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FACULTY OF EGINEERING & TECHNOLOGY

DATA STRUCTURE USING C

LECTURE -5

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OUTLINE

- Stack
- Stack Representation
- Push Operation
- Pop Operation
- MCQ
- References

INTRODUCTION OF STACK

Stack

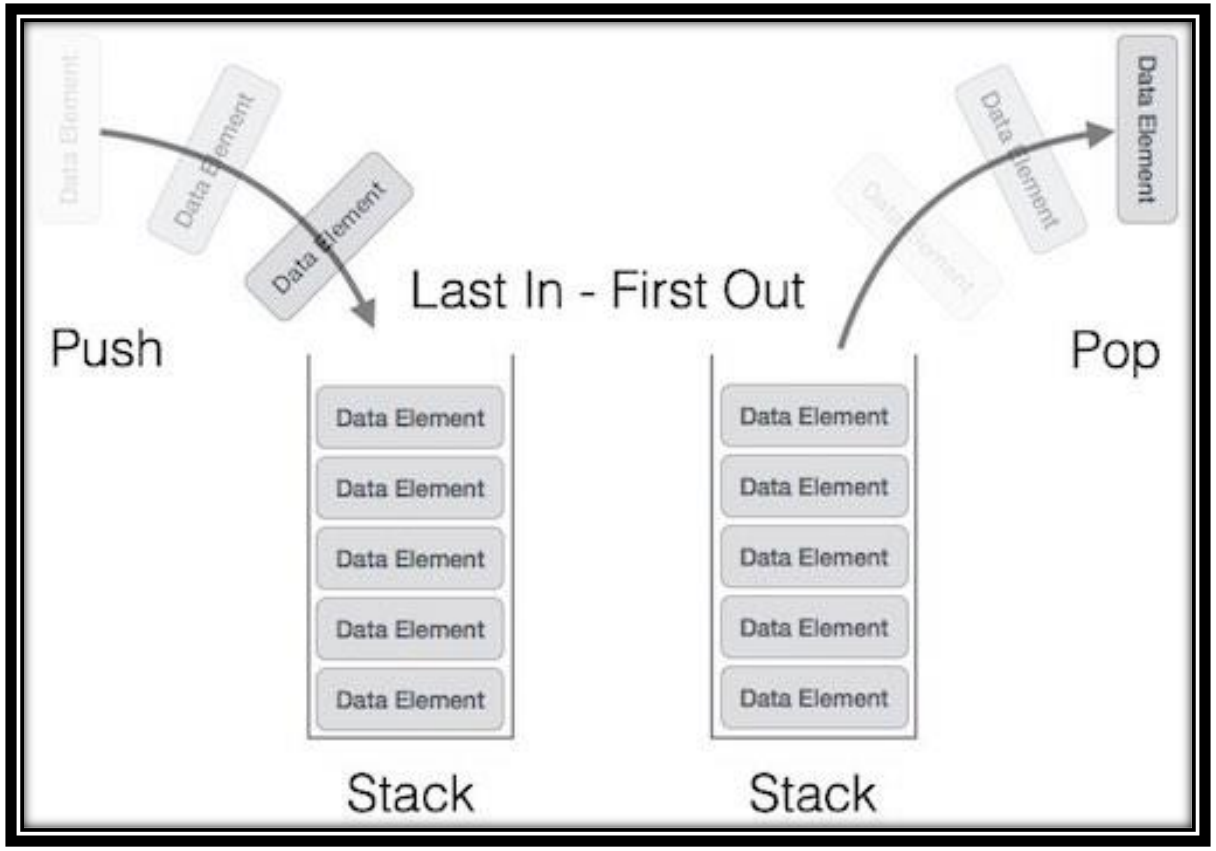
A stack is an Abstract Data Type (ADT), commonly used in most programming languages. It is named stack as it behaves like a real-world stack, for example – a deck of cards or a pile of plates, etc.

INTRODUCTION OF STACK

Stack Representation

The following diagram depicts a stack and its operations −

A stack can be implemented by means of Array, Structure, Pointer, and Linked List. Stack can either be a fixed size one or it may have a sense of dynamic resizing. Here, we are going to implement stack using arrays, which makes it a fixed size stack implementation.



INTRODUCTION OF STACK

Basic Operations

push() − Pushing (storing) an element on the stack.

pop() − Removing (accessing) an element from the stack.

Push Operation

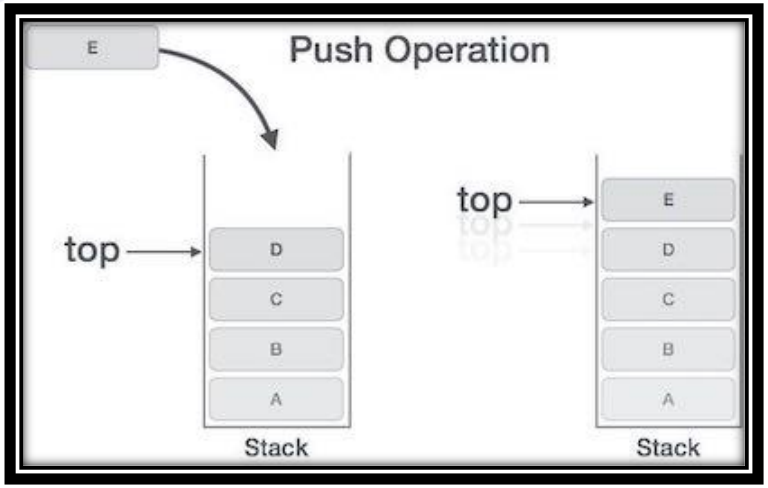
Step 1 − Checks if the stack is full.

Step 2 − If the stack is full, produces an error and exit.

Step 3 − If the stack is not full, increments top to point next empty space.

Step 4 − Adds data element to the stack location, where top is pointing.

Step 5 − Returns success**.**



INTRODUCTION OF STACK

Pop Operation

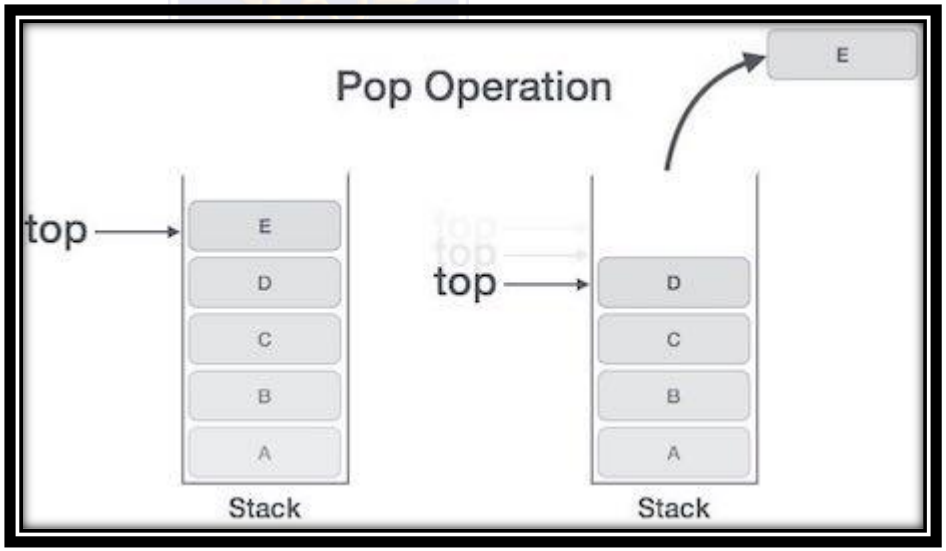
Step 1 − Checks if the stack is empty.

Step 2 − If the stack is empty, produces an error and exit.

Step 3 − If the stack is not empty, accesses the data element at which top is pointing.

Step 4 − Decreases the value of top by 1.

Step 5 − Returns success.



MCQ

1. Process of inserting an element in stack is called _____

a) Create

b) Push

c) Evaluation

d) Pop

2. Process of removing an element from stack is called _____

a) Create

b) Push

c) Evaluation

d) Pop

3. In a stack, if a user tries to remove an element from empty stack it is called _____

a) Underflow

b) Empty collection

c) Overflow

d) Garbage Collection

4. Pushing an element into stack already having five elements and stack size of 5, then stack becomes

a) Overflow

b) Crash

c) Underflow

d) User flow

5. Entries in a stack are “ordered”. What is the meaning of this statement?

a) A collection of stacks is sortable

b) Stack entries may be compared with the ‘<‘ operation

c) The entries are stored in a linked list

d) There is a Sequential entry that is one by one

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