CSC 1061 Chapter 10 Assignment (50 points)

Read Chapter 10 in your book titled "Object-Oriented Thinking"

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 unless specified differently in parenthesis. 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. If you redefine the **Loan** class in Listing 10.2 (page 370 in your book) without setter methods, is the class immutable? Why or why not?

2. What is meant by association?

3. What is aggregation? What is composition?

4. What are common relationships among classes?

5. What is a stack?

6. What happens when invoking the pop() method on a stack while size is **0**?

7. Describe primitive-type wrapper classes.

8. (4 points) How do you convert an integer into a string? How do you convert a numeric string into an integer? How do you convert a double number into a string? How do you convert a numeric string into a double value?

9. Show the output of the following code:

```
public class Test {
    public static void main(String[] args)
        Integer x = new Integer.valueOf(3);
        System.out.println(x.intValue());
        System.out.println(x.compareTo(4));
    }
}
```

10. What are autoboxing and autounboxing?

11. What is the output of the following code?

```java
public class Test {
  public static void main(String[] args) {
    System.out.println(Integer.parseInt("10"));
    System.out.println(Integer.parseInt("10", 10));
    System.out.println(Integer.parseInt("10", 16));
    System.out.println(Integer.parseInt("11"));
    System.out.println(Integer.parseInt("11", 10));
    System.out.println(Integer.parseInt("11", 16));
  }
}
```

12. (5 points). Suppose s1, s2, s3, and s4 are four strings, given as follows (this is a picture so please answer below):

```java
String s1 = "Welcome to Java";
String s2 = s1;
String s3 = new String("Welcome to Java");
String s4 = "Welcome to Java";
```

What are the results of the following expressions?

a. s1 == s2

b. s1 == s3

c. s1 == s4

d. s1.equals(s3)

e. s1.equals(s4)

f. "Welcome to Java".replace("Java", "HTML")

g. s1.replace('o', 'T')

h. s1.replaceAll("o", "T")

i. s1.replaceFirst("o", "T")

j. s1.toCharArray()

13. Does any method in the String class change the contents of the string?

14. Suppose string s is created using new String(); what is s.length()?

15. How do you convert a char, an array of characters, or a number to a string?

16. What is the difference between StringBuilder and StringBuffer?

17. (6 points) Write three statements to reverse a string **s** using the **reverse** method in the **StringBuilder** class.