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

Problem 1 (50pts.) Ten not so simple questions about Java and SDK environment

Please circle all answers that apply to each question. Sometimes multiple answers will apply. You must not discuss or share your opinion about answer to any of these questions with anybody before the test is graded and returned. Return this test in person by 3pm on Friday 11/14/08.

1. Why might you define a method as native?
   a) To get to access hardware that Java does not know about
   b) To define a new data type such as an unsigned integer
   c) To write optimized code for performance in a language such as C/C++
   d) To overcome the limitation of the private scope of a method

2. Which of the following statements are true?
   a) An interface can only contain method and not variables
   b) Interfaces cannot have constructors
   c) A class may extend only one other class and implement only one interface
   d) Interfaces are the Java approach to addressing its lack of multiple inheritance, but require implementing classes to create the functionality of the Interfaces

3. Which of the following are Java key words?
   a) double
   b) Switch
   c) then
   d) instanceof

4. You want to loop through an array and stop when you come to the last element. Being a good java programmer and forgetting everything you ever knew about C/C++ you know that arrays contain information about their size. Which of the following can you use?
   a) myarray.length();
   b) myarray.length;
   c) myarray.size
   d) myarray.size();
5. You want to loop through a String and stop when you come to the last character. Being a good Java programmer and forgetting everything you ever knew about C/C++, you know that strings contain information about their size. Which of the following can you use?

a) myarray.length();

b) myarray.length;

c) myarray.size

d) myarray.size();

6. The following code will compile but produce no output. I was expecting to see 0 1 2 ... 9 printed to the console. What’s wrong? (Show how to fix it.)

```java
public class Bground extends Thread{
    public static void main(String argv[]){
        Bground b = new Bground();
        b.run(); // or alternatively here: b.start();
    }
    public void start run(){
        for (int i = 0; i <10; i++){
            System.out.println("Value of i = " + i);
        }
    }
}
```

7. How do you indicate where a component will be positioned using Flowlayout?

a) North, South, East, West

b) Assign a row/column grid reference

c) Pass a X/Y percentage parameter to the add method

d) Do nothing, the FlowLayout will position the component

8. How do you change the current layout manager for a container?

a) Use the setLayout method

b) Once created you cannot change the current layout manager of a component

9. Which of the following are correct event handling methods (individual methods, not complete event handling implementations, for various event handlers)?

a) mousePressed(MouseEvent e) {} 

b) MousePressed(MouseClick e) {}

c) functionKey(KeyPress k) {}

d) componentAdded(ContainerEvent e) {}

10. Which of the following are true statements about TCP/IP networking?

a) Programs can be classified as a server or a client regardless whether TCP or UDP protocol is used

b) The same socket-handling class is used for primary server and for client socket in connections using UDP protocol

c) The same socket-handling class is used for primary server and for client socket in connections using TCP protocol

d) Multicasting is done using TCP protocol
Problem 2 (50pts.) TCP/IP+UDP Application Layer Protocol

You may make or receive general comments about the approach to solving this problem but must not show or look at any other Bradley University student or alumni code in Java or C# that goes towards solving this problem. Return this test in person by 3pm on Friday 11/14/08.

Please implement POP3 protocol from the server side point of view using a multi-threaded POP3 server on port 110. Each time a client connects and provides whatever user ID and password those credentials should be accepted. The client software should always find only one email in the mailbox with the following parameters:
- From: <use your email address at Bradley>
- To: olekmali@ieee.org
- Subject: WBC-exam2
- Body: enter your first and last name and the current time and date as one line

The server should acknowledge but ignore any attempts to delete the email. You have to “implement” at least USER, PASS, RSET, TOP, RETR, STAT, LIST, QUIT. Each command may have hardcoded reply from the server as the content of a mailbox never changes. In order to simplify the program you may allow to retrieve email even if the client did not authenticate using USER and PASS prior to retrieval. In case you cannot complete the program do your best. If so then do your best so that your code could compile and have at least partial functionality.

Paste your code below so that instructor can copy and paste it and verify if it works. The instructor will test your program with ThunderBird email client, or in case it fails will test the partial functionality of the server using telnet and impersonating the e-mail client.

Note: you must be an administrator of a computer in order to run any server on any port below 1024. If you do not own a computer set up the server on port above 1024 and test with an email program (Thunderbird, Outlook Express, Eudora, etc.) by setting up the location of your server at the custom port of your choice instead of the default 110.

Submission

Staple your code after this page and also e-mail it to the instructor as a file attachment - *.java file(s) only, do not zip multiple files together, ask for “return receipt”. Set the subject of your email to “wbc-exam2”. The electronic version will be used for testing, and the printed source code will be used for code inspection, grading, and writing any comments back to you.

Somewhat modified source code for this server to be posted in the Java Console examples in the TCP/IP application level protocols section of the course notes.

Quite common mistakes:
- upon connection the server should send immediately “+OK\n”
- email (RETR|TOP) there should be an empty line between email header and the body
- email (RETR|TOP) body does not start with word Body:
- email (RETR|TOP) should be always terminated with \n
Total errors this page: ____