

Lab 16

Box Sorter!

Objective:

Write a program where the user enters in information about 5 boxes, and then they are sorted by their volume.

Create a class called **Box**

- This class has four instance variables
 - Label: the name of the box
 - Length: the length in feet
 - Width: the width in feet
 - Height: the height in feet
 - Assume Length, Width, and Height are all decimal values
- Constructors
 - Default
 - Parameterized (MUST CHECK FOR VALID VALUES)
- Accessors for every instance variable
- Mutators for every instance variable
 - CHECK FOR VALID VALUES!
 - Length Width and Height should all be greater than 0
- Other methods
 - getVolume: this method returns a decimal value corresponding to its volume. It also has no parameters
 - toString: This method returns a string which is made up of the label of the box and its volume

Create another class called **BoxSorter**

- This class has a main method
- An array of boxes
- Prompts the user for box information
- Sorts the boxes
- Displays the sorted boxes

Example Dialog:

```
Welcome to the box sorter!
Enter the information about boxes and I'll sort them!
Enter the label, length, width, and height (all feet) of box 1
Random electronics
2.0
2.0
2.0
Enter the label, length, width, and height (all feet) of box 2
Art supplies
1.0
3.0
1.0
Enter the label, length, width, and height (all feet) of box 3
Video Games Box 1
4.0
4.0
3.0
Enter the label, length, width, and height (all feet) of box 4
Board Games Box 3
3.0
3.0
2.0
Enter the label, length, width, and height (all feet) of box 5
Imported Cheeses
0.5
0.5
```

0.25

Sorted boxes

Label: Imported Cheeses Volume: 0.0625

Label: Art supplies Volume: 3.0

Label: Random electronics Volume: 8.0

Label: Board Games Box 3 Volume: 18.0

Label: Video Games Box 1 Volume: 48.0

Lab Report Question:

1. Define what "null" means.
2. Is it safe to assume when an array of objects is declared and initialized that each of the individual objects is also constructed?

Finally:

Upload the all files to the dropbox