

Overview:

This second programming assignment will make use of several new things we've learned (or will shortly learn) since the first programming assignment. This includes writing our own methods (we'll have more than just a main() methods in this program), returning values from methods, and switch statements.

Brief Description:

This program will present the user with a main menu of options which the user can choose from to perform simple unit conversions. Once the user has chosen an option from the menu, the program should provide a brief explanation of the conversion to be performed and allow the user to enter a quantity to be converted. The program should then display the converted result. **After performing the conversion, the program should return the user back to the main menu.**

Details:

When your program first runs, it should print out print out your name, the course number ("CS103-01"), and the programming assignment name ("Programming Assignment #2"), each on a new line. Then, the program should skip a line (i.e., print a blank line), and print a brief description of what the program does.

After the description, the program should print out a "main menu" similar to the following:

```
Here is the menu. Enter your choice (or q to quit):
a) Convert kilometers to miles
b) Convert miles to kilometers
c) Convert meters to feet
d) Convert feet to meters
e) Convert centimeters to inches
f) Convert inches to centimeters
```

When the user picks an option from the menu, the program should take in input from the user and perform the conversion, along with proper prompts. For example, if the user selects option "a", the program should ask the user to input the number of kilometers to be converted, and the program should print out the converted number. **After the conversion is performed, the program should return to the main menu.**

When the user enters "q" at the main menu, the program should quit immediately.

I've included an "example run" on the next page, which should clarify exactly what information is to be printed and with what formatting.

Specific Implementation Requirements:

1. The **menu should be implemented as a switch statement.**
2. Each conversion should be done by a method that has a single parameter of a floating point number. Each method should return a floating point number. **There are 6 conversions to be done, so there should be 6 of these methods.**
3. All **input from the keyboard and output to the screen should be done in main** – nowhere

else.

4. All methods should have appropriate comments explaining what data the method takes in, what data the method returns, and what the method does (this includes main!).
5. Conversion from kilometers to miles should be done by multiplying the number of kilometers by 0.621371.
6. Conversion from miles to kilometers should be done by multiplying the number of miles by 1.60934.
7. Conversion from meters to feet should be done by multiplying the number of meters by 3.28084.
8. Conversion from feet to meters should be done by multiplying the number of feet by 0.3048.
9. Conversion from centimeters to inches should be done by multiplying the number of centimeters by 0.393701.
10. Conversion from inches to centimeters should be done by multiplying the number of inches by 2.54.

Submission:

All programming assignments are to be submitted as hard copy **and** electronically. For the electronic submission, just submit your .java file on Canvas. Assignments should be turned in during class on the due date (or earlier). Grading late assignments is really time consuming (seriously – I didn't realize this until I started grading), so don't turn in any assignment late unless you've made arrangements with me.

As always, do your own work.

Example Run:

```
CS103-01 Programming assignment 2

This program will present you with a menu.
Select from the menu to choose from common length unit conversions.
When you are done performing conversions, enter "q".

Here is the menu. Enter your choice (or q to quit):
a) Convert kilometers to miles
b) Convert miles to kilometers
c) Convert meters to feet
d) Convert feet to meters
e) Convert centimeters to inches
f) Convert inches to centimeters
Your choice: a
Enter the length in kilometers: 1
That's 0.621371 miles.
Here is the menu. Enter your choice (or q to quit):
a) Convert kilometers to miles
b) Convert miles to kilometers
c) Convert meters to feet
d) Convert feet to meters
e) Convert centimeters to inches
f) Convert inches to centimeters
Your choice: b
Enter the length in miles: 1
That's 1.609340 kilometers.
Here is the menu. Enter your choice (or q to quit):
a) Convert kilometers to miles
b) Convert miles to kilometers
c) Convert meters to feet
d) Convert feet to meters
e) Convert centimeters to inches
f) Convert inches to centimeters
Your choice: q
```

Hints:

Remember that to read in a single character, the book suggests to read in an entire line of text and then just grab the first character from it.