CSE 215L: Programming language II Lab
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Sec: 09
Lab - 09 [Class And Object, Composititon], Summer-2020
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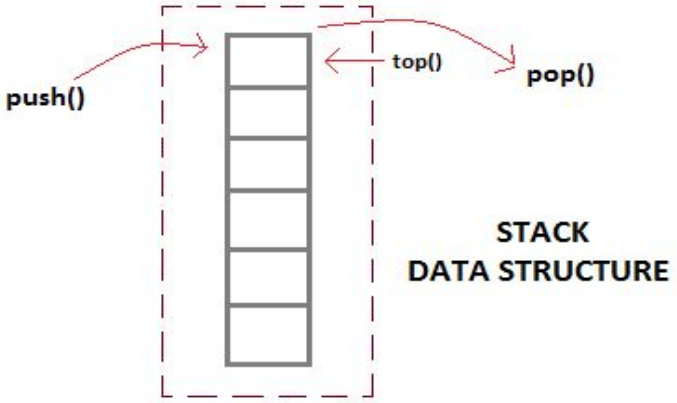
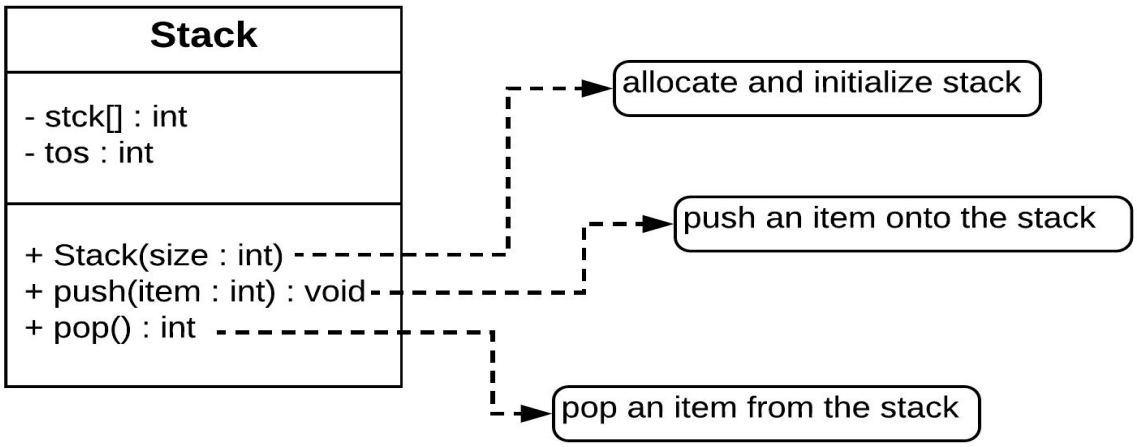
Objective:

- To implement Stack Data Structure
- To define a new class with Composition *(aka Aggregation*)
- To reuse existing classes

Stack: A stack is a basic data structure that can be logically thought of as a linear structure represented by a real physical stack or pile, a structure where insertion and deletion of items takes place at one end called top of the stack.



Task-01: Implement the following class and test its methods.



Now create two stacks, one having 5 elements and the other having 8 elements. Push some numbers onto the stacks and finally pop those numbers off the stacks.

There are two ways to *reuse* existing classes, namely, *composition* and *inheritance*. With *composition* (aka *aggregation*), you define a new class, which is composed of existing classes. With *inheritance*, you derive a new class based on an existing class, with modifications or extensions.

As an example of reusing a class via composition, suppose that we have an *existing* class called Point, defined as shown in the below class diagram. Suppose that we need a new class called Line, we can design the Line class by re-using the Point class via *composition*. We say that "A line is *composed* of two points", or "A line *has* two points". Composition exhibits a "*has-a*" relationship.

Task-02: Implement the following UML Class Diagrams and test their methods.