COSC 1336 Homework 8

Relevant reading: Chapter 11

Due: Dec. 6, 2:30 pm

(Late date: Dec. 13, 2:30 pm)

40 Points

Problem 1. **[12 points]** Fill in the blank

a. An object is to a class as a cookie is to a _____.

b. An object is to a class as a _____ is to a blueprint.

c. A(n) _____ is a component of a class that references data.

d. A(n) _____ is a procedure that an object performs.

e. When you instantiate a class, you create a(n) _____.

f. Classes package together both _____ and _____.

Problem 2. **[8 points]** For each of the following, mark the letter of any true answer. More than one answer may be correct.

1. By doing which of the following can you hide a class's attributes from code outside the class?
   a. begin the attribute's name with `self.`
   b. begin the attribute's name with two underscores
   c. begin the name of the attribute with `private__`
   d. Python has no mechanism for doing this; it is only through convention that a class's attributes are not directly accessed from outside the class.
2. The _____ is automatically called when an object is created.
   a. `__init__` method
   b. `init` method
   c. `__str__` method
   d. constructor
3. If a class has a method named `__str__`, which of these is a way to call the method?
   a. call it like any other method: `object.__str__()`
   b. pass an instance of the class to the built-in `str` function
   c. the method is automatically called when the object is created
   d. pass an instance of the class to the built-in `print` function
4. A(n) _____ method gets the value of a data attribute but does not change it.
   a. retriever
   b. constructor
   c. mutator
   d. accessor
5. A(n) _____ method stores a value in a data attribute or changes its value in some other way.
   a. modifier
   b. constructor
   c. mutator
   d. accessor

Problem 3. **[20 points]** Consider the following `Month` class, and then read the instructions below it.

```
class Month:
    names = ["January", "February", "March", "April", "May", "June",
             "July", "August", "September", "October", "November",
             "December"]
    def __init__(self, num = 1):
        self.num = num

    def __str__(self):
        return Month.names[self.num-1]

    def __lt__(self, other):
        return str(self) < str(other)
```

Fill in the Python interpreter transcript below to show what the interpreter would say for each of the missing responses. The missing responses are indicated with a number that you should use to identify your answers. Assume that the transcript is executed in the order it is shown (that is, modifications to the variables persist after they are made).

I recommend that you try to fill in the missing responses based on your understanding of Python and classes, and then verify your answers with the interpreter. If you find that you are wrong about something, make sure you take the time to figure out why!

```
>>> m1 = Month(6)
>>> m1
<month.Month object at 0x4e5550>
>>> str(m1)

1. # what does the interpreter say here?

>>> m2 = Month()
>>> print(m2)

2.

>>> print(Month.names[4:7])

3.

>>> m2.num = 7
>>> print(m1.num, m1, m2.num, m2)

4.

>>> m2.names[5] = "Czerwiec"
>>> print(m1, m2)

5.

>>> print(m1.names[4:7], m2.names[4:7])

6.
```

```
>>> Month.names[1] = "Luty"
>>> m2.num = 2
>>> print(m2)
```

7.

```
>>> print(m1.num, m2.num)
```

8.

```
>>> m1.num < m2.num
```

9.

```
>>> m1 < m2
```

10.