Please read Section 1.7 (again), as well as Sections 3.1 through 3.3 of the textbook and then answer the following, trying not to look at your notes or at the textbook. Quiz #3, on Fri. 9 Sep., will consist exclusively of questions taken from the Part 1 of this homework.

Part I — Questions

Ex. 1. Name four different data types of Java.

Ex. 2. What would the following statement print?

```
System.out.printf("My %s has $%.2f.", "taylor", 180.3);
```

Ex. 3. What will be stored in the `myString` variable after this statement is executed?

```
String myString = String.format("My %s has %d apples.", "dentist", 3);
```

Ex. 4. Can you determine, looking at the following UML diagram, what is the name of the class, what are the methods and attributes of the class, and what are the names of the variables in the file `Circle.java`?

Circle
radius

setRadius()
getRadius()
getArea()

Ex. 5. Is there anything wrong with the following class header?

```
public class MyDemoClass;
```

Ex. 6. Consider the following method header: can you determine if the `getRadius` method can be called outside the class, what is its return type, and how many arguments it takes?

```
public double getRadius()
```

Ex. 7. Consider the following method header: can you determine if the `setRadius` method can be called outside the class, what is its return type, and how many arguments it takes?

```
public void setRadius(double rad)
```

Ex. 8. Can you determine, looking at the following UML diagram, what is the data type of the `radius` field, what is the return type of the `getRadius` method, and which methods are private?

Circle
- radius : double
+ setRadius(rad : double) : void + getRadius() : double + getArea() : double

Ex. 9. When a variable is said to to reference an object, what is actually stored in the variable?

Ex. 10. In an UML diagram, what symbol do you use to specify that a member (i.e., field or method) of a class is private? To specify that it is public?

Ex. 11. How many objects can be created from the same class?

Ex. 12. Are accessors also called getters, and mutators also called setters, or is it the other way around? Describe in a few words their uses.

Ex. 13. How many objects from the `String` class are created by the following two statements? What are their respective contents?

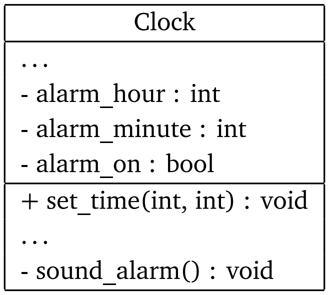
```
String s = "Publius", t="Aelius", o="Hadrianus";
String nameComplete = s + " " + t.charAt(0) + ". " + o;
```

Ex. 14. Looking at the following statement, can you tell how many arguments do the `setInfo` method take? Do their order matter? Can you tell the return type of this method?

```
String info = train.setInfo("Thomas", true, 4);
```

Part II — Programming Exercises

Ex. 1. For once, this exercise is not about writing a program. Look at the example of the alarm clock page 21 of your textbook, and try to complete the following UML diagram for a `Clock` class that would match this description. Don't forget the getters (you want to be able to read the time!).



Clock

. . .
- alarm_hour : int
- alarm_minute : int
- alarm_on : bool

+ set_time(int, int) : void
. . .
- sound_alarm() : void

Ex. 2. Write down, on a piece of paper, a program that creates a class `RomanEmperor` that holds a name, a length of a reign (expressed in whole years) and a place of birth, and write a getter and a setter for each of those fields. Then, write an application program that create three instances of this class, with Hadrian, Trajan and Antoninus Pius (you can also decide to make up the information, of course). Your program should also print the informations, using a statement like (it doesn't have to be exactly this one)

```
    System.out.printf("%s was born in %s and reigned for %d years.\n", trajan.getName(),
trajan.getPob(), trajan.getReign());
```

Then, type, compile and run your program into BlueJ.