

[**May use one side of an 8.5 × 11 inch sheet of paper**] Show all of your work clearly in the space provided or on the additional page at the end of the exam. If the additional page is used, clearly identify to which exam question it is related. Be sure to **read each problem carefully**. Note that the exam is double sided.

1. (10 points) Determine the output of the following code when the input is **(a)** 123abc, **(b)** -2, and **(c)** 0.

```
try {
    number = Integer.parseInt(JOptionPane.showInputDialog(null, "input"));
    if(number!=0) {
        throw new Exception("Not_Zero");
    }
} catch (NumberFormatException e) {
    System.out.println("Cannot_convert_to_int");
} catch (Exception e) {
    System.out.println("Error:_" + e.getMessage());
}
```

2. (10 points) Explain the difference between the following two code segments:

```
String word = "Jon";  
word = word + "_Dough";
```

```
StringBuffer word = new StringBuffer("Jon");  
word.append("_Dough");
```

3. (10 points) Concisely and precisely describe a situation where using inheritance is appropriate and list at least two advantages of inheritance over alternative strategies that do not make use of inheritance.

4. (70 points) You are given the following class:

```
public class Midterm {
    protected String[] lines;
    protected int actualLinesInFile = 0;
    protected static int MAX_LINES_IN_FILE = 50;

    public Midterm() {
        lines = new String[MAX_LINES_IN_FILE];
    }

    public void readFile(File inFile) throws IOException {
        System.out.println("I'm broken, but if I wasn't, I would read the first " +
            MAX_LINES_IN_FILE + " lines and");
        System.out.println("stores them in the 'lines' field of this object.");
        // Note: If the file is less than MAX_LINES_IN_FILE long, this method
        // should stop attempting to read the file once it reads the last line.
    }

    public File selectFile() {
        System.out.println("I'm broken, but if I wasn't, I would use JFileChooser");
        System.out.println("to allow the user to select a file and then return a");
        System.out.println("File object associated with the selected file.");
        return new File("I am broken");
    }

    public double averageLineLength() {
        System.out.println("I'm broken, but if I wasn't, I would return the");
        System.out.println("average line length for the lines in the file.");
        return 0.0;
    }

    public int numberOfVowels() {
        System.out.println("I'm broken, but if I wasn't, I would return the total");
        System.out.println("number of vowels (upper and lowercase) in the file.");
        return 0;
    }

    public void makeCopy(String filename) throws IOException {
        System.out.println("I'm broken, but if I wasn't, I would write all of the");
        System.out.println("text in the 'lines' array to a file called "
            + filename + ".");
    }
}
```

Create your own class, `MidtermFixed`, that inherits from the `Midterm` class and override all the methods so that they do what they are supposed to do. Each method is worth between 5 and 15 points, and the rest of the class is worth 20 points.



Additional work area for any problem. Clearly identify to which problem the work on this page is related.



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