Background (Same as for Week 4 Lab)

Blood pressure is an important physiological quantity. Blood pressure is often reported in terms of systolic and diastolic values and in units of millimeter of mercury (mm Hg). The systolic value ($P_{systolic}$) is maximum value and occurs at the end of the heart contraction. The diastolic value ($P_{diastolic}$) is the minimum value and occurs just before the heart starts to contract. Typical systolic and diastolic values are 120. and 80. mm Hg, respectively.

Two useful quantities can be obtained from the systolic and diastolic pressures. These are the mean arterial pressure (MAP) and pulse pressure (PP). The MAP can be estimated using the equation $P_{MAP} = (P_{systolic} + 2 \cdot P_{diastolic})/3$. The pulse pressure is defined as $P_{PP} = P_{systolic} - P_{diastolic}$.

Specific Assignment

Write a program that uses a "BldPress" class. It is up to you to design this class in a reasonable way. The program should prompt the user for and accept input of systolic and diastolic pressure values. It should then calculate and display (in a reasonable format) the P_{MAP} and P_{PP}. The program may use *JOptionPane* methods for input and output or console input and output (but not a combination of the two).

Submission and Evaluation Requirements

Discuss your class and program designs with your instructor prior to beginning to write any code (**this is very important**). You must prepare some written documentation prior to this discussion. This documentation should include a brief description the overall program designs, a list of the Classes and methods that you plan to use in the programs, a list of the variables you plan to use in the programs and information regarding how you plan to test your programs (including "test vectors" with manually calculated results).

Your projects and classes for this assignment must be named *MapCls* and *MapClsGUI*. Your source files must contain your name, course and project (Lab 4) in comments at the top of the file.

Demonstrate your working programs to your instructor prior to leaving lab. Also, create a zip file containing the contents of your workspaces and e-mail it to your instructor. The names of your zip files must be your project name concatenated with your MSOE user name. For example, the name of my GUI program zip file would be *MapClsGUITritt.zip*.

Reference

Cooney, David O. Biomedical Engineering Principles – An Introduction to Fluid, Heat and Mass Transport. Dekker, 1976.