Working principle of stack is
Last In First Out (LIFO)

Operations on Stack

push
pop
is_empty
peek
size

Real World Examples of Stack

1. Travelling Bag
2. Compiled plates in buffet
3. Stack of books
4. Bread packet

Programming Examples

① function call stack

② Evaluating expressions

③ Parenthesis matching

④ Iterative solution of binary tree traversal

⑤ Depth first Search

⑥ undo - redo operations

f1( ) ✓
f2( ) ✓
f3( ) ✓
f4( ) ✓

3+4*5-6

5+2* 3-4 +5)

( ) ( )

Implementation of Stack

① using list

② by extending list class

③ using singly linked list class

④ by extending singly linked list class

⑤ using linked list concept