

Lab Exercise 1: Input, Output, Variables.

Intro to Programming: Lab Exercise for Assignment 1

Goals

The goal of this exercise to prepare you for homework assignment 1

Summary

There are two parts to the exercises:

- [Calculators exercise](#):
 - ➡ Write programs to convert `milesToKilometers`, `gramsToOunces`, `kelvinToCelsius`, and calculate `triangleArea`, `surfaceAreaOfSphere`, and `costOfPeppers`
- [Flags exercise](#):
 - ➡ Write programs to draw several simple flags.

Overview

The exercises for this lab involve writing programs very similar to the ones shown in lectures.

Structure of the Exercises

Each part is a group of very small programs to check that you understand the key principles. You do not need to do all the exercises - you can stop a group once you have completed two programs in the group without help.

Exercise Series 1: Calculators.

For the first series of exercises, you must complete methods that perform a simple calculation. Each method should ask the user for one or two numbers, and print out the answer of the computation.

Start BlueJ and open the project called `CalculatorExercise`

The method called `milesToKilometers` currently does nothing. You should complete the method so that it converts miles to kilometers:

- Ask the user for the number of miles
- Compute the number of kilometers (there are 1.609 kilometers in a mile)
- Print out the number of kilometers eg = 45.783 kilometers

Write similar methods (`triangleArea` , `gramsToOunces` , etc) to perform the following calculations. You may stop once you have written one of the methods by yourself.

- Ask the user for the base and the height of a triangle, and print out the area (half the product of the base and the height).
- Ask the user for grams and print out the number of ounces.
- Ask the user for the radius of a sphere and print out the surface area ($4 * \text{radius squared} * \pi$)
- Ask the user for the temperature in degrees Kelvin and print out the temperature in Celsius (Celsius is $\text{kelvin} - 273.15$)
- Ask the user for the number of green peppers, and the unit price of peppers and print out the total cost (in RMB).

Exercise Series 2: Flags and shapes.





For the second series of exercises, you must complete methods that draw various simple national flags. Each method should ask the user how wide the flag is, and then draw it on the graphics pane.

The file `FlagExercise.java` contains one method called `drawIndonesiaFlag` that currently does nothing. You should complete the method so that it draws an Indonesia flag:

-  Indonesia

The comment on the method tells you what you must do. Test your method with at least two different widths.

For each other flag, you must complete two methods. Eg `doAustriaFlag` method (which asks for the width, then calls `drawAustriaFlag`) and `drawAustriaFlag` to draw the flag.

-  Austria
-  Japan
-  Bangladesh
-  Niger