

[Closed book and notes. You may use one side of an  $8.5 \times 11$  inch sheet of paper that you personally prepared.] Show all of your work clearly in the space provided or on the additional page at the end of the exam. Be sure to **read each problem carefully**. Note that the exam is double sided. Due to time constraints, you are not required to document your source code.

1. (16 points) Consider the following code:

```
String in = JOptionPane.showInputDialog(null, "Enter stuff");
try {
    if(in.length() > 0 && in!=null) {
        System.out.println("Stuff!");
        System.out.println(Integer.parseInt(in));
    } else {
        System.out.println("Where's my stuff?");
    }
} catch(NullPointerException e) {
    System.out.println("null's make me sad");
} catch(NumberFormatException e) {
    System.out.println("Hint: integers are stuff");
}
System.out.println("Done");
```

Determine the output if the user:

(a) enters 2 and clicks “OK”

(b) enters friendly and clicks “OK”

(c) clicks “OK” without entering anything

(d) clicks “Cancel”

2. (10 points) Create a customized class, `ExamException`, that can be thrown by the following command:

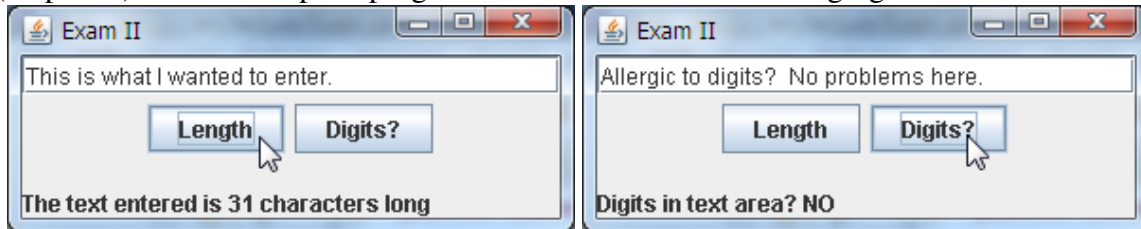
```
throw new ExamException("Question is too hard");
```

3. (10 points) Describe two distinct ways of structuring `ActionListener` classes and discuss advantages and disadvantages of each.

4. (10 points) Give an example of when you would want to use an object from the `JPanel` class.

5. (10 points) Explain why there are multiple classes that derive from the `Exception` class.

6. (44 points) Write a complete program that looks like the following figures:



The window, titled “Exam II,” is 300 pixels wide and 120 pixel high. When the “Length” button is clicked the label at the bottom is changed to: “The text entered is XX characters long” where XX is the actual number of characters in the text field at the top. When the “Digits?” button is clicked the label at the bottom is changed to: “Digits in text area? NO” if no digits are present in the text field or “Digits in text area? YES” if at least one digit is present in the text.

A number of import statements have been provided as hints. If you use other classes, you do not need to provide import statements. Place your answer on the back of this page and additional pages, if needed.

```
import java.awt.BorderLayout;  
import java.awt.Container;  
import java.awt.FlowLayout;  
import java.awt.event.ActionEvent;  
import java.awt.event.ActionListener;  
import javax.swing.JButton;  
import javax.swing.JFrame;  
import javax.swing.JLabel;  
import javax.swing.JPanel;  
import javax.swing.JTextField;
```



6. continued



6. continued



6. continued