

What is a Stack?

LIFO

python

basics

communitycreator

Stack is a linear data structure in which the element inserted last is the element to be deleted first.

It is also called **Last In First Out** (LIFO).

In a stack, the last inserted element is at the top.

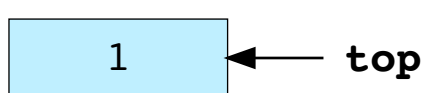
Operations

Operations of the stack are

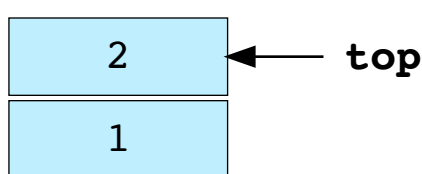
- **push()** : inserts an element into the stack at the end
- **pop()** : deletes and returns the last inserted element from the stack
- **peek()** : returns the last inserted element

Illustration

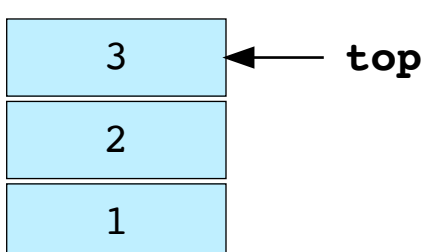
After inserting three elements in the stack, it will look like this:



push(1)

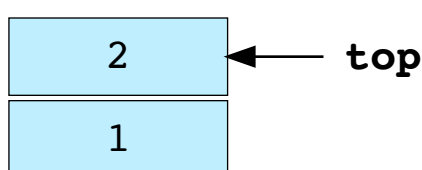


push(2)

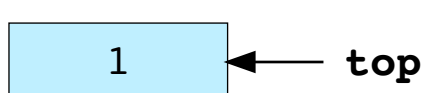


push(3)

After performing the pop operation twice, the stack elements will look like:



pop()



pop()

Implementation of stack operations

```
def push(stack,element):
    """insertion of 'element' into the stack"""
    stack.append(element)

def pop(stack):
    """deletes and returns the last inserted element"""
    if len(stack)==0:
        print("stack underflow")
        quit()
    return stack.pop()

def peek(stack):
    """returns the last inserted element"""
    if len(stack)==0:
        print("stack is empty")
        return -1
    return stack[-1]
```

Applications of the stack

- **Balanced parenthesis**
- Infix to postfix conversion
- Postfix evaluation
- **Recursion**
- **Depth First Search (DFS)**

Contributor: naresh

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