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## NACA.161 Programming Fundamentals II

### In-class Exercise #14 – ArrayList

#### Objective

- Get access to classes in the java.util package
- Use the ArrayList class.

#### ArrListStuff Class

- 1) Create a file named **ArrListStuff.java**. Add the statement that will let you use the ArrayList class.

What package do you need to use? java.util.ArrayList

Write the statement that you need to put in your program to access the package.

import java.util.ArrayList;

Where do you put this line of code?

Before you start programming at top of list.

- 2) Create a class named **ArrListStuff** that contains a main method.
- 3) Create an **ArrayList** object named **Inventory**.

What is the code you used to create the object?

ArrayList Inventory = new ArrayList();

Which constructor did you use? new ArrayList();

- 4) Compile the code and fix all your errors.

## Boat Class

- 5) Create a file called **Boat.java** that holds the **Boat** class. The **Boat** class has two attributes: a color stored as a String and a price stored as a double.
- 6) Create a two-parameter constructor. The first parameter initializes the color and the second parameter initializes the price. NO other constructor is needed.
- 7) Create an accessor for each attribute. To keep the class simple, you do not need to write any mutators or additional methods. Note that the values of a Boat object can not be changed after it is constructed, but you will not need to change them.
- 8) Compile the **Boat** class and fix any errors.

## Back to the ArrListStuff Class

- 9) Using the constructor, create a **Boat** object with color "Blue" and a price of \$125,000. Do not do any input, just use literals.

Write this statement below.

Boat b1 = new Boat("Blue", 125000);

- 10) Add the boat from the previous step into your array list.

Write this statement below.

Inventory.add(b1);

- 11) Create the following additional boats and add them to your array list. Use the KISS principle – Keep It Simple, Student. You do not need to prompt the user in a loop. Just create objects with literal values and add them to the collection.

Color	Price
Red	\$45,500
Blue	\$67,250
White	\$48,400
Blue	\$97,600

- 12) Retrieve the first **Boat** object from your array list. Since you know that all objects in the array list are of type **Boat**, cast the object to type **Boat**. No loop is needed here.

What is your code to do this?

Boat b = (Boat) Inventory.get(0);

- 13) Use the accessors for a **Boat** object to display the color and the price for the object retrieved from your array list.

Write the statement to get the color from the **Boat** object and assign it to the variable boatColor.

String boatColor2 = b2.getColor();

Write the statement to get the price from the **Boat** object and assign it to the variable boatPrice.

double boatPrice3 = b3.getPrice();

- 14) Print the values of the attributes for each boat on a separate line in the form  
Color: cccc Price: nnnn ✓
- 15) Compile your program and fix any errors until the proper boat values are printed. ✓
- 16) Write a loop to retrieve all boats, including the first one, from your array list. Remember to cast each object to type **Boat**. In the loop, do the following:
- Print the values of the attributes for each boat on a separate line in the form  
Color: cccc Price: nnnn
  - Sum the total price of all boats.
  - Sum the total price of all Blue boats.
- 17) After the loop, print the total price of all boats and the total price of all Blue boats.



**When you complete all of the steps successfully and answer all of the questions, contact your instructor to check if your program(s) executes correctly and to review your code. We will initial the line below.**

\_\_\_\_\_ **Successful execution of code**

**If you do not finish the program during the class period, contact your instructor to initial below so that you can complete it before the next class period.**

\_\_\_\_\_ **Code not completed during lab time**

**You may then have your instructor verify your work at the start of work period in the next class. If you do not have a signature, then you cannot receive any points for this assignment.**