

## Week 7 Lab 1

Do part of Chapter 6 Practice Program 2 (write a simple *Person* class using multiple constructors), and also do Chapter 6 Practice Program 4 (create and test an updated *Trivia* class) and, for extra credit, Exercise 2 (create and test a *Time* class)

1. Do part of Chapter 6 Practice Program 2, using the **Simple4** class in the Sakai **Week 7 → Source Code folder** as a model for how you might want to proceed (or you can just follow these instructions): Create a simple **Person** class with the following characteristics:

- Two instance variables, a *String name* and an *int age*
- A constructor that takes two parameters, a *String* and an *int*, and uses them to initialize the two instance variables
- A constructor that only takes a *String* parameter and calls the first constructor (using *this()*) with the *String* as the *name* and **0** as the *age*
- A constructor that only takes an *int* parameter and calls the first constructor with "**unknown**" as the *name* and the *int* as the *age*
- A *default constructor* that calls the first constructor with "**unknown**" as the *name* and **0** as the *age*
- A *void print()* method that prints out the **Person**'s name and age
- A *main* method that creates two **Person** objects using two different constructors and then calls their *print()* methods; you can use constructors other than the ones used in **Simple4**

2. Do Chapter 6 Practice Program **4**, create and test an updated *Trivia* class:

- Do Practice Program **4** from Chapter 5
- The *Trivia* class has two *String* instance variables, *question* and *answer*.
- Define a constructor to initialize a *Trivia* object's *question* and *answer*. (Use mutator methods, which can be private!)
- The *Trivia* class has only *getter* methods for these instance variables, so once they have been set by the constructor they can't be changed.
- The *Trivia* class should also have a ***toString()*** method to return its info (its *question* and *answer*) as a *String*.
- Write a *main* method that creates two *Trivia* objects and then uses each of those objects' *question* and *answer* instance variables (obtained by using their *getter* methods) to ask the user those two questions, reads their answer for each using *nextLine()*, and tells them whether they had the right answer in each case.
  - **Use the *String equalsIgnoreCase(...)* method to check their answer.**
- Also in *main*, print the two *Trivia* objects to show that this automatically runs their *toString()* methods.
- You can create the *Trivia* objects, interact with the user and print the objects inside of a for loop. In fact, you can use the loop control variable to customize the question and answer. (I used "some question 1" and "some answer 1" for the first question, and then "some question 2 and some answer 2" for the second question.)

3. This is inspired by Chapter 6 Exercise 2, but it is different. Create and test a *Time* class (extra credit):

- Consider a class *Time* that represents a time of day. It has attributes for the hour and minute. The hour value ranges from **0 to 23**, where the range 0 to 11 represents a time before noon. The minute value ranges from **0 to 59**. This Exercise is different from the textbook's version.
  - Write a **default constructor** that initializes the time to **0 hours, 0 minutes**.
  - Write a private method *isValid(hour, minute)* that returns *true* (a *boolean*) if the given hour and minute values are in the appropriate range.
  - Write a **void** method *setTime(hour, minute)* that sets the time only if the given values are valid; if one or both are not valid, the time is unchanged.
  - Write another version of *setTime(hour, minute, isAM)* that sets the time if the given values are valid. The given hour should be in the range **0 to 11**. The parameter *isAM* is *true* if the time is an a.m. time and *false* otherwise.
  - **Hint:** The second version of *setTime()* (an overloaded method) must check to make sure that *hour* is  $\leq 11$ , and should convert a **p.m. hour** (one where *isAM* is *false*) to that *hour + 12* to convert it to a correct afternoon time; in either case, it should then just call the first version of *setTime()*.
  - Write a *toString()* method to return the current time in hours and minutes as a *String*.
  - Write a main method that instantiates a *Time* object and invokes *setTime* more than one way.