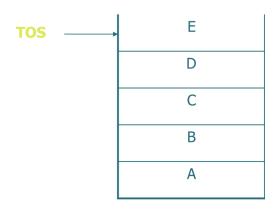## STACKS

A stack is an ordered collection of items into which new items are inserted and from which items may be deleted only at one end – called the TOP OF THE STACK

As all the addition and deletion in a stack is done from the TOS, the last added element will be first removed from the stack

This is why the stack is referred to as a LIFO (Last-In-First-Out) Structure

SCHEMATIC REPRESENTATION

TOS →

E
D
C
B
A

STACK

OPERATIONS

PUSH operation

- The process of adding a new element x to the TOS
- Pushing an element to a stack will add the new element at the top
- After every push operation the top is incremented by 1
- If the stack is full and no new element can be accommodated, then the *stack overflow* condition occurs

POP operation

- The process of deleting an element from the TOS

- After every pop operation the stack is decremented by 1

- If there is no element in the stack and the pop operation is performed, then the *stack underflow* condition occurs

PEEK operation

- Returns the element at the TOS

- But the stack pointer is not decremented

DISPLAY operation

- Display all the elements of the stack

- The stack pointer is not affected

FULL operation

- Returns true when the stack is full

EMPTY operation

- Returns true when the stack is empty

APPLICATIONS

Checking for parenthesis balancing in expressions

Conversion of infix to postfix/prefix

Recursive functions

Page visited history in a Web browser

Undo sequence in a text editor

Saving local variables during function calls