

Please fill in your Student Number and Name.

Student Number : _____

Name:

Student Number:

University of Cape Town ~ Department of Computer Science
Computer Science 1016S ~ 2008
Test 3

Question	Max	Mark	Internal	External
1	7			
2	13			
3	10			
TOTAL	30			

Marks : 30
Time : 40 minutes
Instructions:

- a) Answer all questions.
- b) Write your answers in the space provided.
- c) Show all calculations where applicable.

Question 2: GUIs [13]

The following program produces the GUI shown. Only some of the elements of the GUI are indicated. In particular, the buttons marked A and B here will have different labels in the actual GUI.

Buttons Program:

```
import javax.swing.JFrame;
import javax.swing.JButton;
import java.awt.FlowLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

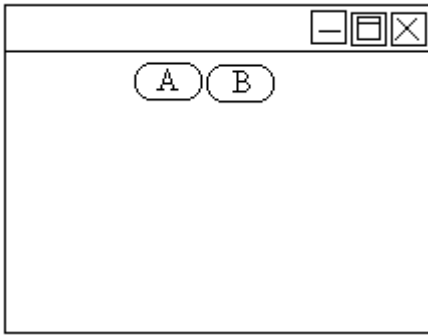
public class Buttons extends JFrame implements ActionListener
{
    JButton one;
    JButton two;

    public Buttons()
    {
        super("Buttons");
        setSize(400, 200);
        setLayout(new FlowLayout());
        one = new JButton("one");
        two = new JButton("one");
        one.addActionListener(this);
        two.addActionListener(this);
        add(one);
        add(two);
    }

    public void actionPerformed(ActionEvent e)
    {
        String choice = e.getActionCommand();
        if (choice.equals("one"))
        {
            System.out.println(one.getText());
            two.setActionCommand("two");
        }
        else
            System.out.println(choice);
    }

    public static void main(String[] args)
    {
        Buttons gui = new Buttons();
        gui.setVisible(true);
    }
}
```

Buttons GUI:



a) Redraw the GUI as it will appear when the program is run. That is, fill in any information that is missing or mislabelled in the diagram above. [3]

b) Write down what the program does when the following actions are performed.

i) Click button A first, followed by button B, followed by button A. [1]

ii) Click button B first, followed by button A, followed by button B. [1]

- d) The Principle of Utility in Utilitarianism can also be called [1]
- A. the Categorical Imperative.
 - B. the Difference Principle.
 - C. the Greatest Happiness Principle.
 - D. the Social Contract.
 - E. the Ten Commandments.
- e) Two philosophers closely associated with utilitarianism are [1]
- A. Jeremy Bentham and John Stuart Mill.
 - B. Immanuel Kant and Jeremy Bentham.
 - C. Immanuel Kant and John Stuart Mill.
 - D. John Stuart Mill and John Rawls.
 - E. Jean-Jacques Rousseau and John Rawls.
- f) Utilitarianism is an example of [1]
- A. the divine command theory.
 - B. a cultural relativism theory.
 - C. the social contract theory.
 - D. a teleological theory.
 - E. a relativistic theory.