

Name: _____
please type or print your name

EE-WBC Exam No. 2 (100pts. - 30% of the final grade)

General Remarks

Do not use back side for answers. Back side of this test will not be graded. Attach more pages if necessary. The progress grade will be calculated based on this exam (40%), the first exam (30%) and homework (30%).

DL: __ ERR: __ PTS: __ MPTS: __ MGR: __

DL – exam difficulty level (adjustment), ERR – exam errors, PTS – exam points, MPTS – total midterm points, MGR – total midterm grade.

Problem 1 (30pts.) Ten simple questions about Java and SDK environment

Please answer the questions briefly but straightforward. DO PAY ATTENTION TO NAME CAPITALIZATION

1. When I want to compile an applet that is defined as

```
class MyApplet extends Applet { . . . }
```

I need to use a file name of _____
(please use "any" as a part of the file name if the name does not matter)

2. Assuming the file name you listed above and that the Java command line compiler is in the PATH of programs that can be run from console what is the command to compile the applet:

3. Assuming the class name and file name from question (1) and that the class contains a function `static public void main(String s[]) { . . . }` what is the command to run the program in console application mode?

4. Assuming the class name and file name from question (1) and that the class `MyApplet` is the only class in the file please list all files that need to be updated to a Web server in case you modified the applet class and recompiled it?

5. Are array of primitive type (int, double...) variables passed by value or by reference?

CIRCLE: by value / by reference / both

6. Are array of class type (Integer, Double, Button...) variables passed by value or by reference?

CIRCLE: by value / by reference / both

Total errors this page: _____

7. Why might we have to implement an action triggered by a GUI action listener by starting it in a thread? For this question Assume that the action takes some time but is not continuous, i.e. this is not the last Java homework assignment

8. Why it is very bad to use so called "deprecated" classes and methods in the new programs that you develop? Those classes and functions still work in the current Java run time environments.

9. If you need to assign a variable of double type to a variable of int type, do you need to do anything special, or is the following line allowed in Java programs? If there is anything wrong, please try to correct the marked line.

```
double x      =    1.0;
```

```
int    y      =    x      ; // <- this line, is it correct?
```

10. What is the essential functional difference between TCP/IP Socket and ServerSocket?

Problem 2A (16pts.) TCP/IP+UDP Application Layer Protocols

Please write the possible sequence of text data lines received from a Web browser and approximate replies from the server in the following case:

1. The server name is cegt201.bradley.edu
2. The file name is /counter.html
3. The file does exist on the server and is sent to the Web browser
4. The file creation date (right now) and file size (152 bytes) can be skipped in this example
(That data is typically sent but you do not worry about that in this question)
5. The mime type of the file is "text/html"
6. The connection is closed after the file is received (no keep-alive feature)

You need to write only the sequence of line exchanges and not the program to open the connection and perform it and/or check for errors. The transmitted file without HTTP protocol header is as follows

```
<html><head>
<meta http-equiv="Content-type" content="text/html; charset=iso-8859-1">
<title>Counter</title></head>
<body><p>44</p></body>
</html>
```

Write the dialog between the Web browser and the server. Use "S>" and "B>" at the beginning of each line to indicate who sends that line. Show the complete interaction.

Problem 2B (4pts.) TCP/IP+UDP Application Layer Protocols Quick Question

Who opens the network connection? Server / Web Browser

Who starts the exchange of information? Server / Web Browser

Problem 3 (25pts.) GUI Layouts and Graphics

Complete code for a GUI applet that looks like one in the provided figure. Some instructions or their portions were left out and replaced by underscore. This is GUI components, their initialization, and GUI layout exercise only.

Applet does not have any functionality, nor actions attached to the GUI components.

```
import java.awt.*;
import java.applet.Applet;
// <applet code="E2Prob3.class" height="200" width="100"> </applet>
```

```
public class E2Prob3 extends Applet {

    Label      _____;

    _____ up;

    _____ down;

    public void init() {

        setLayout(new BorderLayout());

        up = new _____ ("up");

        down = new _____ ("down");

        disp = new _____ ("", Label.CENTER);

        disp._____ ("set: 70F  cur: 69F");

        Panel P = new _____ ();

        P.setLayout(new GridLayout(1,2));

        P.add(_____);

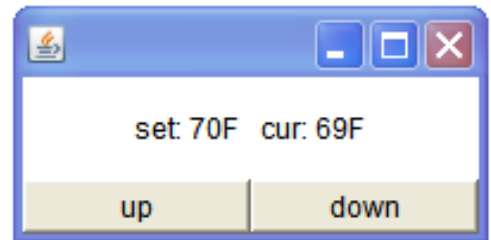
        P.add(_____);

        add("Center", _____ );

        add("South", _____ );

    }

}
```



Problem 4 (25pts.) Event Handling and Threads

Write code for a GUI applet that has one checkbox. Initially the checkbox background is `Color.yellow`. However, when it is checked it changes background to `Color.green`, and when it is unchecked it changes color to `Color.red`. The colors should be updated accordingly after the checkbox state changes. Follow the suggested class organization for event handling. Do not add unnecessary code.

```
import java.awt.*;
import java.awt.event.*;
import java.applet.Applet;
// <applet code="E2Prob4.class" height="100" width="100"> </applet>
```

```
public class E2Prob4 extends Applet implements _____ {
```

```
    private Checkbox C;
```

```
    public void init() {
```

```
        C = new Checkbox("Sensitive");
```

```
        C.setBackground(Color.yellow);
```

```
        C.add_____ ( _____ );
```

```
        add(C);
```

```
    }
```

```
// INTERFACE _____
```

```
    public void _____ ( _____ e) {
```

```
        if (e.getSource()_____ ) {
```

```
            if ( _____ ) {
```

```
                _____;
```

```
            } else {
```

```
                _____;
```

```
            }
```

```
        }
```

```
    }
```

```
}
```

