

5. (10 points) List three layout managers and describe the key differences between them.

6. (10 points) Under what circumstances would the `finally` block in the following code not execute?

```
public static void main(String[] args) {
    Scanner in = new Scanner(System.in);
    int i = in.nextInt();
    double x = -1.0;
    try {
        x = in.nextInt();
        System.out.println(i*x);
    } catch(RuntimeException e) {
        System.out.println("ouch");
    } finally {
        System.out.println("done");
    }
}
```

7. (15 points) Draw a picture of what the GUI associated with the following program would look like.

```
1 public class ExamII extends JFrame {
3     private JTextField a;
4     private JTextField b;
5     private JTextField operator;
6     private JTextField result;
7
8     public static void main(String[] args) {
9         new ExamII();
10    }
11
12    public ExamII() {
13        this.setTitle("Exam_II");
14        this.setSize(300, 200);
15        this.setDefaultCloseOperation(EXIT_ON_CLOSE);
16        this.setLayout(new BorderLayout());
17        JPanel panel = new JPanel();
18        panel.setLayout(new GridLayout(1, 3));
19        a = new JTextField(5);
20        b = new JTextField(5);
21        result = new JTextField(20);
22        result.setEditable(false);
23        operator = new JTextField("+");
24        JButton equals = new JButton("=");
25        panel.add(a);
26        panel.add(operator);
27        panel.add(b);
28        add(panel, BorderLayout.NORTH);
29        add(equals);
30        add(result, BorderLayout.SOUTH);
31        this.setVisible(true);
32    }
33 }
```

8. Suppose we wish to make the program in the previous problem functional so that if the user types enter in either of the text fields for numbers or pushes the “=” button the result of the math operation is shown in the text field at the bottom of the window.

(a) (5 points) What interface must be implemented in order to make the GUI functional?

(b) (10 points) There are at least three ways to implement this interface:

1. With the `ExamII` class
2. With an inner class of the `ExamII` class
3. With an anonymous inner class within the `ExamII` class

Rank these from most to least desirable and explain your reasons.

(c) (25 points) Modify the code in the previous problem so that it is functional. Your code need only handle “+” and “-” operators and may crash on invalid input. You may make modifications to the code directly, but if you need to insert more then one line of code in a spot, write the code here and indicate where it should be inserted into the code on the previous problem by referring to the appropriate line number(s).



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