Programming Software Systems

Lab 6

More into Java

Exercise 1

Create a class which represents Animal class and its basic properties: height, weight, color, and basic operations: eat, sleep, animalSound. Also create child classes which represent the exact animals: cow, cat, dog and override properties / methods.
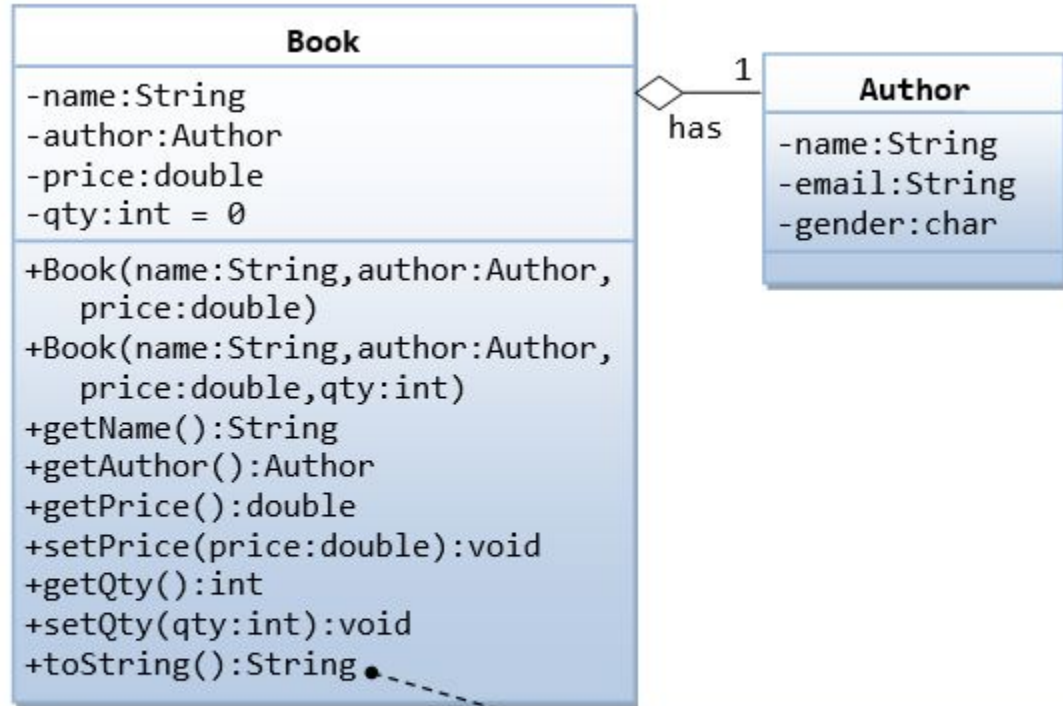
Exercise 2

Implement classes for different shapes: Circle, Rectangle, Triangle, Square, Ellipse. Add corresponding members and functions to calculate the area and perimeter of the shapes.

Note: Use inheritance for minimizing amount of code

Exercise 3

Create two classes Book and Author. The Author class should contain properties such as name, email, gender, and the Book class should contain name, author, price, quantity(qty).

Book
-name:String -author:Author -price:double -qty:int = 0

+Book(name:String,author:Author,
   price:double)
+Book(name:String,author:Author,
   price:double,qty:int)
+getName():String
+getAuthor():Author
+getPrice():double
+setPrice(price:double):void
+getQty():int
+setQty(qty:int):void
+toString():String

1

has

Author
-name:String -email:String -gender:char

"Book[name=?,Author[name=?,email=?,gender=?],price=?,qty=?]"
You need to reuse Author's toString().

Exercise 4

Create a class which implements a Calculator. The calculator should be able to perform the following operations:

    - addition   - multiplication   - division   - subtraction

Your main method should be able to receive three parameters: first number, the operation symbol which should be performed (+, -, *, /), and the second number.
Example:

- 1 + 2
- 2 * 4
- 10 / 2

Handle division to zero, if your program encounters such cases, return -1.

Your calculator should only work with positive integer numbers.

Exercise 5

Create a class Time which receives the time in seconds, minutes, hours. It should be able to advance the Time instance by one second, and returns this instance to support chaining.
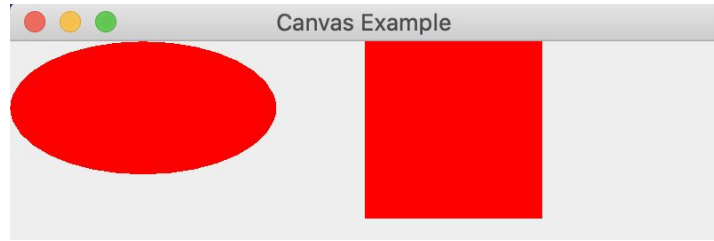
Exercise 5 (not mandatory)

Using awt packages from JDK, draw an oval shape. Create a class which extends from Canvas class, then draw an oval.
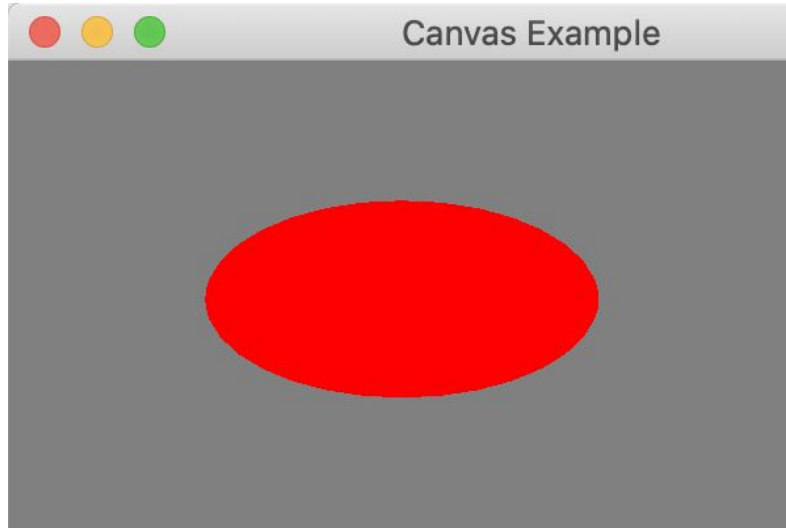
Exercise 6 (not mandatory)

Using awt packages from JDK, draw an oval, rectangle shapes next to each other. Create two classes named Oval and Rectangle which extend from Canvas class and draw the particular shape.

PSP

Understanding How You Spend Time

Date	Start	Stop	Interruption Time	Delta Time	Activity	Comments	C	U

Student _____   Date _____

Instructor _____   Class _____