GUI Application (3)

Han-fen Hu

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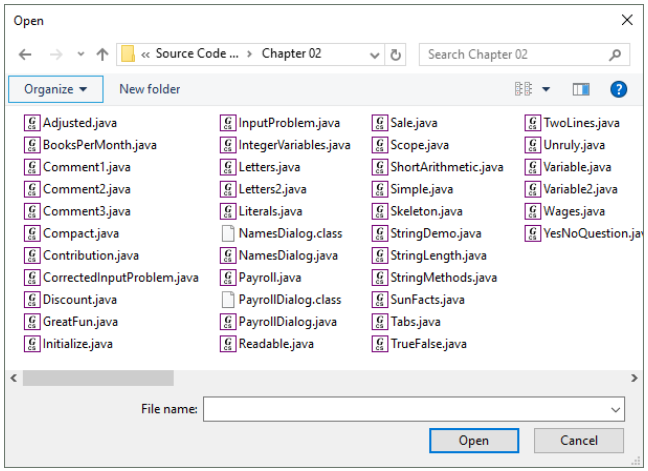
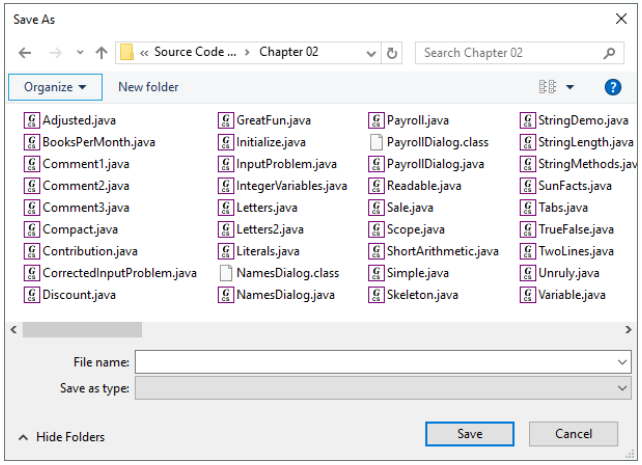
Outline

- Other Controls in JavaFX: FileChooser
- Default Button and Mnemonic
- Multiple Scene Application
- TableView Control
- JavaDoc

FileChooser (1)

- The `FileChooser` class displays a dialog box that allows the user to browse for a file and select it.
- The class can display two types of predefined dialog boxes:
  - open dialog box
  - save dialog box





FileChooser (2)

- First, create an instance of the `FileChooser` class
- Then, call either the `showOpenDialog` method, or the `showSaveDialog` method
- With either method, you pass a reference to the application's stage as an argument

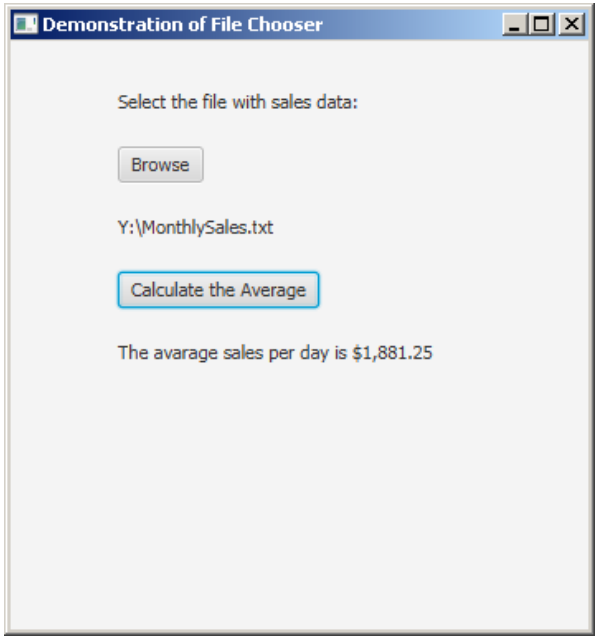
```
FileChooser fileChooser = new FileChooser();
File selectedFile = fileChooser.showOpenDialog(primaryStage);
```

FileChooser (3)

- The `showOpenDialog` and `showSaveDialog` methods return a File object (in the java.io package) containing information about the selected file.
- If the user does not select a file, the method returns null.

```
FileChooser fileChooser = new FileChooser();
File selectedFile = fileChooser.showOpenDialog(primaryStage);
if (selectedFile != null)
{
   String filename = selectedFile.getPath();
   outputLabel.setText("You selected " + filename);
}
```

Lab (1)



- ReadFile.fxml
- ReadFile.java
- ReadFileController.java
  - In this application, the user will select a file with sales data and the program calculates the average sales

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Default Button

- Default Button
  - A default Button is the button that receives a keyboard VK_ENTER press, if no other node in the scene consumes it
  - Allows the user to use keyboard to trigger the event at a button.

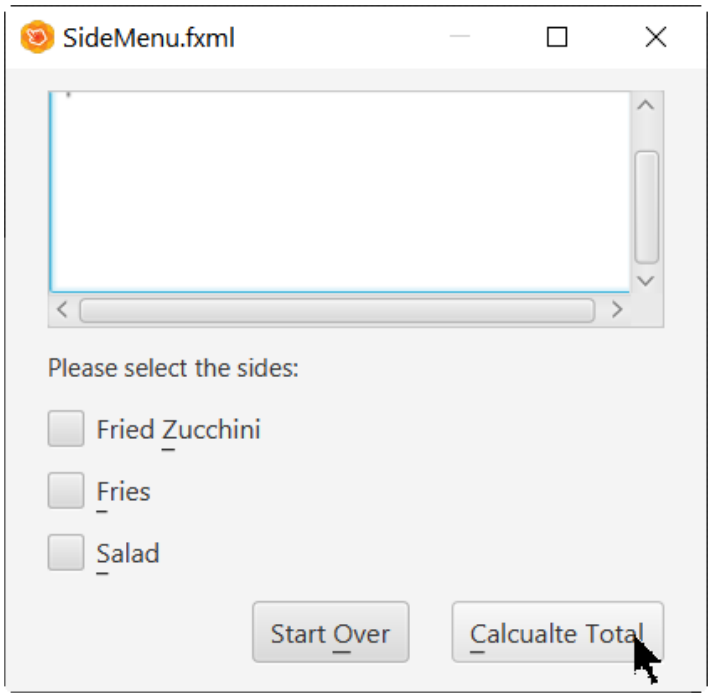
```
<Button text="Login" defaultButton="true"
                  onAction="#handleSubmitButtonAction"/>
```

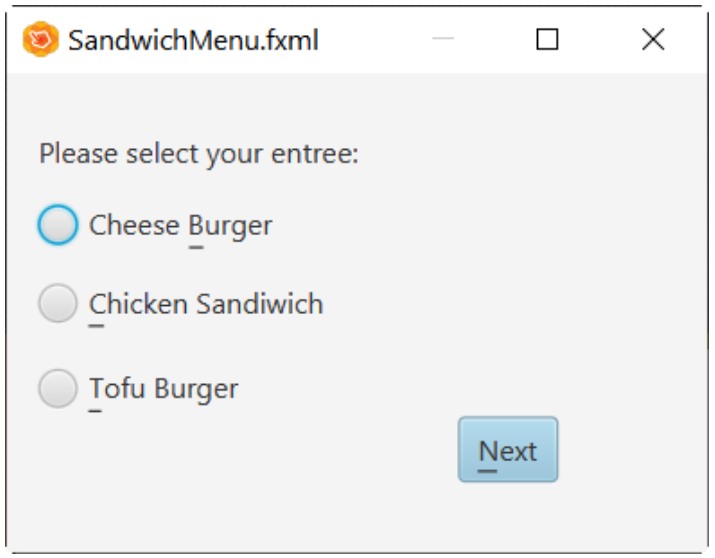
Mnemonic

- Mnemonic registers a keyboard shortcut to activate the element
  - using the letter following _ in the text + Alt
- mnemnonicParsing
  - Parse the _ in the Text as the registration of mnemnonic
  - if `mnemnonicParsing` is false. In this case the _ will also be printed normally instead of underlining the following letter.

Lab (2)

- SandwichMenu.fxml
- SideMenu.fxml





Multiple Scene Application (1)

- Create an FXML and a controller for each scene
- Keep the scene as simple as possible
  - Push different scenes to the stage, one at a time
- Variables can be passed between scenes
  - Create a method in the second scene that accepts parameters
  - From the first scene, call the method and pass the arguments

Multiple Scene Application (2)

- Calling a method in a controller class
  - Via the loader of the FXML
  - The controller class is specified in the FXML file
  - Call the method and pass the variable

```
// the FXML loader object to load the UI design
FXMLLoader loader = new FXMLLoader();
// specify the file location
loader.setLocation(getClass().getResource("SideMenu.fxml"));
// access the controller class via the loader
// in the FXML file, the controller class is specified.
SideMenuController controller = loader.getController();
// call the method in the controller class.
// Pass the string to the next scene
controller.initData(item);
```

Multiple Scene Application (3)

- Push a new scene to the window
  - A window is a stage
  - To get the current stage, we need to use the event object to get the stage

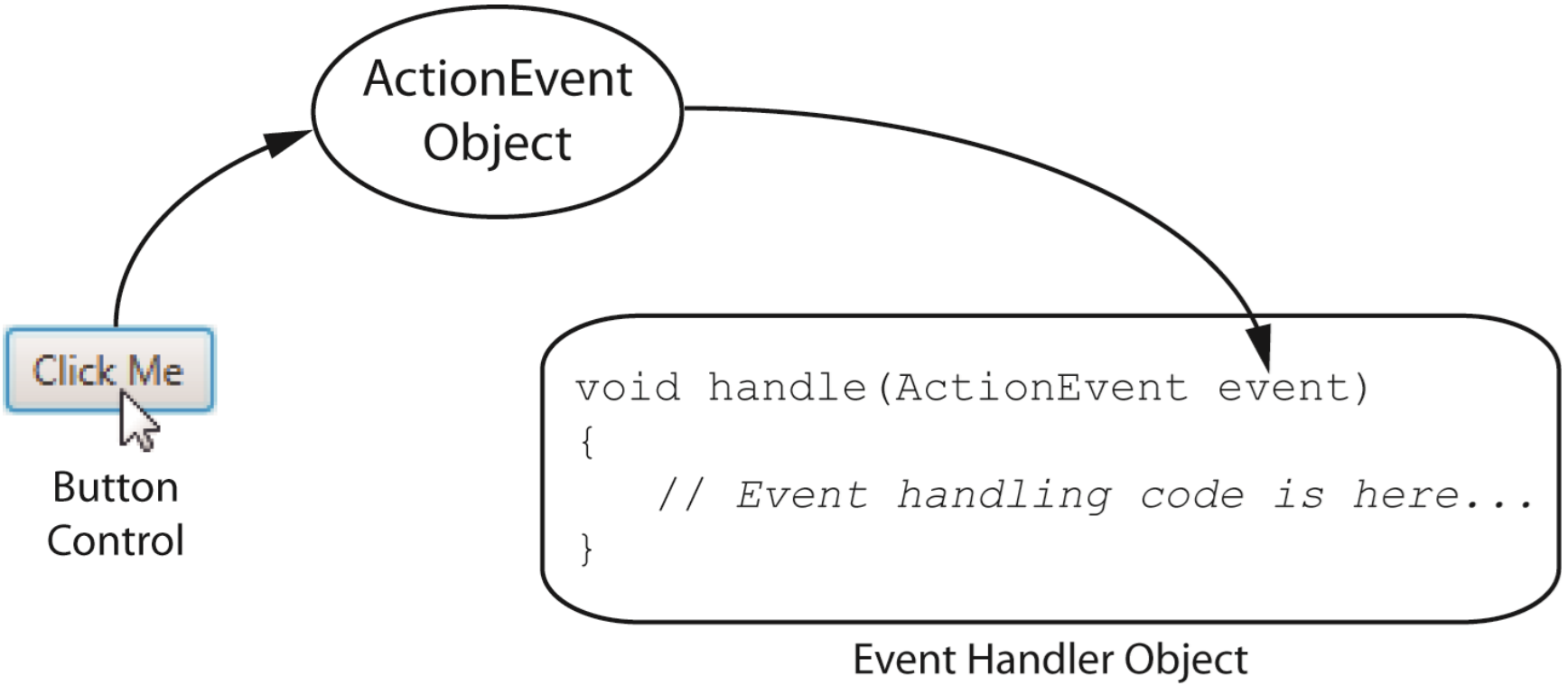
```
Stage stage =
(Stage)((Node)e.getSource()).getScene().getWindow();
```

    - Every event on the GUI will create an event object and pass to the listener method

- Set the scene for the stage

```
stage.setScene(scene);
```

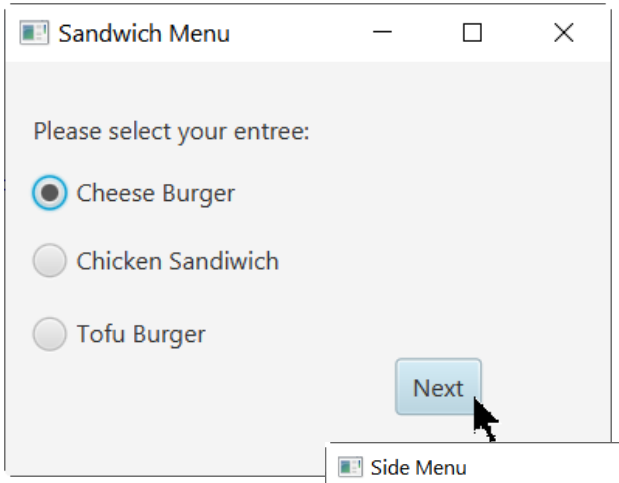
ActionEvent Object

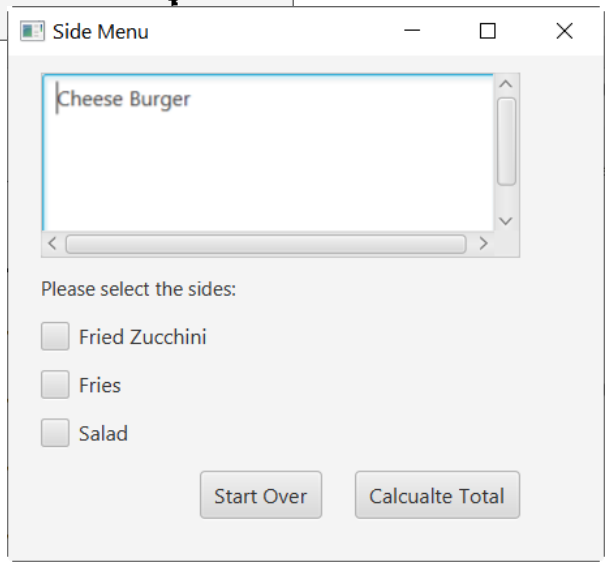


Example of ActionEvent Object

```
public void changeScenceToSideMenu(ActionEvent e) throws Exception {
    // preprare the string to be sent to the next page
    String item="";
    // check which radio button is selected. Then set the string according
    if(cheeseBurgerRadioButton.isSelected())
        item = "Cheese Burger";
    else if(chickenSandwichRadioButton.isSelected())
        item = "Chicken Sandwich";
    else if(tofuBurgerRadioButton.isSelected())
        item = "Tofu Burger";

    // the FXML loader object to load the UI design
    FXMLLoader loader = new FXMLLoader();
    // specify the file location
    loader.setLocation(getClass().getResource("SideMenu.fxml"));
    // access the controller class via the loader
    // in the FXML file, the controller class is specified.
    SideMenuController controller = loader.getController();
    // call the method in the controller class.
    // Pass the string to the next scene
    controller.initData(item);


    // load the UI
    Parent parent = loader.load();
    // set the scene
    Scene scene = new Scene(parent);

    // get the current window
    Stage stage = (Stage)((Node)e.getSource()).getScene().getWindow();
```

Lab (3)





- SandwichMenu.fxml
- SideMenu.fxml
- SandwichMenuController.java
- SideMenuController.java
- BurgerJoint.java
  - In this application, the user will select a sandwich from the first window and select the sides from the second window. The selected sandwich and sides will be display at the TextArea of the second window

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TableView Control (1)

- The most important classes for creating tables are `TableView`, `TableColumn`, and `TableCell`.
  - Populate a table by implementing the data model and by applying a cell factory.
- `TableColumn` object need to be created first and then added to `TableView`

```
TableView table = new TableView();

TableColumn firstNameCol = new TableColumn("First Name");
TableColumn lastNameCol = new TableColumn("Last Name");
TableColumn emailCol = new TableColumn("Email");

Table.getColumns().addAll(firstNameCol, lastNameCol,
emailCol);
```

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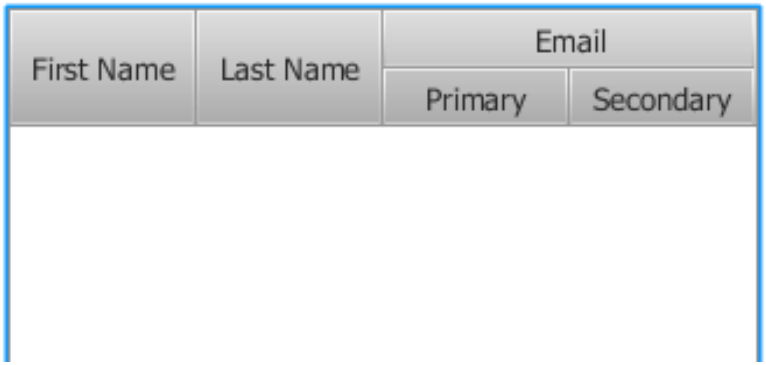
TableView Control (2)

- Table with Nested Columns

```
TableColumn firstNameCol = new TableColumn("First Name");
TableColumn lastNameCol = new TableColumn("Last Name");
TableColumn emailCol = new TableColumn("Email");

TableColumn firstEmailCol = new TableColumn("Primary");
TableColumn secondEmailCol = new TableColumn("Secondary");

emailCol.getColumns().addAll(firstEmailCol, secondEmailCol);
```

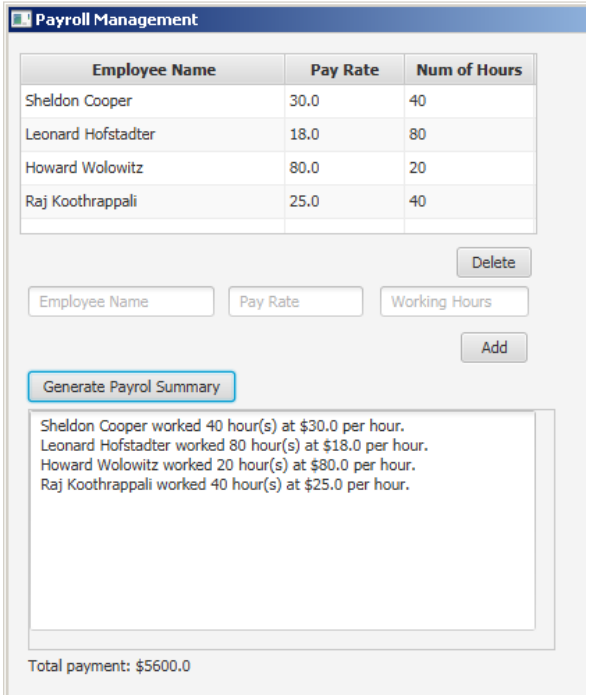


TableView Control (3)

- Defining the Data Model
  - It is a best practice to implement a class that defines the data model as an object class
  - The class provides methods and fields to further work with the table
- Then associate the data with the table columns

```
firstNameCol.setCellValueFactory( new
PropertyValueFactory<Person,String>("firstName") );
lastNameCol.setCellValueFactory( new
PropertyValueFactory<Person,String>("lastName") );
emailCol.setCellValueFactory( new
PropertyValueFactory<Person,String>("email") );
```

Lab (4)



- Payroll.java
- PayrollManagement.java
  - In this example, we will create an application that manages the payroll for an organization.
- PayrollManagementController.java
- PayrollManagement.fxml

TableView Control (4)

- Once the data model is outlined in an object class, an `ObservableList` array can be defined to represent rows to be show in the table
  - An `ObservableList` is similar to an ArrayList but is used in GUI applications.
- To add a row, we can add an object to the end of the `ObservableList` array which representing the existing rows
  - The getItems() method of `TableView` returns an `ObservableList`

```
// create a Payroll object
Payroll payroll = new Payroll();
// set the values
payroll.setEmpName(nameTextField.getText());
payroll.setPayRate(rateTextField.getText());
payroll.setNumOfHours(hoursTextField.getText());

// get all the items from the table as a list, then add the new object to it
// add it to the table
tableView.getItems().add(payroll);
```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Lab (5)

- PayrollManagementController.java
- PayrollManagement.fxml

TableView Control (5)

- To remove a row from TableView, we can use the **getSelectedIndex()** method to retrieve the selected item
- `ObservableList` class provides the remove() method that accepts an index for removing a record.

Lab (6)

- PayrollManagementController.java
- PayrollManagement.fxml

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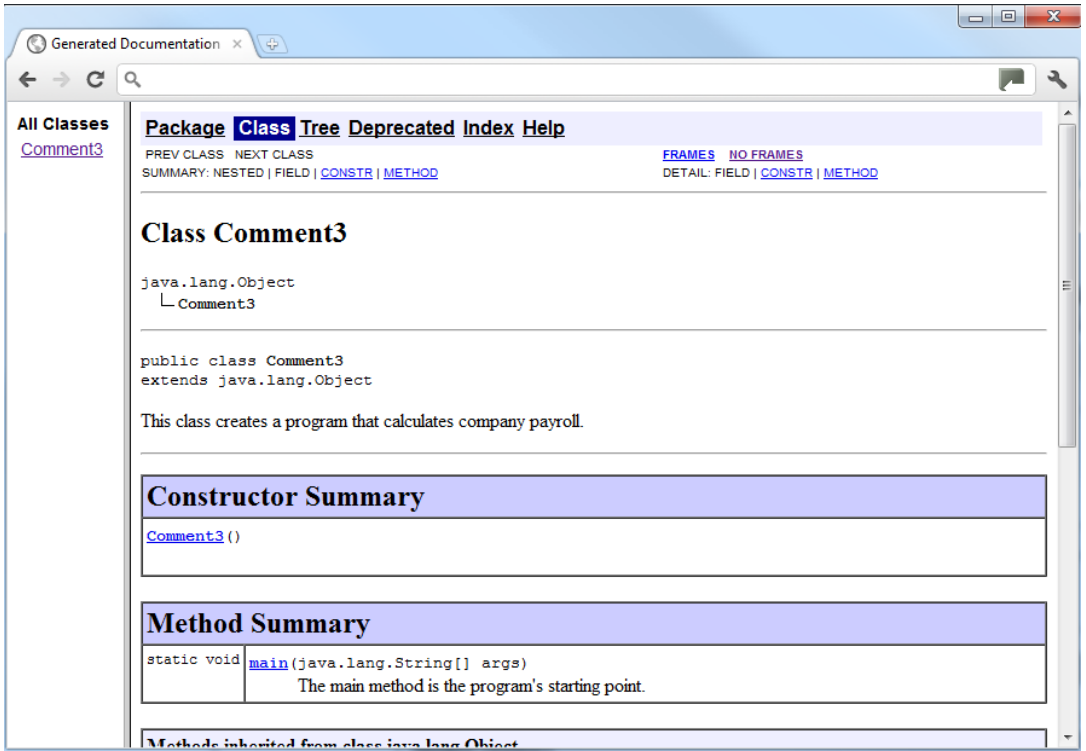
Javadoc (1)

- Java provides three methods for commenting code.

Comment Style	Description
//	Single line comment. Anything after the // on the line will be ignored by the compiler.
/* … */	Block comment. Everything beginning with /* and ending with the first */ will be ignored by the compiler. This comment type cannot be nested.
/** … */	Javadoc comment. This is a special version of the previous block comment that allows comments to be documented by the javadoc utility program. Everything beginning with the /** and ending with the first */ will be ignored by the compiler. This comment type cannot be nested.

Javadoc (2)

- Javadoc comments can be built into HTML documentation.
- The **`javadoc`** program will create **`index.html`** and several other documentation files in the same directory as the input file.



`@param` Tag in Documentation Comments

- You can provide a description of each parameter in your documentation comments by using the `@param` tag.
- General format

```
@param parameterName Description
```

- All `@param` tags in a method's documentation comment must appear after the general description. The description can span several lines.

`@return` Tag in Documentation Comments

- You can provide a description of the return value in your documentation comments by using the **`@return`** tag.
- General format

```
@return Description
```

- The **`@return`** tag in a method's documentation comment must appear after the general description. The description can span several lines.

Other Tags in Documentation Comments

- @author
- @version

Lab (7)

- SavingsAcocunt.java
- RetailItem.java