

1. Define the following terms:

- a. StringBuffer
- b. Container
- c. SWT
- d. ZipInputStream
- e. interface

2. Suppose a text file contains the following lines of text, in this format:

This is a test  
it is only a test.

- a. When the file is saved, you notice it takes 34 bytes. Why that many?
- b. When you use a zip stream to write to disk, you might notice it actually grows in size....why would such a thing happen?



- 5.
- a. Give two advantages of generics.

- b. Why is the following illegal?

```
if (myList instanceof ArrayList<Integer>) {...}
```

6. Describe how to create graphical user interface (GUI) in Java that will allow the user to enter a mail message. The interface should allow the user to specify the To:, Cc: and Subject: fields of the mail message, the body of the message and should have a means for the user to initiate the following actions: send the message, save the message to a file, add an attachment, and abort the operation (note: you don't need to consider the interfaces to implement these actions). The interface should be laid out in reasonable way and how to use the interface should be readily apparent.

Only show how to create the user interface - nothing needs to be done when fields are entered, buttons pushed, etc. Assume your code is embedded in the constructor of the following class:

```
import java.awt.*;
```

```
class MailGUI extends Frame {  
    MailGUI() {  
  
        // your code to create the GUI  
    }  
}
```

7. (Extra Credit) Threads in Java allow several things to be done in parallel. This introduces some unique problems that do not occur in non-threaded (or single-threaded) code. Describe one of these problems, and indicate what facilities exist in the Java language to solve the problem.

