

Lesson 74: Array Insertion/Deletion Operations (W24D2)

Balboa High School

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- Read PS #12, §10.2, which demonstrates how to use `add()` to insert an object into an `ArrayList`. Note that arrays don't have a means provided by Java to make insertions as easy!
- Create project L74 in workspace3 and create a new class called `ArrInsert1`
- In `main()`, create this array —

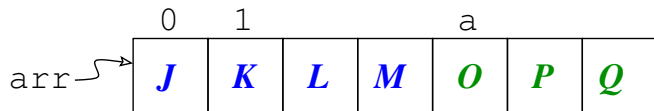
```
int[] listOfInts = { 4, 5 }
```

— followed by statements that...

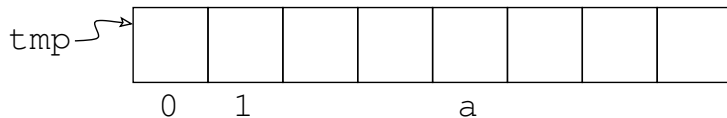
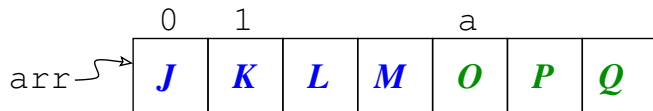
- resize the array, giving it a capacity of 3
- shuffle the element '5' to the right by 1 position
- insert the value '1' between the 4 and 5

Students will learn how to deal with array insertions and removals.

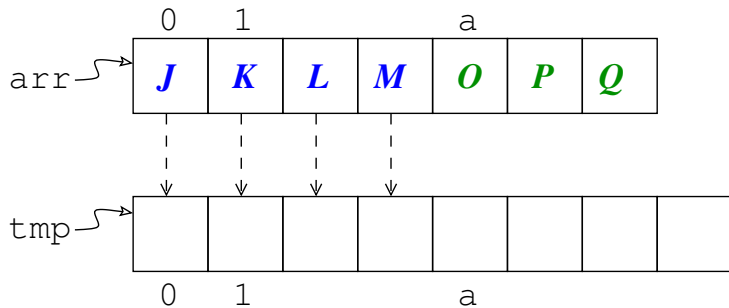
Array Insertion Illustrated



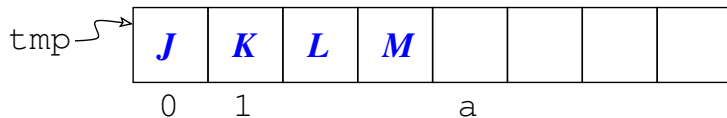
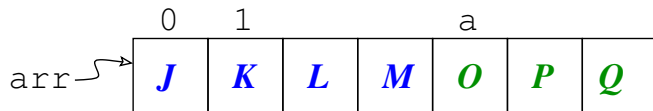
Array Insertion Illustrated



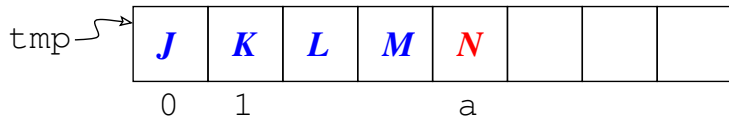
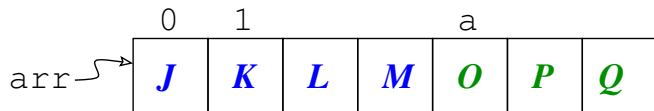
Array Insertion Illustrated



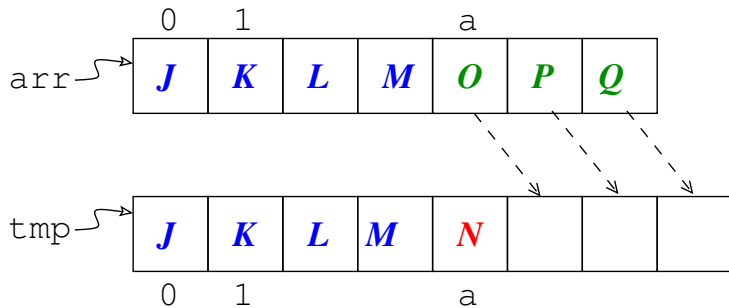
Array Insertion Illustrated



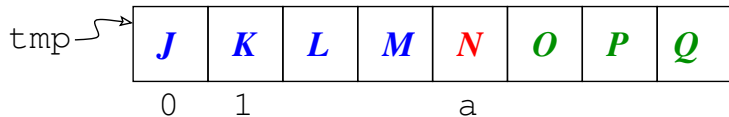
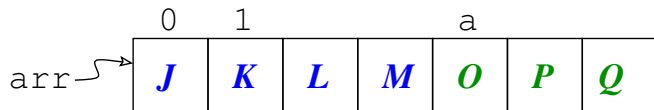
Array Insertion Illustrated



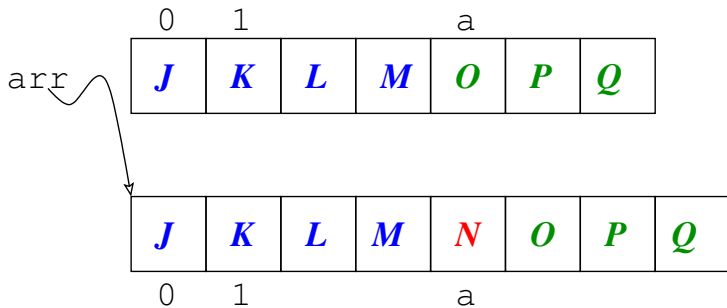
Array Insertion Illustrated



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Array Insertion Summary

To insert an element at position `a` of array `arr`:

- 1 Make a new, larger array (`tmp`)
- 2 Copy elements from `arr[0, ..., a-1]` to `tmp`
- 3 Insert value at `tmp[a]`
- 4 Copy elements from `arr[a, ..., arr.length-1]` to `tmp[a+1, ..., tmp.length-1]`
- 5 Point `arr` to `tmp`

- Using what you've learned about array insertions, work on the insertion/removal problems described in PS #12:
 - §10.4, #1 — easier insertion problem
 - §10.4, #2 — trickier insertion problem
 - §10.5 — element removal problem
- Once finished, continue on to the book questions in §11.
- **There will be a quiz on arrays and ArrayLists in 2 class days!**

- Finish §§10-11, inclusive
- Next class: 2D Arrays