UD CISC 181-011 Final exam

Wednesday, May 27, 2015

This exam on the Java programming language is worth 20% of your grade. Partial credit will be given in quarter-point gradations. Write your answers on this exam, using the backs of pages as necessary.

Q1 (2 points) Consider the following method:

```
public void countWords(String fileName) {
    FileInputStream inputFile = new FileInputStream(fileName);
    // ...
}
```

Because the `FileInputStream` constructor might throw an exception, this code will not compile. Show **both** ways to fix it by satisfying the "catch or specify" requirement.

Q2 (1 point) What is an *event handler* in Android? Explain with reference to actual events.

Q3 (1 point) Write a *generic class* `MyPair` which acts as a container for two variables named `v1` and `v2` which are of possibly different types. Include an appropriate two-parameter constructor.

Q4 (1 point) What is the purpose of the `finally` block for exception-handling?

Q5 (1 point) Name two ways that `Map`-like *key-value pairs* are used in Android.

Q6 (2 points) Suppose `A` is an `ArrayList` of `Integers`. Write code to `System.out.println()` each element of `A` using an `Iterator` and a `while` loop.

Q7 (4 points) Mark whether each of the following statements is true or false. Each answer is worth a half point.

	Statement	**True** or **False**
a	An *abstract* class can be instantiated as an object	
b	An abstract class can include both method signatures for abstract methods and complete code for non-abstract methods	
c	*Unit testing* means to modify method inputs in small steps known as "units"	
d	After an exception is thrown and a `catch` block executes, execution resumes after the `throw` statement	
e	A class can *implement* multiple interfaces but only *extend* one class	
f	*Unchecked* exceptions do not need to be caught and will not stop a program if they occur	
g	The `SimpleDateFormat` class may be used for printing and parsing dates	
h	There may be multiple instances of a particular key in a `Map`	

Q8 (2 points) What is the difference between the `Comparable` and `Comparator` interfaces? When is a `Comparator` necessary?

Q9 (2 points) What is the difference in Android between an `Activity` and a `View`? Since both are the names of classes, what does it mean to extend them?

Q10 (2 points) Suppose you have two text files and you want to know *how many words they have in common*. Which of the following Java `Collection` data structures would make this task easiest: an `ArrayList`, a `HashSet`, or a `HashMap`? Explain by discussing how you would use your chosen data structure to accomplish the task.

Q11 (2 points) On the back of this page, write the body of an Android function `void myDraw(Canvas canvas)` to draw the following logo (in color and without bitmaps), centered horizontally and vertically on the `Canvas`. The dark areas are red, and the diameter of the outermost circle should be 300 pixels. Initialize any `Paint` objects that you use inside `myDraw()`.