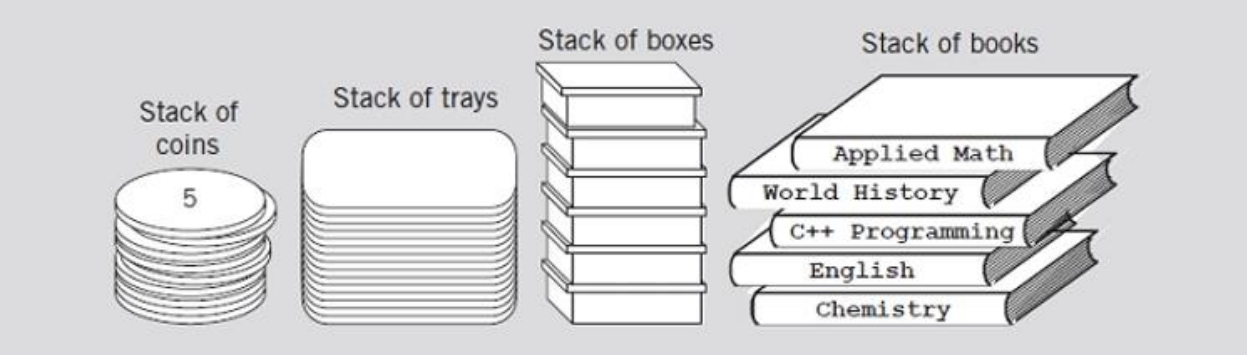
The School Electrical Engineering and Information Technology
Computer Science Department

CS223
Stack

Definition:

- Stack: A data structure in which the elements are added and removed from one end only; a Last In First Out (LIFO) data structure.



Main Operations

- **Push Operation**

Add element onto the stack

- **Peek Operation**

Retrieve top element of the stack

- **Pop Operation**

Remove top element from the stack

- **IsEmpty Operation**

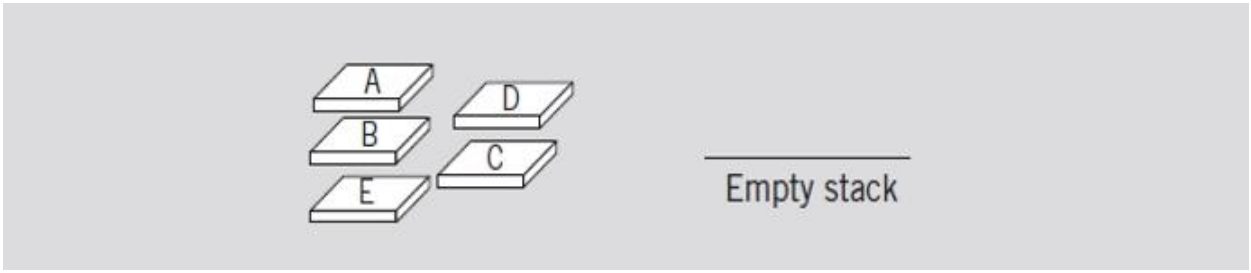
Checks for empty stack

- **Size Operation**

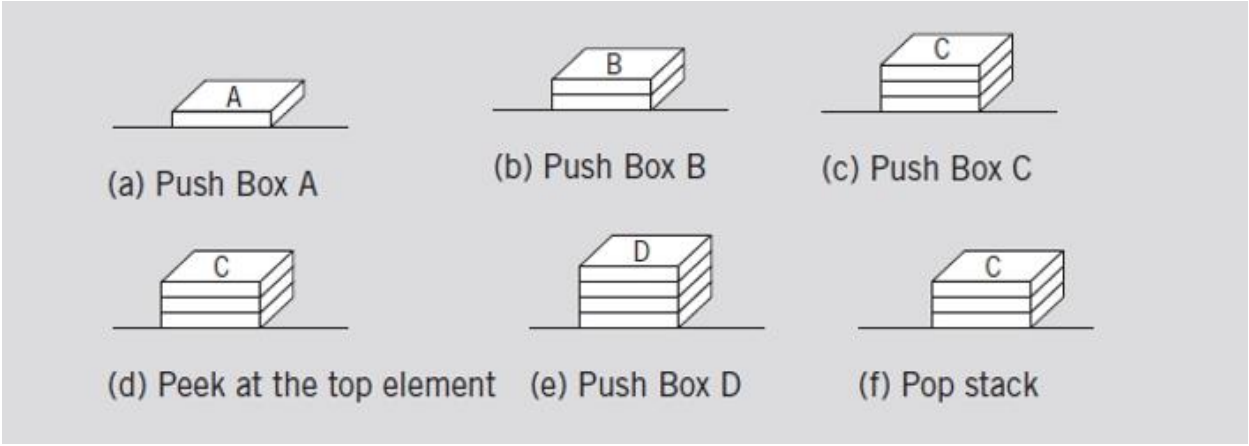
Retrieve number of elements in the stack

- **Display Operation**

Printing stack elements.



Empty Stack



Stack Operations

Lab Work

Based on the definition of Stack, Complete the following C++ code with the main Stack operations to provide a full implementation for **Linked List** based Stack:

```
#include <iostream>

using namespace std;

struct Node

{

   int data;

   struct Node* next;

};

struct Node* top;

void push(int data)

{

}

void pop()

{

}

bool isEmpty()

{

}

int peek()

{

}

void display()

{

   struct Node* temp;

   if (isEmpty())

   {

      cout << "\nThe stack is empty";
```

```
    }
    Else{
        temp = top;
      while (temp != NULL){
        cout << temp->data << "\t";
        temp = temp->next;
      }
    }
}
int main()
{
}
```