Graphical User Interfaces

Advanced GUI Components

COMP2603
Object Oriented Programming 1

Week 6

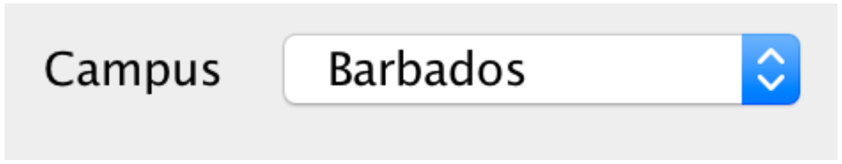
Outline

- Graphical User Interfaces
  - Advanced GUI Components
    - ComboBox
    - Radio Button
    - Check Box

Advanced GUI Components

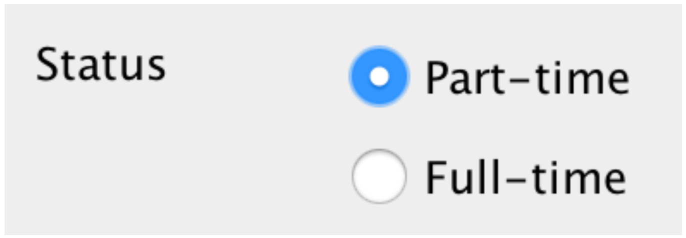
Three advanced GUI components are:

- Combo Box



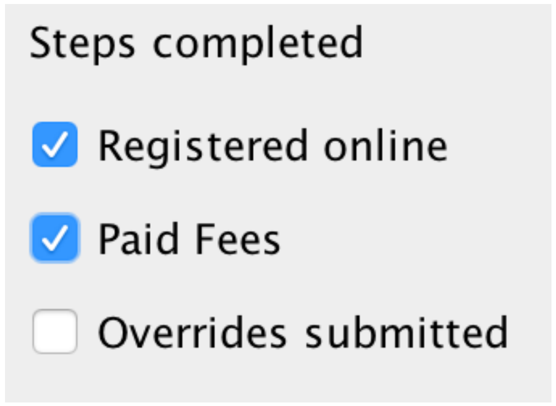
Campus: Barbados

- Radio Button



Status
[✓ Part-time]
Full-time

- Check Box



Steps completed
[✓ Registered online]
[✓ Paid Fees]
Overrides submitted

Combo Box

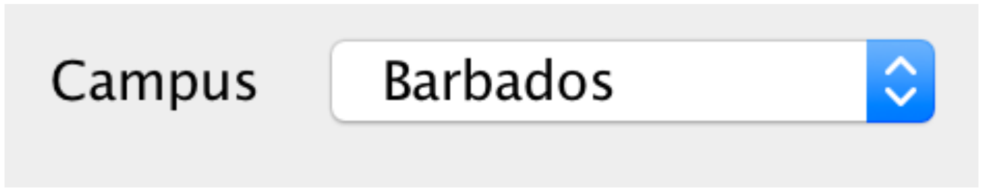
A combo box combines a button with a drop-down list.

It is available in Swing as `JComboBox`

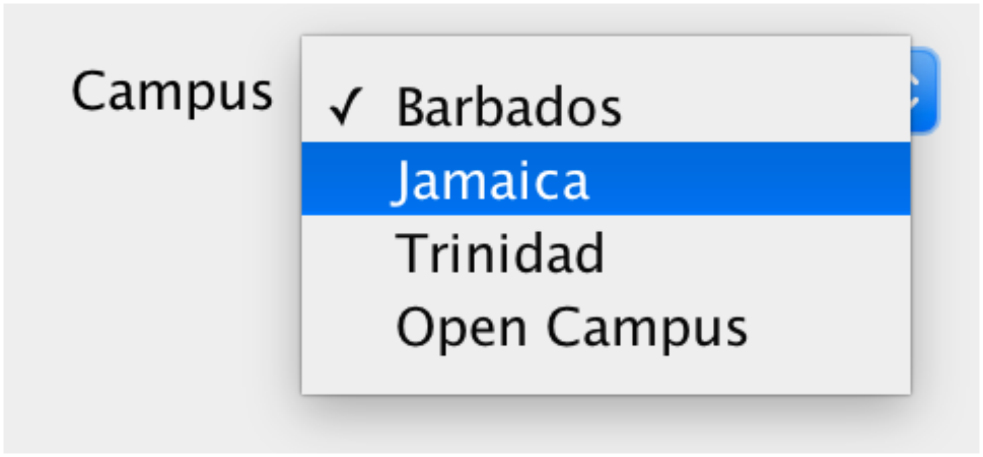
If a user clicks on the button, a drop-down list is displayed.

The user can then scroll down the drop-down list and select a value which is then displayed.

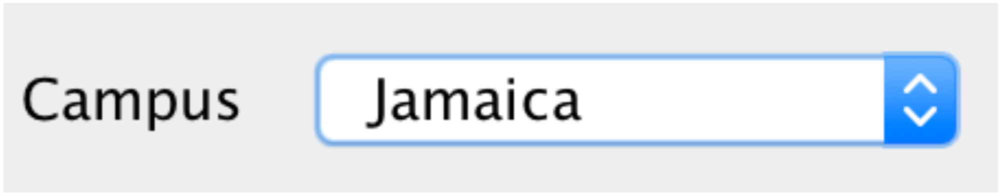
Combo Box Examples



Automatic option displayed



Selecting from the list



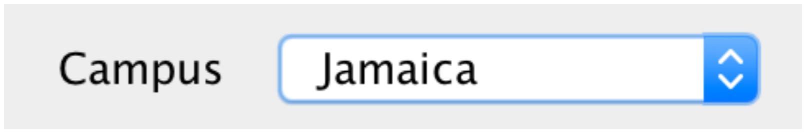
Selected option displayed

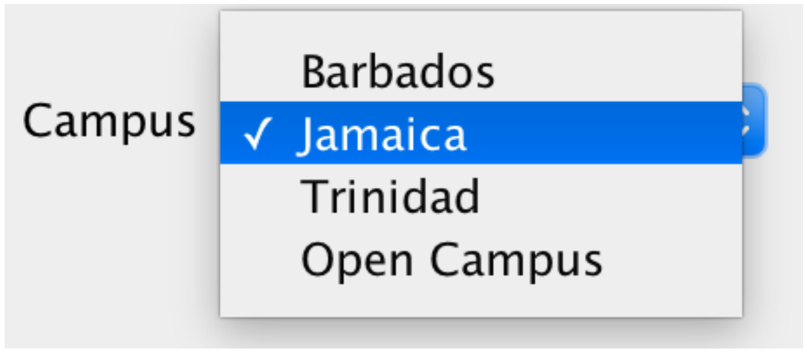
Creating a Combo Box

```
/* short hand for creating an array and filling it with
data */
String[] countries = new String{“Barbados”, “Jamaica”,
“Trinidad”, “Open Campus”};

// #1 Creating a combo box and passing in the array
JComboBox countriesCB = new JComboBox(countries);

// #2 Creating a combo box and setting options
JComboBox countriesCB  = new JComboBox();
countriesCB.addItem(“Barbados”);
countriesCB.addItem(“Jamaica”);
countriesCB.addItem(“Trinidad”);
countriesCB.addItem(“Open Campus”);
```

Combo Box Methods
Automatic Position of Selected Item

```
//#1 Automatically position combo box at particular option
countriesCB.setSelectedIndex(1);  // Jamaica

//#2 Automatically position combo box at particular option
countriesCB.setSelectedItem(“Jamaica”);  // Jamaica
```





Combo Box Methods
Getting Value of Selected Item

```
/* Retrieve the Object selected from the combo box
   and get its String representation */
String country = countriesCB.getSelectedItem().toString();
```

Combo Box Methods
Setting the Value to a Selected Item

```
// Suppose we have a Student object with a campus location
String country = student.getCampusLocation();

/* If we want to set the combo box automatically to this
location, we have to write a method in our GUI class to parse
the data model of the combo box and extract the index of the
student’s country. Return -1 if not found */
int countryIndex = getCountryIndex(country);

/* If valid, set the combo box to display country at that index
if(countryIndex >= 0)
   countriesCB.setSelectedIndex(countryIndex);
```

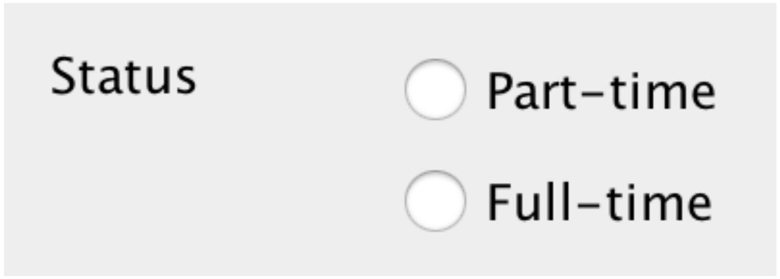
https://docs.oracle.com/javase/tutorial/uiswing/components/combobox.html

Radio Button

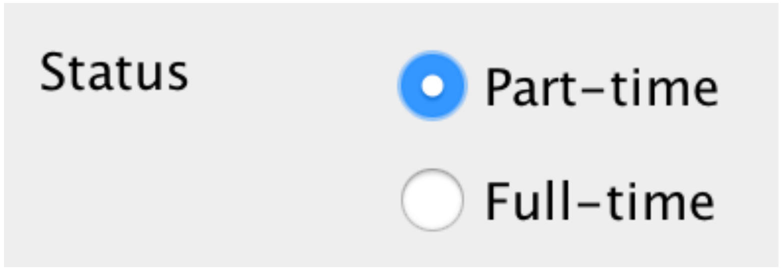
A radio button can be selected or de-selected by the user. It is available in Swing as `JRadioButton`.

A `ButtonGroup` object can be used to group together a set of `JRadioButton` objects so that only one `JRadioButton` can be selected at a time.

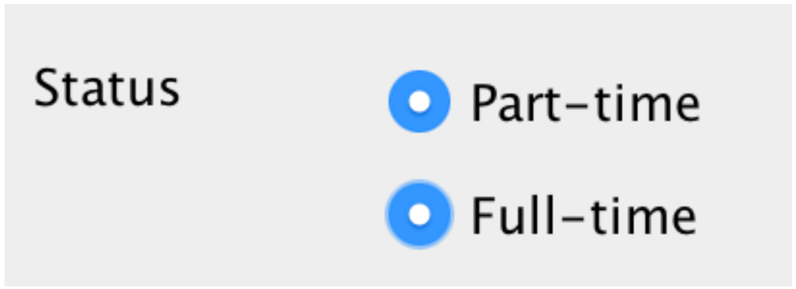
Radio Button



No selection



Selecting one option



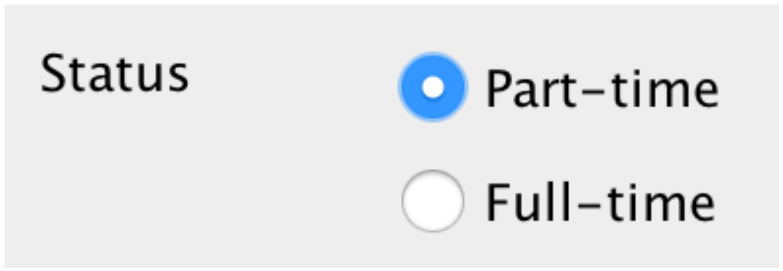
Selecting both options.
If not correct, then a
ButtonGroup should be used

Creating Radio Button Objects

```
//declare Radio Buttons
JRadioButton status1, status2;

//declare Button Group for grouping Radio Buttons together
ButtonGroup statusGroup;

//initialise Radio Buttons
status1 = new JRadioButton(“Part-time”);
status2 = new JRadioButton(“Full-time”);

//initialise Button Group
statusGroup = new ButtonGroup();

/* add Radio Buttons to Button Group -> only 1 can be
selected now on the GUI */
statusGroup.add(status1);
statusGroup.add(status2);
```

Radio Button Method
Automatic Selected Item

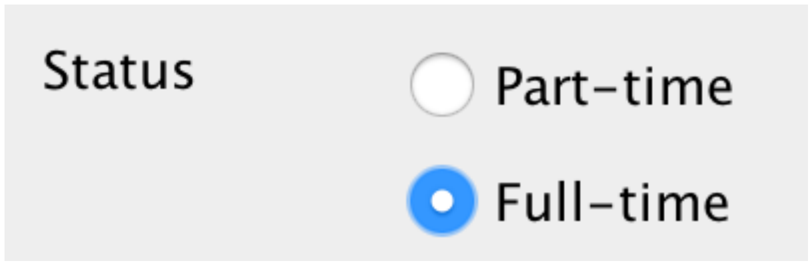
```
// Automatically select particular option
status1.setSelected(true);
```



Radio Button Methods
Getting Value of Selected Item

```
String status;   //for saving selected value
if(status1.isSelected())
  status = status1.getText(); //get displayed value
else
  status = status2.getText();
```

Status will be Full-time



Check Box

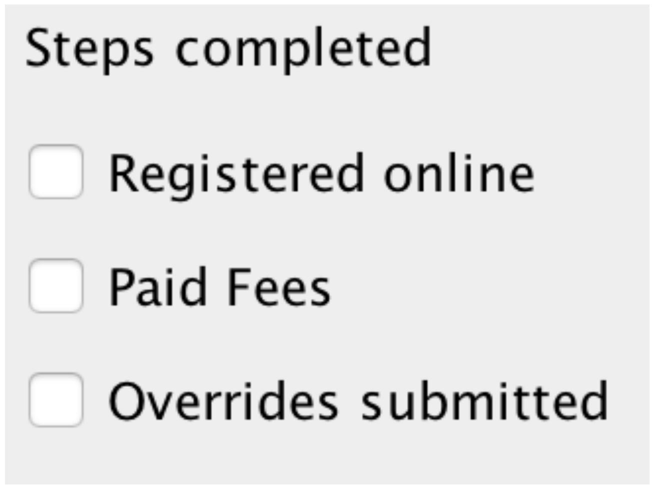
A check box is similar to a radio button and can be selected or de-selected by the user.

A check mark is usually placed inside the check box to indicate it has been selected.

If a group of check boxes is used, the user can select as many as required.

It is available in Swing as `JCheckBox`.

Check Box

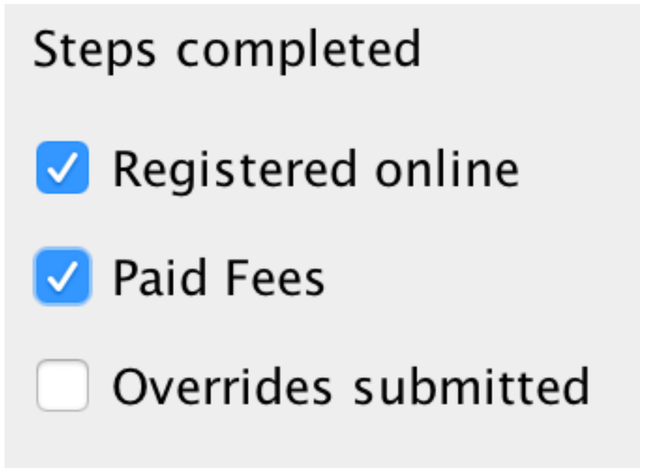

Steps completed

☐ Registered online

☐ Paid Fees

☐ Overrides submitted

No selection


Steps completed

✓ Registered online

✓ Paid Fees

☐ Overrides submitted

A few selections

Creating Check Boxes

```
//create a check box array
JCheckBox[] steps = new JCheckBox[3];

//enter options
steps[0] = new JCheckBox(“Registered Online”);
steps[1] = new JCheckBox(“Paid Fees”);
steps[2] = new JCheckBox(“Overrides Submitted”);
```

Getting Values of Check Boxes

```
//see slide on ArrayLists
ArrayList<String> stepsCompleted;
stepsCompleted = new ArrayList<String>();

for(int i = 0; i< steps.length; i++){ //for all boxes
  if(steps[i].isSelected()){  //if box is selected
    String label = steps[i].getText(); //get box value
    stepsCompleted.add(label); //add value to list
  }
 }
```

API Links

JComboBox: https://docs.oracle.com/en/java/javase/21/docs/api/java.desktop/javax/swing/JComboBox.html

JRadioButton:https://docs.oracle.com/en/java/javase/21/docs/api/java.desktop/javax/swing/JRadioButton.html

JCheckBox:https://docs.oracle.com/en/java/javase/21/docs/api/java.desktop/javax/swing/JCheckBox.html