

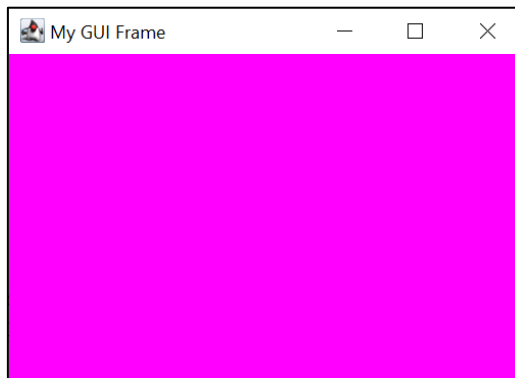
TK1143 - Tutorial 5

Graphical User Interface (GUI)

Section A

Topic: JFrame and ContentPane.

1. Complete the following class (L1-L3, L5-L6 and L10, L12-L14) to create a Java frame whose title is “My GUI Frame”, width is 350, height is 250, and content pane’s background color is magenta (as shown below).



```
L1  import _____ //import package awt  import java.awt.*;
L2  import _____ //import package swing import java.swing.*;
L3  class MyFrame extends _____ {
L4      public MyFrame () {
L5          Container pane = _____ getContentPane( );
L6          pane._____ //set background setBackground(Color.magenta);
L7      }
L8      public static void main(String[] args)
L9      {
L10         _____ MyFrame frame = new MyFrame( );
L11         _____ //create frame
L12         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
L13         _____ //set title frame.setTitle("My GUI Frame");
L14         _____ //set size frame.setSize(350, 250);
L15         _____ //set visible frame.setVisible(true);
L16     }
```

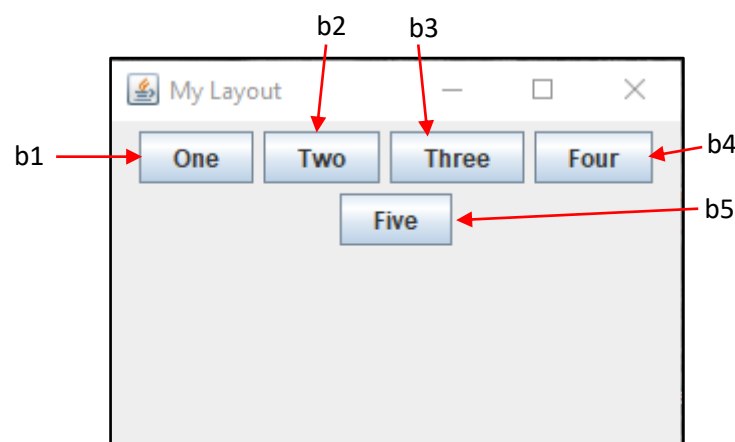
Topic: Layout Manager, GUI Component and JPanel

2. Name one Java Swing components that can be used for the following purposes:

Purpose	Component
a. Displays text on the Java form but cannot receive any input.	JLabel

b. User can choose only one from many options	JRadioButton
c. Displays lines of text that can be chosen by user	JList
d. A component that hides text from user.	JPasswordField
e. Display information, warning or input	JOptionPane
f. User can select more than one items from many items to choose.	JCheckBox
g. User can key in only one line of text inside it	TextField
h. Provide a list of items from which the user can make a single selection.	JComboBox
i. It has a label and generates an event when pressed.	JButton

3. Complete the line of statement based on the following figure.



```

L1  import _____ import java.awt.*;
L2  import _____ import javax.swing.*;
L3
L4  class MyLayout extends _____ { JFrame
L5      _____ //Declare component
L6      private JButton b1, b2, b3, b4, b5;
L7      public MyLayout() {
L8          Container pane = getContentPane();
L9          pane.setLayout(new FlowLayout(FlowLayout.CENTER)); //Set Layout
L10         b1=new JButton("One"); //create b1
L11         _____ //create b2 b2 = new JButton("Two");
L12         _____ //create b3 b3 = new JButton("Three");
L13         _____ //create b4 b4 = new JButton("Four");
L14         _____ //create b5 b5 = new JButton("Five");
L15         pane.add(b1); //Add b1
L16         _____ //Add b2 pane.add(b2);
L17         _____ //Add b3 pane.add(b3);
L18         _____ //Add b4 pane.add(b4);
L19         _____ //Add b5 pane.add(b5);
L20     }
L21
L22     public static void main(String[] args) {

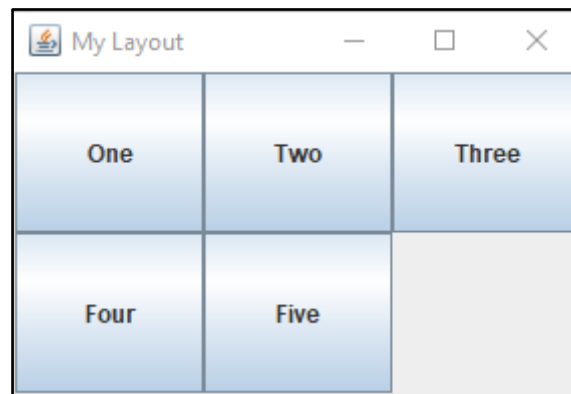
```

```

L23     MyLayout frame = new MyLayout();
L24     frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
L25     frame.setTitle("_____"); My Layout
L26     frame.setSize(300, 200);
L27     frame.setVisible(true);
L28     }
L29     }

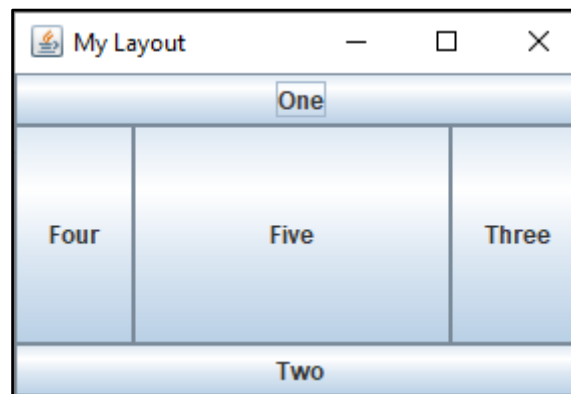
```

4. Modify the line of statement of *Question 3 in L9* to set this Layout in Container (as shown below).



`pane.setLayout(new GridLayout(2,3));`

5. a) Modify the line of statement of *Question 3 in L9, L15-L19* based on the following figure.



```

L9     pane.setLayout( ); //Set Layout
L15    pane.add(b1,BorderLayout.NORTH); //Add b1
L16    pane.add(b2,BorderLayout.SOUTH); //Add b2
L17    pane.add(b3,BorderLayout.EAST); //Add b3
L18    pane.add(b4,BorderLayout.WEST); //Add b4
L19    pane.add(b5,BorderLayout.CENTER); //Add b5

```

b) Based on *Question 5a*) sketch the output if we remove or comment statement(s)

(i) L19

(ii) L18

(iii) L17 & L18

(iv) L6

Remove/comment L19	Remove/comment L18
	
Remove/comment L17 & L18	Remove/comment L16
	

6. Consider the following statements.

```

L1  import javax.swing.*;
L2  import java.awt.*;
L3
L4  public class TextField extends JFrame {
L5      private JLabel name, matric;
L6      private JTextField textName, textMatric;
L7
L8      public TextField()
L9      {
L10         Container pane = getContentPane();
L11         pane.setLayout(new GridLayout(2,1));
L12

```

```

L13         name = new JLabel("Name");
L14         textName = new JTextField(20);
L15         matric = new JLabel("Matric No");
L16         textMatric = new JTextField(20);
L17         pane.add(name);
L18         pane.add(textName);
L19         pane.add(matric);
L20         pane.add(textMatric);
L21     }
L22
L23     public static void main(String [] args) {
L24         TextField frame = new TextField();
L25         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
L26         frame.setTitle("Student Info");
L27         frame.setSize(300, 100);
L28         frame.setVisible(true);
L29     }
L30 }

```

- a) How many components display in the frame? List the name and type of components involve based on the following statements.

4 Components in total

2 Labels: name, matricNo

2 Text Fields: textName, textMatric

- b) Sketch the expecting output

Name	
Matric No	

7. Consider the following statements.

```

L1     import javax.swing.*;
L2     import java.awt.*;
L3
L4     public class CheckBox extends JFrame {
L5         private JCheckbox java, c, python;
L6
L7         public CheckBox()
L8         {
L9             Container pane = getContentPane();
L10            pane.setLayout(new FlowLayout());

```

```

L11
L12     java = new JCheckBox("Java");
L13     c = new JCheckBox("C++");
L14     python = new JCheckBox("Python");
L15     pane.add(java);
L16     pane.add(C);
L17     pane.add(python);
L18 }
L19
L20 public static void main(String [] args) {
L21     CheckBox JFrame = new CheckBox();
L22     frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
L23     frame.setTitle("Programming");
L24     frame.setSize(300, 100);
L25     frame.setVisible();
L26 }
L27 }

```

- a) Trace and fix if have any error(s) in the above statements.

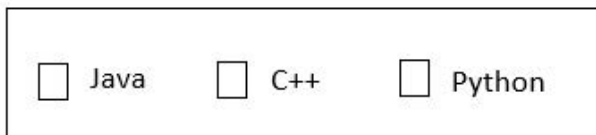
L5 : private JCheckBox java, c, python;

L16 : pane.add(c);

L21 : CheckBox frame = new CheckBox();

L25 : frame.setVisible(true);

- b) Sketch the expecting output

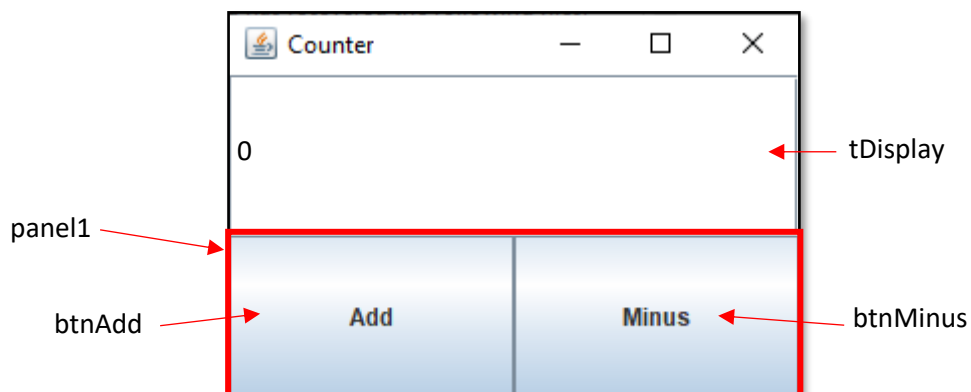


- c) What the difference between checkbox and radio button?

Radio Button : represent mutually exclusive selections, circle with a dot inside

Check Box : represent mutually inclusive, square with a checkmark inside

8. Consider the following figure.



a) What is the purpose of panel1?

To make together a combination a GUI components in the same position

b) Explain the similar and different between frame and panel?

Difference : Frame has its own Title and ContentPane whereas panel doesn't have both of them.

Similarity : both the frame and panel are containers.

c) Complete the line of following statements.

```
L1  import javax.swing.*;
L2  import java.awt.*;
L3
L4  public class Counter extends JFrame
L5  {
L6      _____ //declare panel1      private JPanel panel1;
L7      _____ //declare tDisplay    private JTextField tDisplay;
L8      _____ //declare btnAdd and btnMinus
L9                                      private JButton btnAdd, btnMinus;
L10     public Counter()
L11     {
L12         Container pane = getContentPane(); //get content pane
L13         pane.setLayout(new GridLayout(2,1)); //set layout pane
L14         tDisplay = new JTextField("0"); _____ //create tDisplay
L15
L16         JPanel panel1 = new JPanel(); //create panel1
L17         panel1.setLayout(new GridLayout (1,2)); //set layout panel1
L18         btnAdd = new JButton("Add"); _____ //create btnAdd
L19         btnMinus = new JButton("Minus"); //create btnMinus
L20         panel1.add(btnAdd); _____ //add btnAdd in panel1
L21         panel1.add(btnMinus); _____ //add btnMinus in panel1
L22
L23
L24         pane.add(tDisplay); _____ //add tDisplay in pane
L25         pane.add(panel1); _____ //add panel in pane
L26     }
L27
L28     public static void main (String[] args)
L29     {
L30         Counter frame = new Counter();
L31         frame.setTitle("Counter");
```

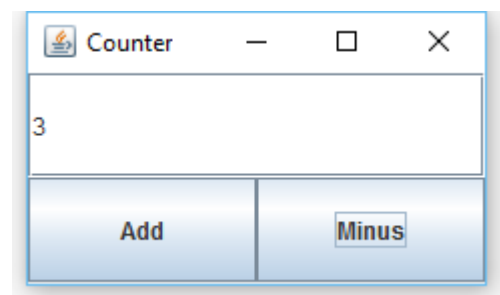
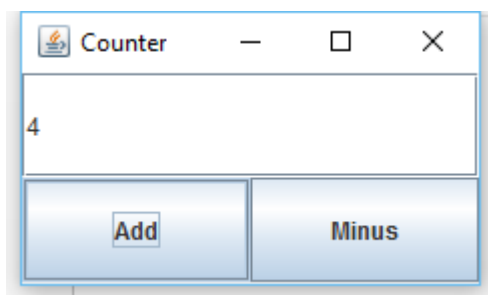
```

L32         frame.setSize(300, 200);
L33         frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
L34         frame.setVisible(true);
L35     }
L36 }

```

Topic: Event Handling.

9. Based on previous question (*Question 8*), write the code statements to handle event so that when the Add button in the GUI is clicked, the number in the box will increased by 2, meanwhile if Minus button is clicked, the number in the box will decrease by 1 as shown in the following figures.



Step 1: The previous class Counter should import event package (*add in L3*) and implement an event listener (*modify L4*).

```

L3  import java.awt.event.*;
L4  public class Counter extends JFrame implements ActionListener

```

Step 2: Register event listener with the appropriate event source (component in the GUI) in the previous constructor (write statement in L22-L23).

```

L22  btnAdd.addActionListener(this);
L23  btnMinus.addActionListener(this);

```

Step 3: Write the code to handle event as shown in the above figures (insert the statement before main method).

```

public void actionPerformed(ActionEvent e) {

    Object obj = e.getSource();
    tDisplay.getText();

    if (obj == btnAdd){
        value = value +2;
        tDisplay.setText(" "+ value);
    }
    else
    {
        value = value -1;
        tDisplay.setText(" "+value);
    }
}

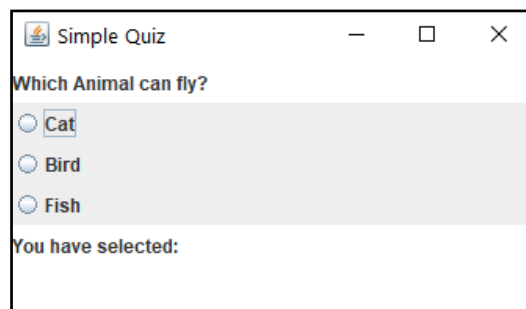
```


Section B

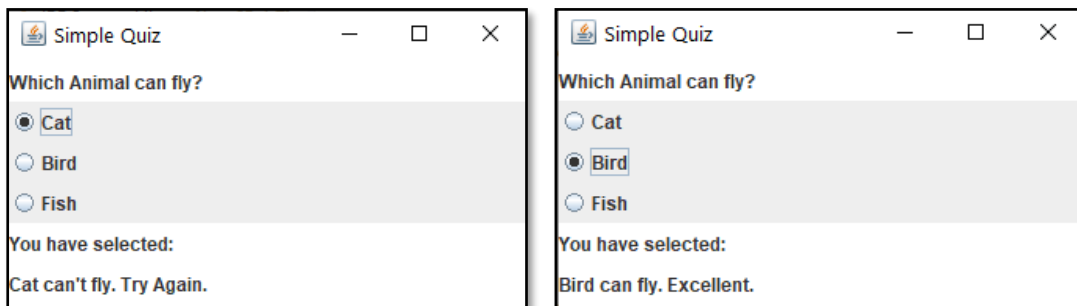
Practice - Question 1

Write the GUI code statements and event for the following figure. User can choose only one answer from the radio button. The selected answer will be display in the text field such as the following figure. (Set frame size 350, 200).

Before user click radio button



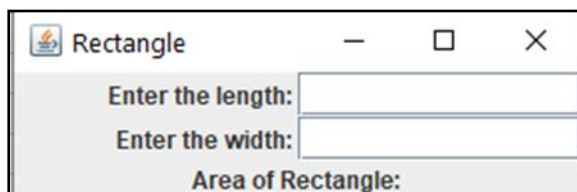
After user click radio button



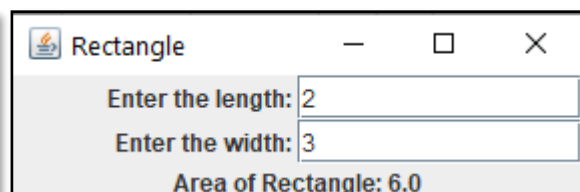
Practice - Question 2

Write the GUI code statements and event for the the following figure. The output of rectangle area should be display such as the following figure after user insert the data and click “enter”. (Set frame size 300, 100).

Before user insert the data:

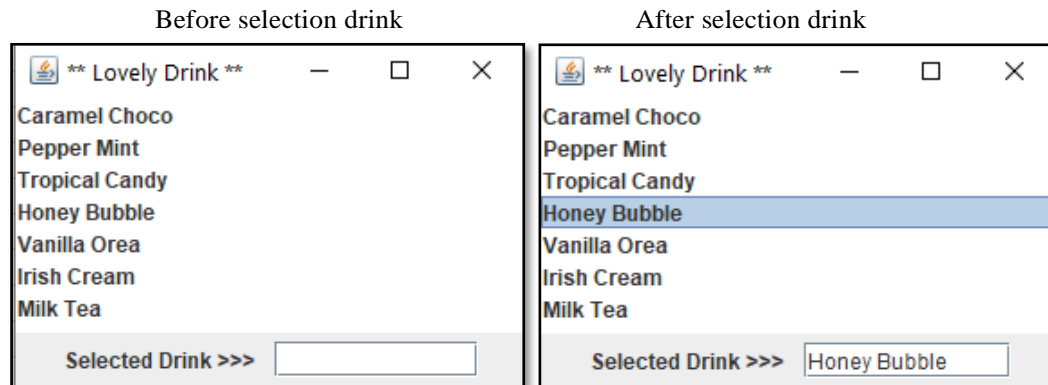


After user insert the data and click enter:



Practice - Question 3

Write the GUI code statements and event for the following figure. Customer can choose from the list of “Lovely Drink”. The selected item will be display in the text field such as the following figure. (Set frame size 300, 200).



Assignment – Question 4

A company named ‘Create Your Own Pizza’ is a small and famous homemade pizza in rural area at Kelantan. Since the company doesn’t have enough staff and the pizza is hot selling due to very cheap and tasty, the company only limited one pizza for only one customer. The company has a very traditional way on ordering pizza. Only one staff will handle the order and the company doesn’t have any system users to order the pizza. You as a freelance programmer try to help them to develop a simple order system for Create Your Own Pizza. The system should have some graphical user interface and related event for ordering the pizza. Figure 1 below show the GUI of the system.

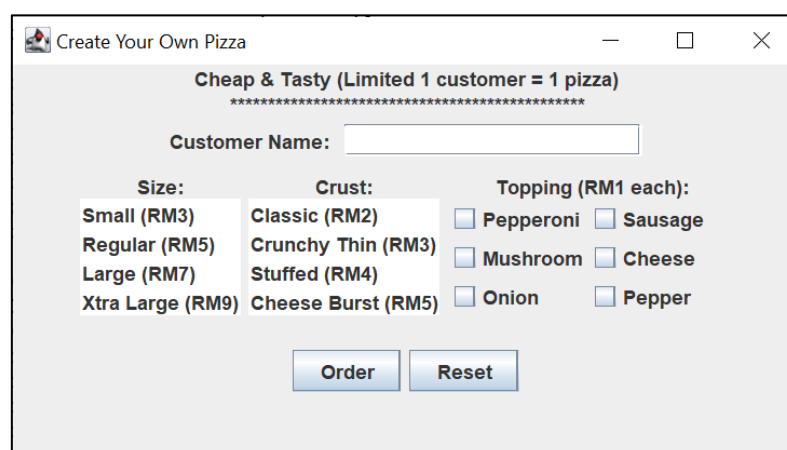


Figure 1

Customer must enter name, select size, crust and topping of pizza. The figure 2 below show the GUI when the form completed and order button clicked.

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name: Hayfa Syakirah

Size:	Crust:	Topping (RM1 each):	
Small (RM3)	Classic (RM2)	<input type="checkbox"/> Pepperoni	<input checked="" type="checkbox"/> Sausage
Regular (RM5)	Crunchy Thin (RM3)	<input checked="" type="checkbox"/> Mushroom	<input type="checkbox"/> Cheese
Large (RM7)	Stuffed (RM4)	<input type="checkbox"/> Onion	<input checked="" type="checkbox"/> Pepper
Xtra Large (RM9)	Cheese Burst (RM5)		

Hi Hayfa Syakirah. Your total order is RM10.00. Thank you.

Figure 2

If the reset button clicked, all the data selected and the name filled before will be reset and it will produce the following GUI.

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size:	Crust:	Topping (RM1 each):	
Small (RM3)	Classic (RM2)	<input type="checkbox"/> Pepperoni	<input type="checkbox"/> Sausage
Regular (RM5)	Crunchy Thin (RM3)	<input type="checkbox"/> Mushroom	<input type="checkbox"/> Cheese
Large (RM7)	Stuffed (RM4)	<input type="checkbox"/> Onion	<input type="checkbox"/> Pepper
Xtra Large (RM9)	Cheese Burst (RM5)		

Figure 3

If the form is not completed such as the following figure and the order button is clicked, the feedback will display at the bottom with the message “Please complete the form. TQ”

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size:	Crust:	Topping (RM1 each):	
Small (RM3)	Classic (RM2)	<input type="checkbox"/> Pepperoni	<input type="checkbox"/> Sausage
Regular (RM5)	Crunchy Thin (RM3)	<input type="checkbox"/> Mushroom	<input type="checkbox"/> Cheese
Large (RM7)	Stuffed (RM4)	<input type="checkbox"/> Onion	<input type="checkbox"/> Pepper
Xtra Large (RM9)	Cheese Burst (RM5)		

Please complete the form. TQ

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size: ☐ Small (RM3) ☐ Regular (RM5) ☐ Large (RM7) ☐ Xtra Large (RM9)

Crust: ☐ Classic (RM2) ☐ Crunchy Thin (RM3) ☐ Stuffed (RM4) ☐ Cheese Burst (RM5)

Topping (RM1 each): ☐ Pepperoni ☐ Sausage ☐ Mushroom ☐ Cheese ☐ Onion ☐ Pepper

Please complete the form. TQ

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size: ☐ Small (RM3) ☐ Regular (RM5) ☐ Large (RM7) ☐ Xtra Large (RM9)

Crust: ☐ Classic (RM2) ☐ Crunchy Thin (RM3) ☐ Stuffed (RM4) ☐ Cheese Burst (RM5)

Topping (RM1 each): ☐ Pepperoni ☒ Sausage ☐ Mushroom ☐ Cheese ☒ Onion ☐ Pepper

Please complete the form. TQ

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size: ☐ Small (RM3) ☐ Regular (RM5) ☐ Large (RM7) ☐ Xtra Large (RM9)

Crust: ☐ Classic (RM2) ☐ Crunchy Thin (RM3) ☐ Stuffed (RM4) ☐ Cheese Burst (RM5)

Topping (RM1 each): ☐ Pepperoni ☒ Sausage ☐ Mushroom ☐ Cheese ☒ Onion ☐ Pepper

Please complete the form. TQ

Create Your Own Pizza

Cheap & Tasty (Limited 1 customer = 1 pizza)

Customer Name:

Size: ☐ Small (RM3) ☐ Regular (RM5) ☐ Large (RM7) ☐ Xtra Large (RM9)

Crust: ☐ Classic (RM2) ☐ Crunchy Thin (RM3) ☐ Stuffed (RM4) ☐ Cheese Burst (RM5)

Topping (RM1 each): ☐ Pepperoni ☐ Sausage ☐ Mushroom ☐ Cheese ☐ Onion ☐ Pepper

Please complete the form. TQ

Note:

- Pizza Size and Crust only can be selected by ONE selection.
- Topping can be selected by multiple selections.