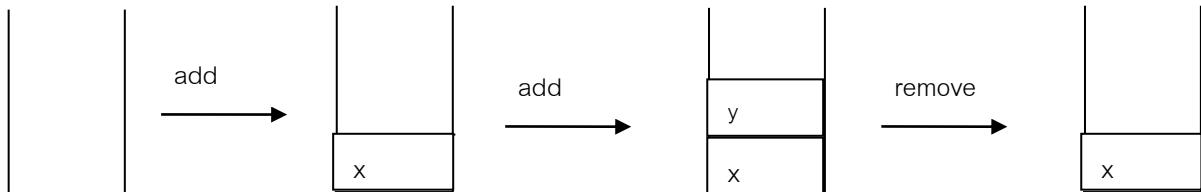


You were told to implement a **class StorageBox** to be used in another program.

A storage box has one open end (at the top). It can only store 1 thing at a time. Adding and removing can only be done from the top, as shown in the picture below:



A storage box can do the following:

- `boolean isEmpty()`: Test if the box does not store anything.
- `boolean isFull()`: Test if the box is full.
- `void push(Object x)` : Add x to the box (from the top).
- `Object pop()` : Remove the top data stored in the storage box. Return the removed data. If there is no data to be removed, return null.
- `Object top()`: Return the data stored at the top in the storage box. The content of the storage box will not change. Return null if there is no data stored in the box.

1. Your task is to define class `StorageBox` and write all its required functions above.
2. Create a UML diagram of the class you defined.
3. export your code out as a jar file.

**Note:**

The only allowed existing data structure is array and `ArrayList`. You must not used other data structure in the Java library.

A Junit test is given for method `push`. It covers the following test cases:

- ☐ push into an empty box
- ☐ push into a box that already contains some data.
- ☐ push into a full box (the box is somehow expanded).

**\*\*\*You have to write your own JUnit for method `isFull`, `pop` and `top` (you can test this two methods together).**

Junit test is also given for method `isEmpty`.