DSA Week 14 Lab Activity (Week10Lab2)

Using the lab computers create the following Java program using jGrasp!

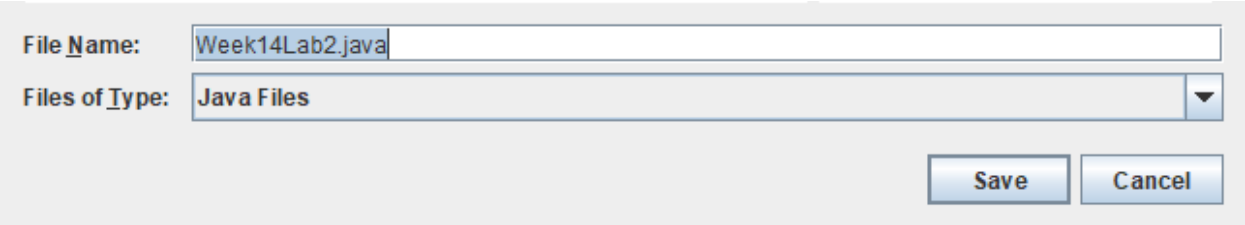
Step 1: Login to your lab computer and create a new java file in jGrasp.

Step 2: When the window below appears. Type the following code into jGrasp.

```
/* DSA Week 14 Lab 2 */

import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
import java.util.ArrayList;

public class Week14Lab2 extends JFrame {
    private ArrayList<String> todoListData;
    private JList<String> todoList;
    private JTextField inputField;
    private DefaultListModel<String> listModel;

    //create a constructor that contains most of the programming logic
    public Week14Lab2() {
        setTitle("To-Do List (Using ArrayList)");
        setSize(400, 300);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        setLocationRelativeTo(null);
        setLayout(new BorderLayout());

        //Initialize ArrayList data structure for tasks
        todoListData = new ArrayList<>();
        listModel = new DefaultListModel<>();
        todoList = new JList<>(listModel);

        //Create input field and add button at the top UI
        JPanel inputPanel = new JPanel();
        inputField = new JTextField(20);
        JButton addButton = new JButton("Add");
        inputPanel.add(inputField);
        inputPanel.add(addButton);

        //Position list in the center
        JScrollPane scrollPane = new JScrollPane(todoList);

        //Create a remove button at the bottom UI
        JButton removeButton = new JButton("Remove Selected");

        add(inputPanel, BorderLayout.NORTH);
        add(scrollPane, BorderLayout.CENTER);
        add(removeButton, BorderLayout.SOUTH);

```

```
44        //Add button which adds a new task
45        addButton.addActionListener(
46           e -> {
47              String task = inputField.getText().trim();
48              if (!task.isEmpty()) {
49                 todoListData.add(task);  // Add to ArrayList
50                 listModel.addElement(task);  // Update the GUI list
51                 inputField.setText("");  // Clear input field
52              } else {
53                 JOptionPane.showMessageDialog(this, "Please enter a task.");
54              }
55           });
56
57        //Remove button which removes a selected task
58        removeButton.addActionListener(
59           e -> {
60              int selectedIndex = todoList.getSelectedIndex();
61              if (selectedIndex != -1) {
62                 todoListData.remove(selectedIndex);  // Remove from ArrayList
63                 listModel.remove(selectedIndex);  // Remove from GUI list
64              } else {
65                 JOptionPane.showMessageDialog(this, "Select a task to remove.");
66              }
67           });
68     }
69
70     //main method
71     public static void main(String[] args) {
72        SwingUtilities.invokeLater(() -> new Week14Lab2().setVisible(true));
73     }
74  }
```

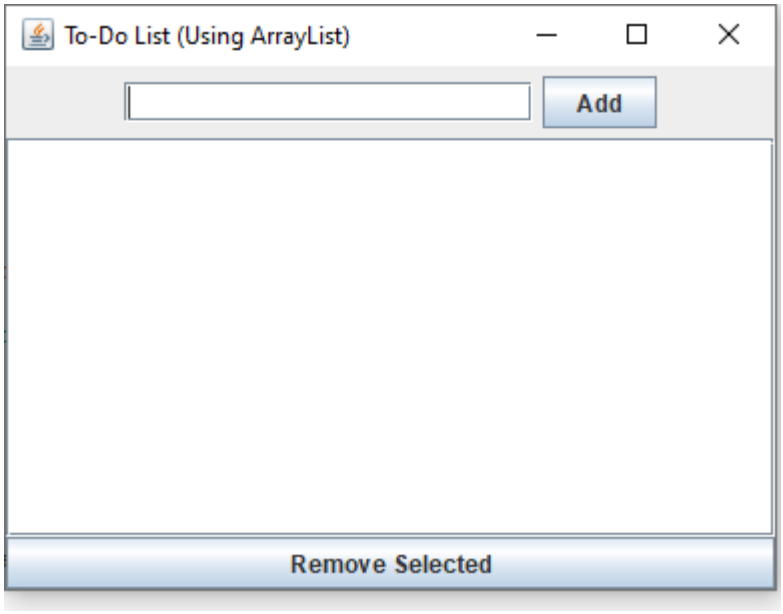
Step 3: Go to **file/save** to save your java program as **Week14Lab2**



Step 4: After saving, compile (**click on compile icon or on your keyword hold Ctrl + B**) to check for syntax errors.

Step 5: If compiling is successfully then run (**click on the find and run main method icon or on your keyboard hold Ctrl + R**) your program.

Step 6: If run is successful then you should see the following pop-up window. Add your task to the list and remove by select from the list.



Step 7: Week14Lab2 Completed! This is your first GUI Java programming using Swing.

Step 8: To close the application. Click either one of the options shown below.