CSC 1061 Chapter 9 Assignment (50 points)

Read Chapter 9 in your book titled "Objects and Classes"

Answer the following questions – please make sure to number them to match your book. Your only source should be your book. The page numbers might be a bit off because I have the flowable version of your book but they should give you an idea. Each problem is worth 2.5 points. Assume all code snippits are correct unless otherwise specified.

You may either answer the questions electronically in Word (or equivalent) or handwrite answers and scan. Make sure that your problems are numbered the same as this document! Upload the file to the folder in D2L. Make sure that the file uploaded is in a format that can be read (.docx, .pdf, .rtf).

1. What is object-oriented programming?

2. What is an object in OOP?

3. What is a class? What is an instantiation?

4. What is a constructor?

5. Describe the relationship between an object and its defining class.

6. How do you declare an object's reference variable?

7. How do you create an object?

8. What are the differences between constructors and methods? When will a class have a default constructor?

9. Is an array an object or a primitive-type value? Can an array contain elements of an object type? Describe the default value for the elements of an array.

10. Which operator is used to access a data field or invoke a method from an object?

11. What is an anonymous object?

12. How do you create a **Date** for the current time? How do you display the current time?

13. How do you create a **Point2D**? Suppose **p1** and **p2** are two instances of **Point2D**, how do you obtain the distance between the two points? How do you obtain the midpoint between the two points?

14. What is an accessor method? What is a mutator method? What are the naming conventions for accessor methods and mutator methods?

15. What is the output of the following code?

```
public class A {
  boolean x;
  public static void main(String[] args) {
    A a = new A();
    System.out.println(a.x);
  }
}
```

16. What are the benefits of data field encapsulation?

17. If a class contains only private data fields and no setter methods, is the class immutable?

18. If all the data fields in a class are private and of primitive types, and the class doesn't contain any setter methods, is the class immutable?

19. What is the output of the following program?

```
public class Test {
  private static int i = 0;
  private static int j = 0;
  public static void main(String[] args) {
    int i = 2;
    int k = 3;
    {
      int j = 3;
      System.out.println("i + j is " + i + j);
    }

    k = i + j;
    System.out.println("k is " + k);
    System.out.println("j is " + j);
  }
}
```

20. Describe the role of the **this** keyword.