

07.05 Virtual Lecture Notes

Array Replacement

Every replacement algorithm usually involves a traversal of some kind. Let us consider the `inventory` array from `TestInventory3.java` with five items.

```
InventoryItem[] inventory = new InventoryItem[5];

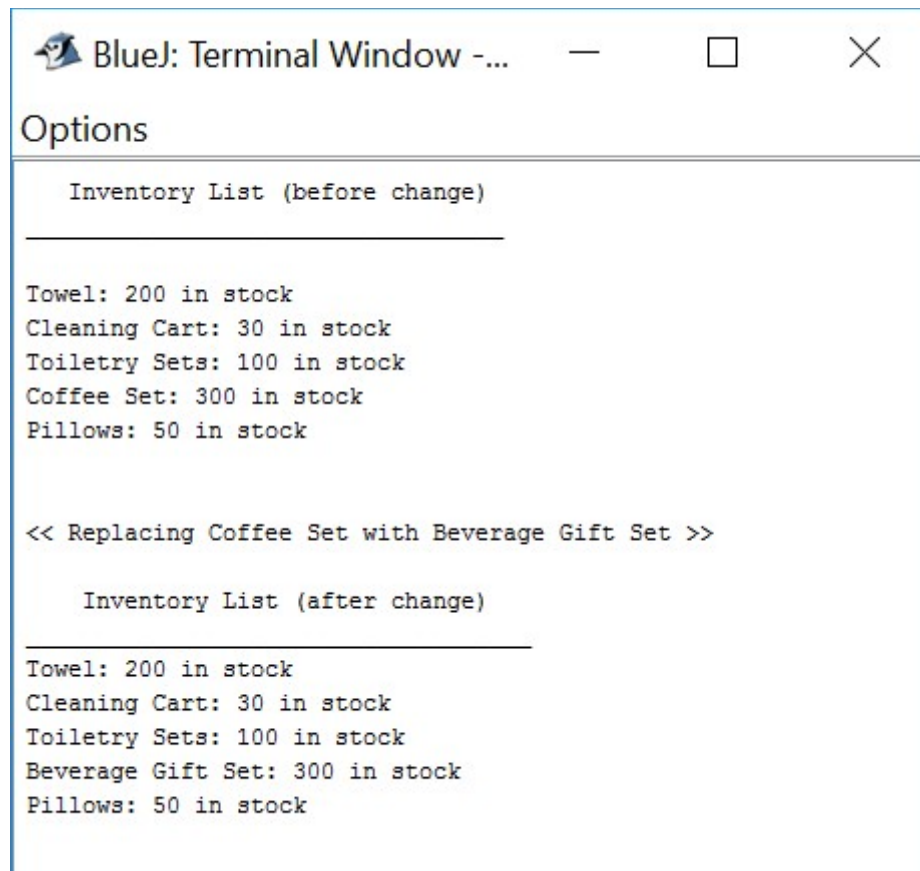
// create inventory
inventory[0] = new InventoryItem("Towel", 200);
inventory[1] = new InventoryItem("Cleaning Cart", 30);
inventory[2] = new InventoryItem("Toiletry Sets", 100);
inventory[3] = new InventoryItem("Coffee Set", 300);
inventory[4] = new InventoryItem("Pillows", 50);
```

We want a way to change out one inventory item for a new one. For example, instead of a Coffee Set, the inventory will include Beverage Gift Sets.

How do we replace that item? The answer is first we traverse through the list to find the Coffee Set item. This will require a loop that traverses through the array and then uses an if statement to see if the name matches Coffee Set. Then we set the name for that index position to Beverage Gift Sets.

```
public static void changeItem(InventoryItem[] itemList, String
find, String replace)
{
    for(int index = 0; index < itemList.length; index++)
        if(itemList[index].getName().equals(find))
            itemList[index].setName(replace);
}
```

If we test it by first printing an inventory list before changing, and then after changing, we get the following output:



The screenshot shows a BlueJ Terminal Window titled "BlueJ: Terminal Window -...". The window displays the output of a program. It starts with the heading "Options" followed by a horizontal line and the text "Inventory List (before change)". Below this, the following items are listed: "Towel: 200 in stock", "Cleaning Cart: 30 in stock", "Toiletry Sets: 100 in stock", "Coffee Set: 300 in stock", and "Pillows: 50 in stock". A separator line is then shown, followed by the text "<< Replacing Coffee Set with Beverage Gift Set >>". Another horizontal line follows, and the text "Inventory List (after change)" is displayed. The final list of items is: "Towel: 200 in stock", "Cleaning Cart: 30 in stock", "Toiletry Sets: 100 in stock", "Beverage Gift Set: 300 in stock", and "Pillows: 50 in stock".



Examine the program and try to make some changes of your own. What other change methods would you like to add to your program?

ArrayList Replacement

Now, how about an `ArrayList`? Take a look at the demonstration program `TestInventory4.java`. Notice that it is the same except for using `ArrayList` methods.

```
public static void changeItem(List<InventoryItem> itemList, String
find, String replace)
{
    for(int index = 0; index < itemList.size(); index++)
        if(itemList.get(index).getName().equals(find))
            itemList.get(index).setName(replace);
}
```

Compare the two versions of the program side by side so you understand how the task is handled differently when using an array and an `ArrayList`. Be sure to run the program and observe the output.



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