CSCI 1301 – Programming Principles I
Georgia Southern University
Department of Computer Science
Fall 2024

Assignment 10
Point Value: 20 points
Due: Friday November 22, 2024, start of lab

Description
Write a Java program that processes shipping containers based on volume. The provided array contains dimensions for shipping containers on a ship currently in port. Each container has dimensions (width, length, height) in **centimeters**.

Create a method named printShippable() that takes a 2D array of doubles as a parameter and prints information if any containers meet certain conditions. If a container has a volume equal to or above 2,000 and equal to or under 7,000 **cubic inches (inches^3)** then it can be shipped out on the next boat. The method should print the "row" index of containers that can be shipped on the next boat.

Create a main method that passes the provided shipping containers data to your method and allows it to print out containers that can be shipped.

Use the following array as the container data:

```
double[][] shippingContainers = {
      {47.19, 39.19, 36.50}, {59.25, 59.25, 54.50}, {47.25, 29.25, 29.50},
      {23.19, 19.20, 19.50}, {17.33, 17.33, 17.50}, {83.19, 47.25, 42.50},
      {23.33, 19.33, 19.50}, {31.25, 23.25, 23.50}, {29.33, 29.33, 24.50},
      {23.19, 23.19, 23.19}, {35.19, 35.19, 30.50}, {47.19, 44.19, 29.50},
      {40.19, 27.88, 20.00}, {59.19, 47.19, 42.50}, {47.19, 47.19, 22.50},
      {39.33, 39.33, 34.50}, {47.25, 29.25, 29.50}, {35.19, 21.19, 16.50},
      {11.33, 11.33, 11.50}, {47.19, 39.19, 29.50}, {47.19, 47.19, 42.50},
      {66.19, 29.20, 25.00}, {57.19, 41.19, 40.50}, {59.25, 59.25, 42.50},
      {71.25, 47.25, 42.50}
};
```

HINTS/NOTES
- Downloading the PDF might make copying the above array easier
- Review System.out.printf() options for formatting
- There are approximately 0.3937007874 inches in a centimeter
- Units matter – do not calculate volume then try to convert using the above conversion factor: inches != cubic inches and centimeters != cubic centimeters
- There should be no user input. You should use the provided array for this project, but the rest of your code/methods should work for any arrays of any lengths that are the same structure as the provided array.

Expected Output/Sample Run

```
Container 0 (4,119.24 in^3) can be shipped
Container 2 (2,487.99 in^3) can be shipped
Container 10 (2,304.82 in^3) can be shipped
Container 11 (3,754.00 in^3) can be shipped
Container 14 (3,057.60 in^3) can be shipped
Container 15 (3,256.61 in^3) can be shipped
Container 16 (2,487.99 in^3) can be shipped
Container 19 (3,329.25 in^3) can be shipped
Container 20 (5,775.48 in^3) can be shipped
Container 21 (2,948.59 in^3) can be shipped
Container 22 (5,821.91 in^3) can be shipped
```

Code

Use the provided template for this assignment. Make any necessary modifications to classes and class headers to complete this assignment.

```
public class PAssign10 {
	public static void main(String[] args)  {
		// add your code here

	}
}
```

Deliverables

Name your program PAssign10.java. Programming Assignment 10 is to be individual work. Submit the program by the specified due date. Submit each file to its corresponding assignment on Gradescope.

See and follow the Programming Assignment Format document for submission requirements.

Use a utility similar to https://www.diffchecker.com/ and the Expected Output to compare your program's output with the requested output as well as the unit tests provided within Gradescope. Programming is in the details, so double check punctuation, spacing, and case if your output does not match. When copying and pasting, be aware that Microsoft Word sometimes replaces normal quotes with Smart Quotes, which may need to be edited.

Last modified: November 10, 2024