

ECE 330 Software Design

Homework 3

The objective of this homework is to give you experience using C++.

Target Heart-Rate Calculator

While exercising, you can use a heart-rate monitor to see that your heart rate stays within a safe range suggested by your trainers and doctors. According to the American Heart Association (AHA) (www.americanheart.org/presenter.jhtml?identifier=4736) the formula for calculating your *maximum heart rate* in beats per minute is 220 minus your age in years. Your *target heart rate* is 50-85% of your maximum heart rate. [Note: *These formulas are estimates provided by the AHA. Maximum and target heart rates may vary based on the health, fitness, and gender of the individual. Always consult a physician or qualified health care professional before beginning or modifying an exercise program.*]

Create a class called **HeartRates**. The class attributes should include the person's first name, last name, and date of birth (consisting of separate attributes for the month, day, and year of birth). Your class should have a constructor that receives this data as parameters. For each attribute, provide *set* and *get* functions. The class should also include a function **getAge** that calculates and returns the person's age (in years), a function **getMaximumHeartRate** that calculates and returns the person's maximum heart rate, and a function **getTargetHeartRate** that calculates and returns the person's target heart rate. Function **getAge** should prompt the user to enter the current month, day, and year before calculating the person's age. Write an application (main) that prompts for the person's information, instantiates an of class **HeartRates**, and prints the information from that object, including the person's first name, last name, and date of birth, and then calculates and prints the person's age in years, the maximum heart rate, and the target heart rate.

Execute your test program and copy the output to a text file, which will demonstrate proper execution.

What to submit:

Please submit a copy of your source code files, a makefile, and a text file(s) that includes the execution output that demonstrates proper operation.