Foundations of Programming

(a) What is the difference between MouseListener and MouseAdapter? [3 marks]

(b) Via suitable HTML, the compiled version of the following Java code is presented to the appletviewer application:

```java
import java.applet.Applet;
import java.awt.Graphics;
import java.awt.event.MouseAdapter;
import java.awt.event.MouseEvent;

public class MouseTest extends Applet {
    private String s = "Hello World";

    public void init() {
        this.addMouseListener(new ML());
    }

    public void paint(Graphics g) {
        g.drawRect(15, 15, 270, 70);
        g.drawString(this.s, 100, 60);
    }

    class ML extends MouseAdapter {
        public void mousePressed(MouseEvent e) {
            MouseTest.this.s = "Mouse Pressed";
        }
    }
}
```

Briefly explain what the code does and describe the initial appearance of the applet window. [6 marks]

(c) The programmer moves the mouse pointer into the applet window, presses the mouse button and expects a new message to appear. Why doesn’t it appear? Give three ways in which the expected result can be provoked without leaving appletviewer. [6 marks]

(d) The line `MouseTest.this.paint(MouseTest.this.getGraphics());` is added to the method `mousePressed()`. Describe the behaviour now if the mouse button is pressed when the pointer is in the applet. [3 marks]

(e) What would have been a more appropriate amendment to the method `mousePressed()`? Explain. [2 marks]