# Supported documents for week 3 assignments.

## Stack

A Stack is a non-primitive linear data structure. It is an ordered list in which the addition of a new data item and deletion of an already existing data item can be done from only one end, known as `top` of the stack.

The last added element will be the first to be removed from the Stack. That is the reason why stack is also called Last In First Out (LIFO) type of data structure.
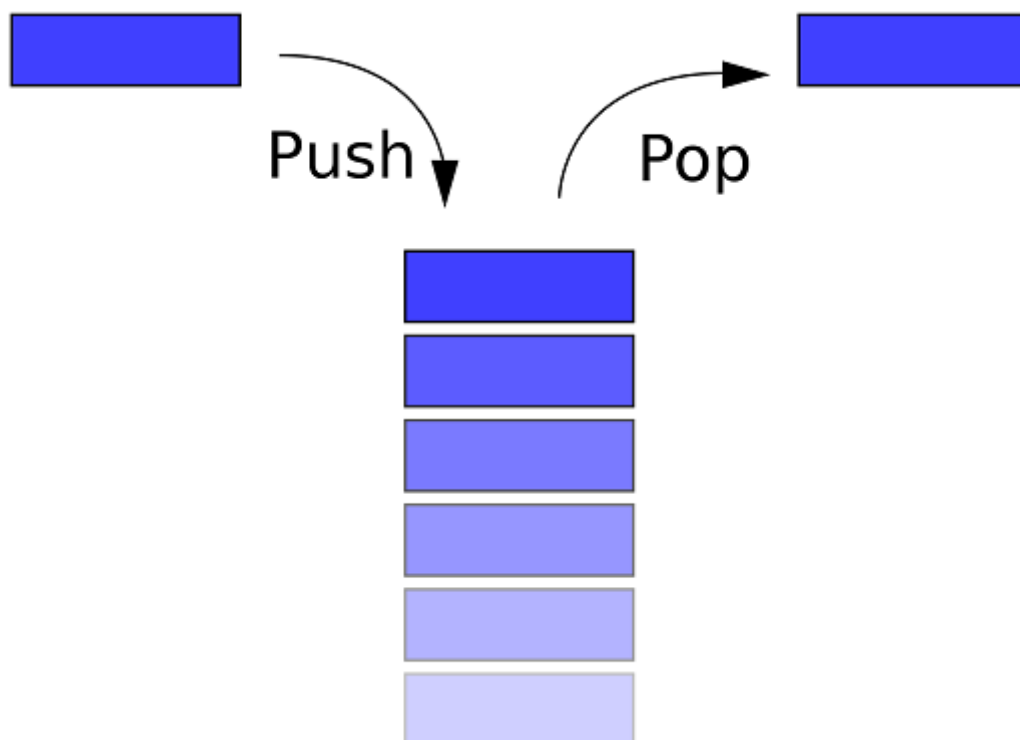


### Basic operations on Stack

**Push**

The process of adding a new element to the top of the Stack is called the `Push` operation.

**Pop**

The process of deleting an existing element from the top of the Stack is called the `Pop` operation. It returns the deleted value.

**Traverse/Display**

The process of accessing or reading each element from top to bottom in Stack is called the `Traverse` operation.

## Applications of Stack

- Reverse the string
- Evaluate Expression
- Undo/Redo Operation
- Backtracking
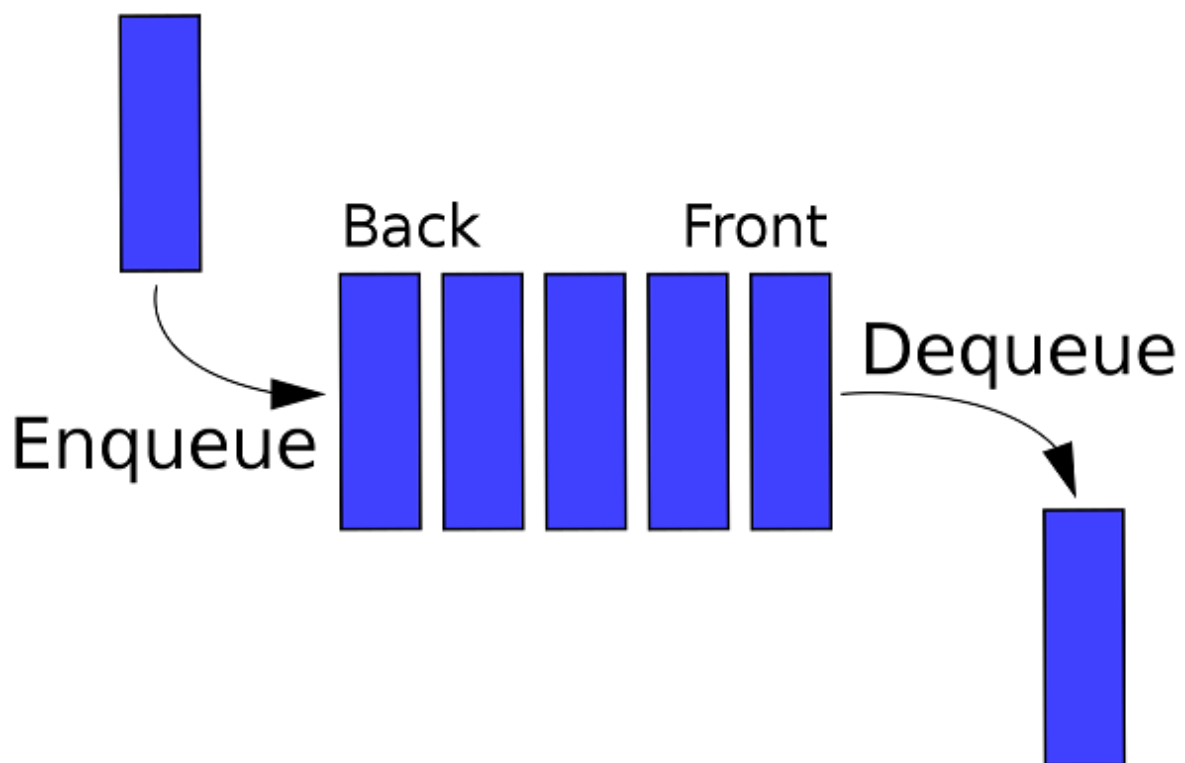- Depth First Search(DFS) in Graph(Will be discussed in Week-4)

## Implementation of Stack in Python

- Using a list
- Using a Linked list

# Queue

The Queue is a non-primitive linear data structure. It is an ordered collection of elements in which new elements are added at one end called the `Back` end, and the existing element is deleted from the other end called the `Front` end.

A Queue is logically called a First In First Out (FIFO) type of data structure.



## Basic operations on Queue

### Enqueue

The process of adding a new element at the `Back` end of Queue is called the `Enqueue` operation.

### Dequeue

The process of deleting an existing element from the `Front` of the Queue is called the `Dequeue` operation. It returns the deleted value.

**Traverse/Display**

The process of accessing or reading each element from `Front` to `Back` of the Queue is called the `Traverse` operation.

## Applications of Queue

- Spooling in printers
- Job Scheduling in OS
- Waiting list application
- Breadth First Search(BFS) in Graph(Will be discussed in Week-4)

## Implementation of the Queue in python

- Using a list
- Using a Linked list