

# Chapter 39 JavaServer Face



# Objectives

- ◆ To explain what JSF is (§39.1).
- ◆ To create a JSF page using NetBeans (§39.2).
- ◆ To create a JSF managed bean (§39.2).
- ◆ To use JSF expressions in a facelet (§39.2).
- ◆ To use JSF GUI components (§39.3).
- ◆ To obtain and process input from a form (§39.4).
- ◆ To track sessions in application, session, view, and request scope (§39.5).
- ◆ To validate input using the JSF validators (§39.6).
- ◆ To bind database with facelets (§39.7).
- ◆ To program using contexts and dependency injection (§39.10).



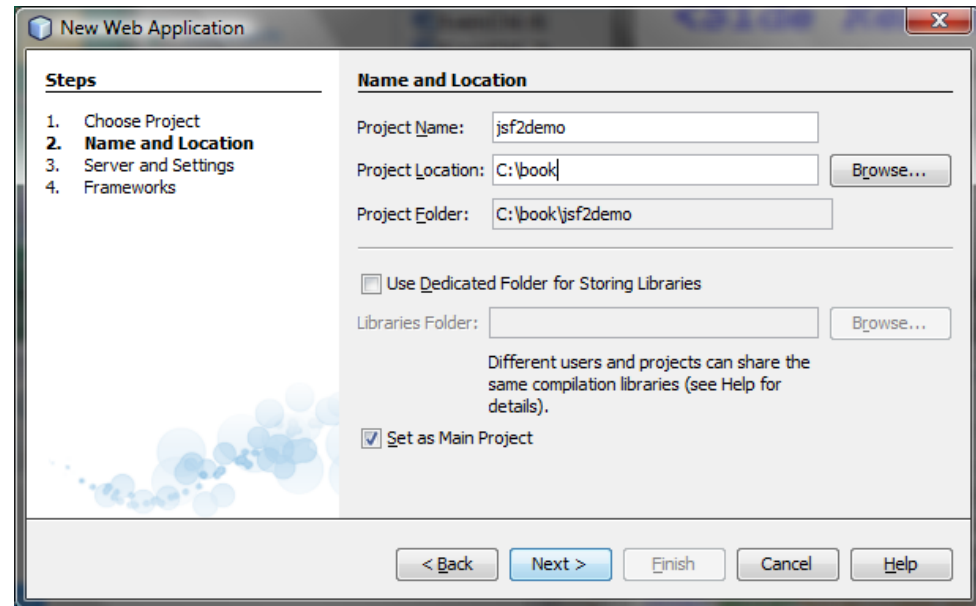
# What is JSF?

JSF completely separates Web UI from Java code so the application developed using JSF is easy to debug and maintain.

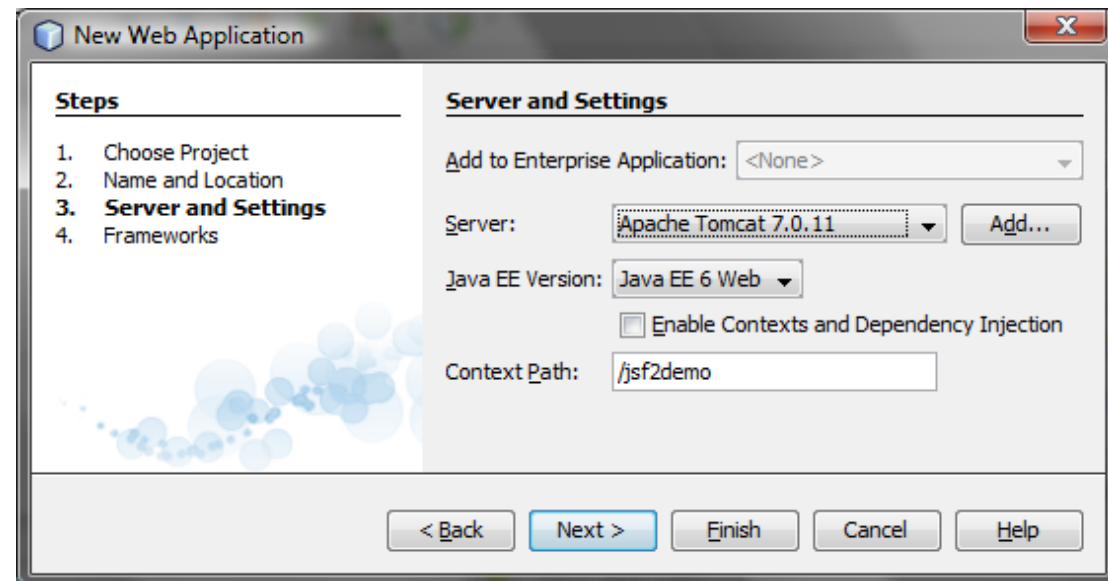


# Creating a JSF Project

Create a Web project with  
JavaServer Faces.

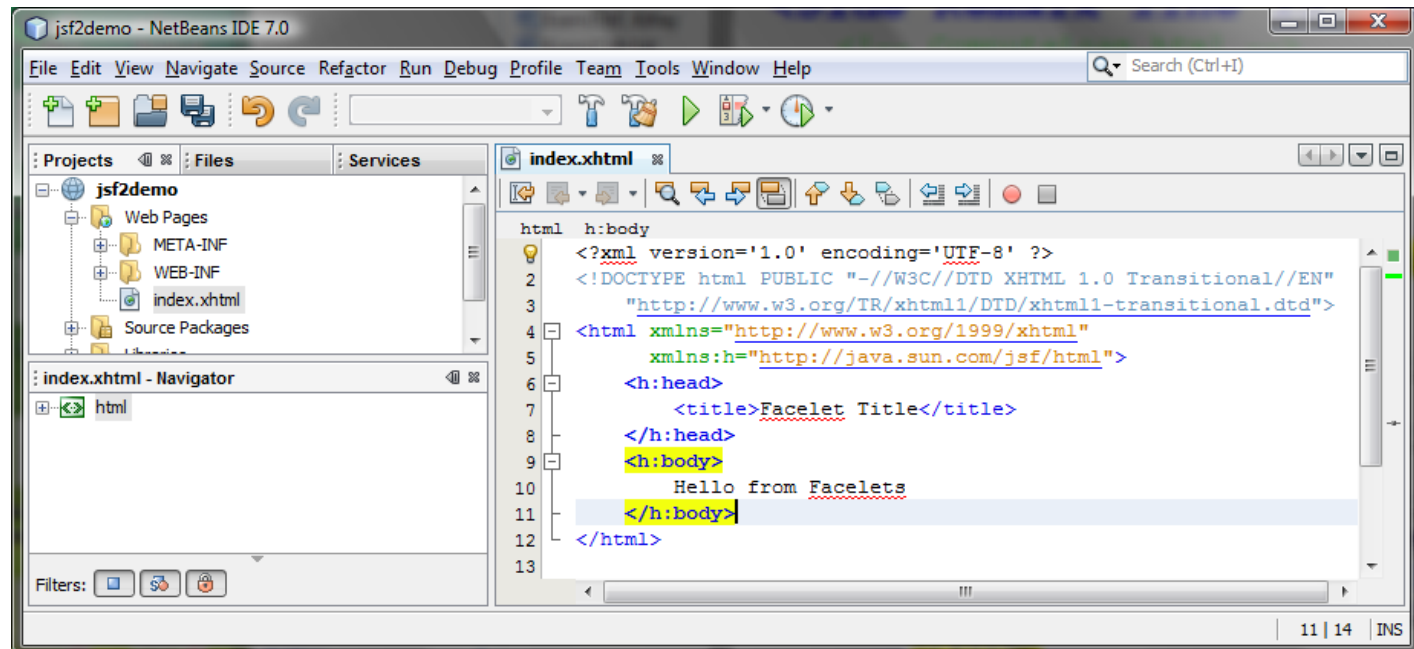
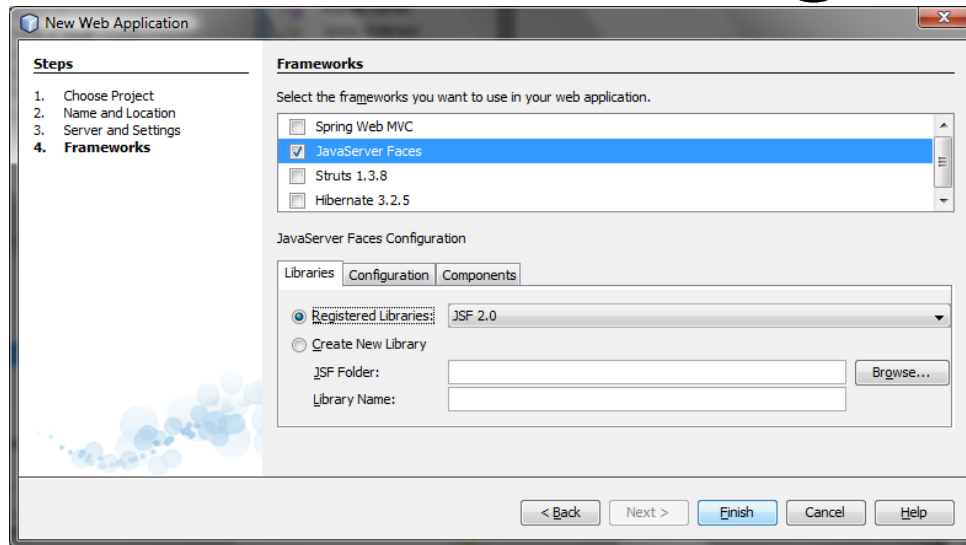


The 'New Web Application' dialog box is shown at the 'Name and Location' step. The 'Steps' list on the left indicates the current step is 2. The 'Project Name' is 'jsf2demo'. The 'Project Location' is 'C:\book' with a 'Browse...' button. The 'Project Folder' is 'C:\book\jsf2demo'. There is a checkbox for 'Use Dedicated Folder for Storing Libraries' which is unchecked, with a 'Libraries Folder' field and 'Browse...' button. A note states: 'Different users and projects can share the same compilation libraries (see Help for details)'. The 'Set as Main Project' checkbox is checked. Navigation buttons at the bottom are '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.



The 'New Web Application' dialog box is shown at the 'Server and Settings' step. The 'Steps' list on the left indicates the current step is 3. The 'Add to Enterprise Application' dropdown is set to '<None>'. The 'Server' dropdown is set to 'Apache Tomcat 7.0.11' with an 'Add...' button. The 'Java EE Version' dropdown is set to 'Java EE 6 Web'. There is an unchecked checkbox for 'Enable Contexts and Dependency Injection'. The 'Context Path' is '/jsf2demo'. Navigation buttons at the bottom are '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

# Creating a JSF Project

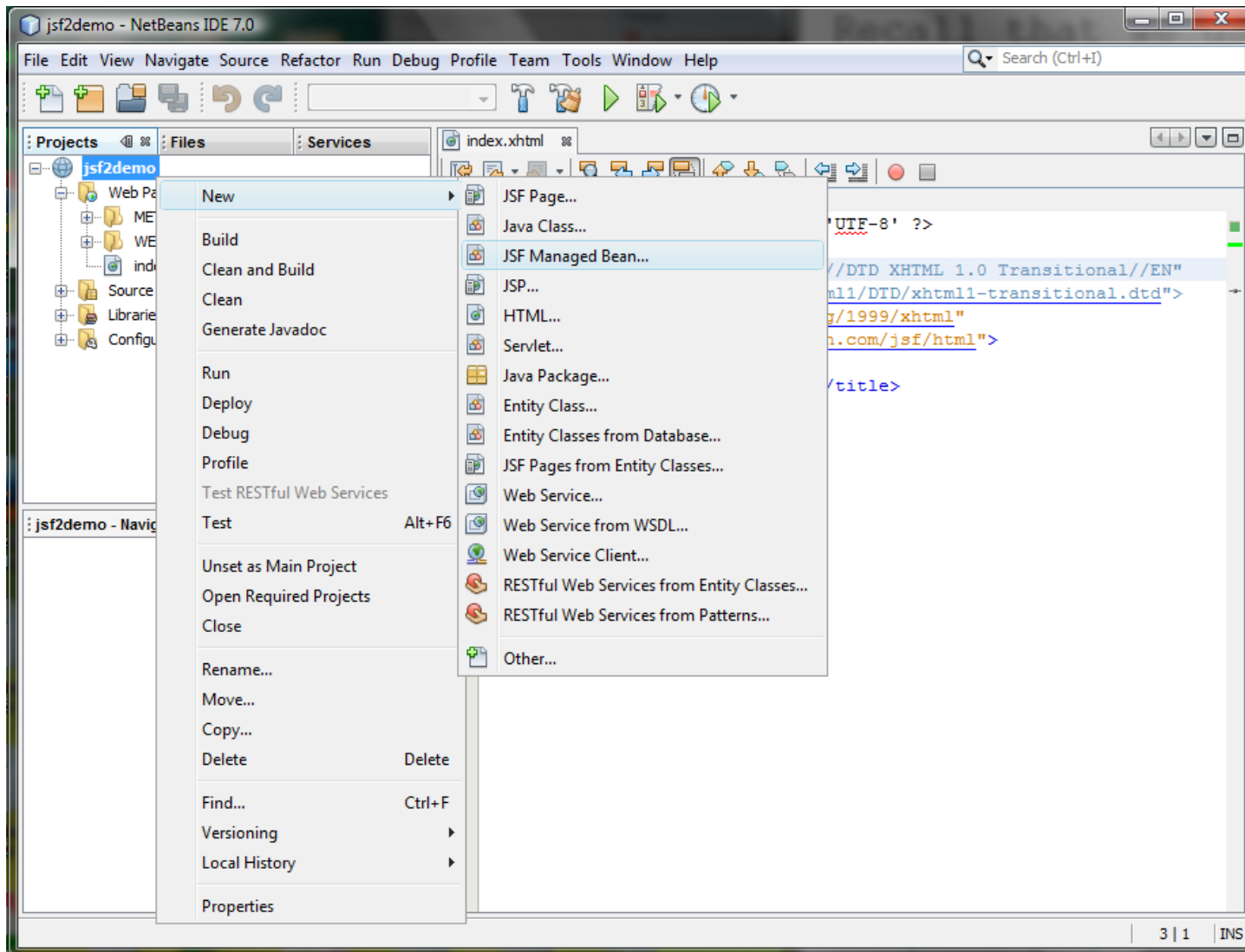


# A Basic JSF Page

```
<?xml version='1.0' encoding='UTF-8' ?>
<!-- index.xhtml -->
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:h="http://java.sun.com/jsf/html">
    <h:head>
        <title>Facelet Title</title>
    </h:head>
    <h:body>
        Hello from Facelets
    </h:body>
</html>
```



# Managed JavaBeans for JSF



# Managed JavaBeans for JSF

```
package jsf2demo;  
import javax.faces.bean.ManagedBean;  
import javax.faces.bean.RequestScoped;  
@ManagedBean  
@RequestScoped  
public class TimeBean {  
    public String getTime() {  
        return new java.util.Date().toString();  
    }  
}
```

`# {expression}`

`# {timeBean.time}`

`# {timeBean.getTime()}`





# Listing 39.3 CurrentTime.xhtml

```
<?xml version='1.0' encoding='UTF-8' ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
Transitional//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
    xmlns:h="http://java.sun.com/jsf/html">
<h:head>
    <title>Display Current Time</title>
    <meta http-equiv="refresh" content="60" />
</h:head>
<h:body>
    The current time is #{timeBean.time}
</h:body>
</html>
```



Run

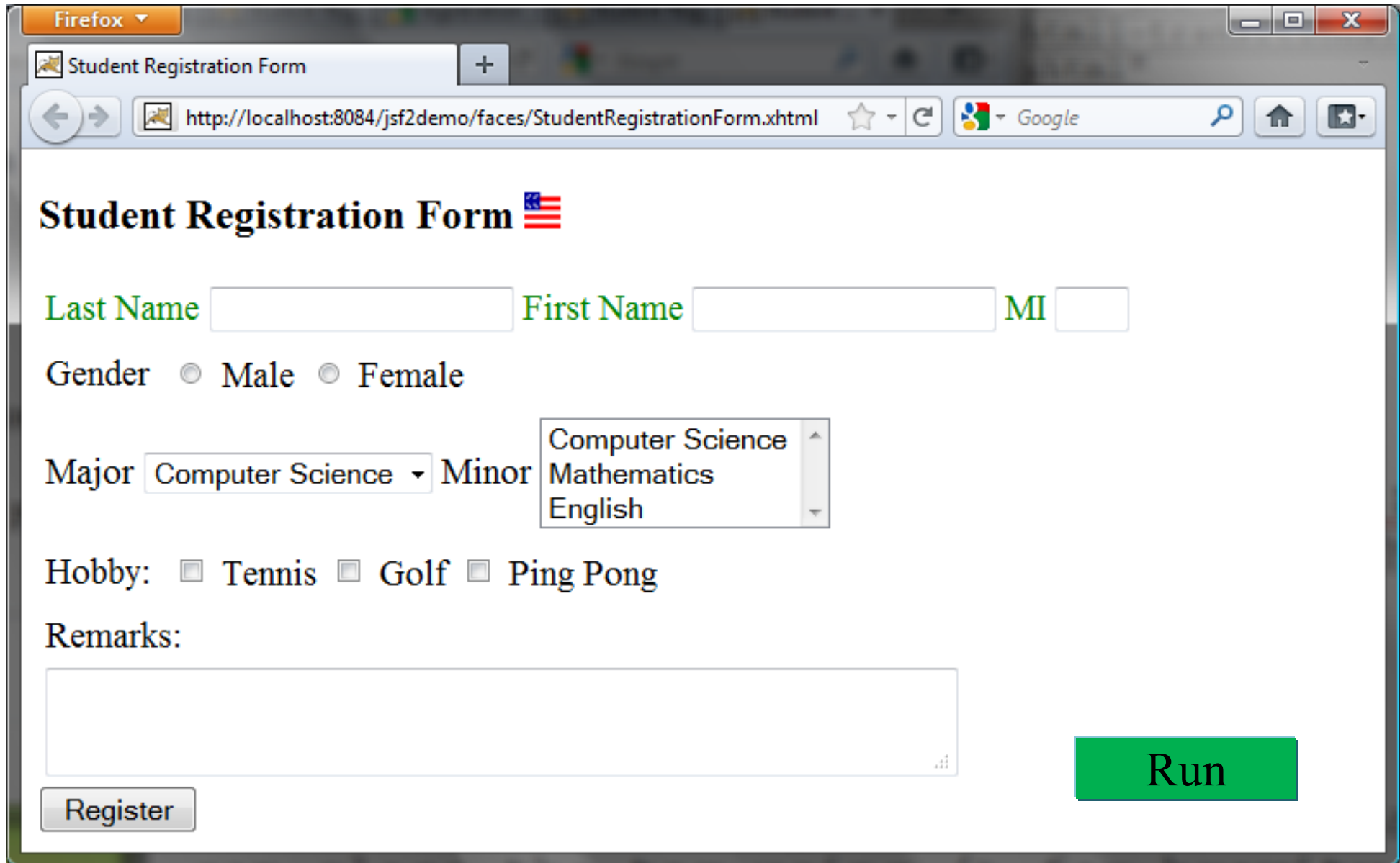


# JSF GUI Components

JSF Tag	Description
<code>h:form</code>	inserts an XHTML form into a page.
<code>h:panelGroup</code>	similar to a Java flow layout container.
<code>h:panelGrid</code>	similar to a Java grid layout container.
<code>h:inputText</code>	displays a textbox for entering input.
<code>h:outputText</code>	displays a textbox for displaying output.
<code>h:inputTextArea</code>	displays a textarea for entering input.
<code>h:inputSecret</code>	displays a textbox for entering password.
<code>h:outputLabel</code>	displays a label.
<code>h:outputLink</code>	displays a hypertext link.
<code>h:selectOneMenu</code>	displays a combo box for selecting one item.
<code>h:selectOneRadio</code>	displays a set of radio button.
<code>h:selectBooleanCheckbox</code>	displays a checkbox.
<code>h:selectOneListbox</code>	displays a list for selecting one item.
<code>h:selectManyListbox</code>	displays a list for selecting multiple items.
<code>f:selectItem</code>	specifies an item in an <code>h:selectOneMenu</code> , <code>h:selectOneRadio</code> , or <code>h:selectManyListbox</code> .
<code>h:message</code>	displays a message for validating input.
<code>h:dataTable</code>	displays a data table.
<code>h:column</code>	specifies a column in a data table.
<code>h:graphicImage</code>	displays an image.



# JSF UI Containers



The screenshot shows a Firefox browser window with a single tab titled "Student Registration Form". The address bar displays the URL "http://localhost:8084/jsf2demo/faces/StudentRegistrationForm.xhtml". The page content includes a title "Student Registration Form" with a US flag icon. The form fields are: "Last Name" (text input), "First Name" (text input), "MI" (text input), "Gender" (radio buttons for "Male" and "Female"), "Major" (dropdown menu showing "Computer Science"), "Minor" (dropdown menu showing "Mathematics", "English", and "Computer Science"), "Hobby" (checkboxes for "Tennis", "Golf", and "Ping Pong"), and "Remarks" (text area). A "Register" button is at the bottom left, and a green "Run" button is at the bottom right.

Firefox

Student Registration Form

http://localhost:8084/jsf2demo/faces/StudentRegistrationForm.xhtml

Student Registration Form 🇺🇸

Last Name  First Name  MI

Gender ☐ Male ☐ Female

Major  Minor   
Computer Science  
Mathematics  
English

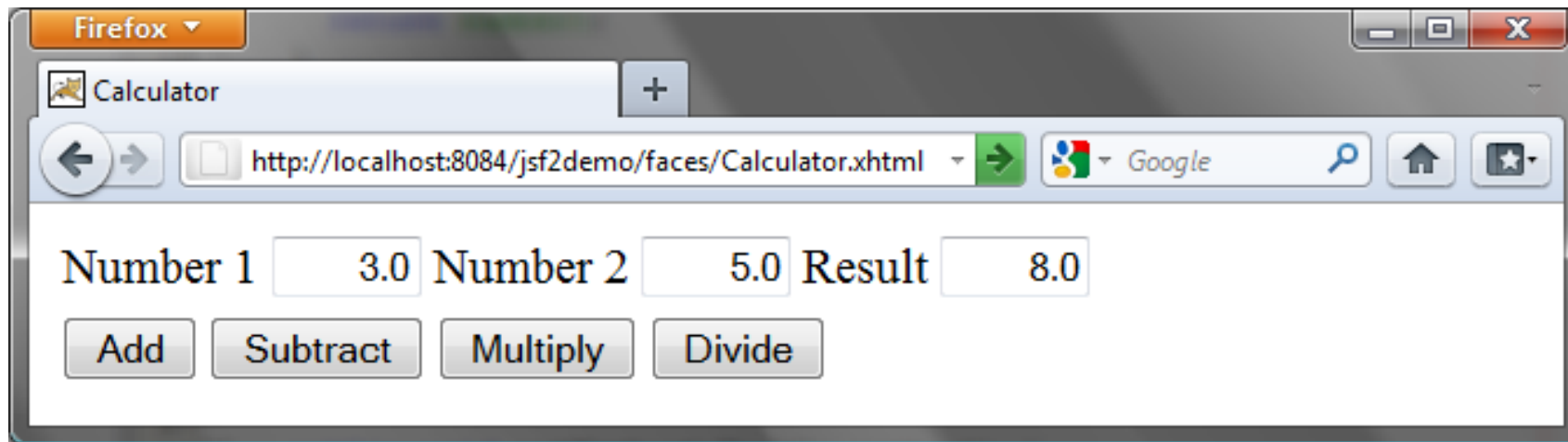
Hobby: ☐ Tennis ☐ Golf ☐ Ping Pong

Remarks:

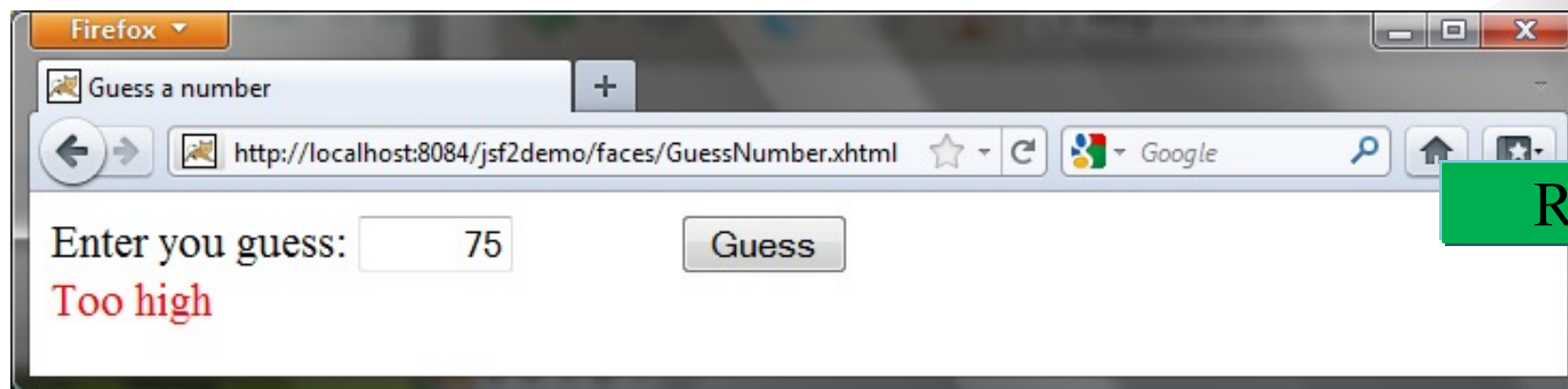
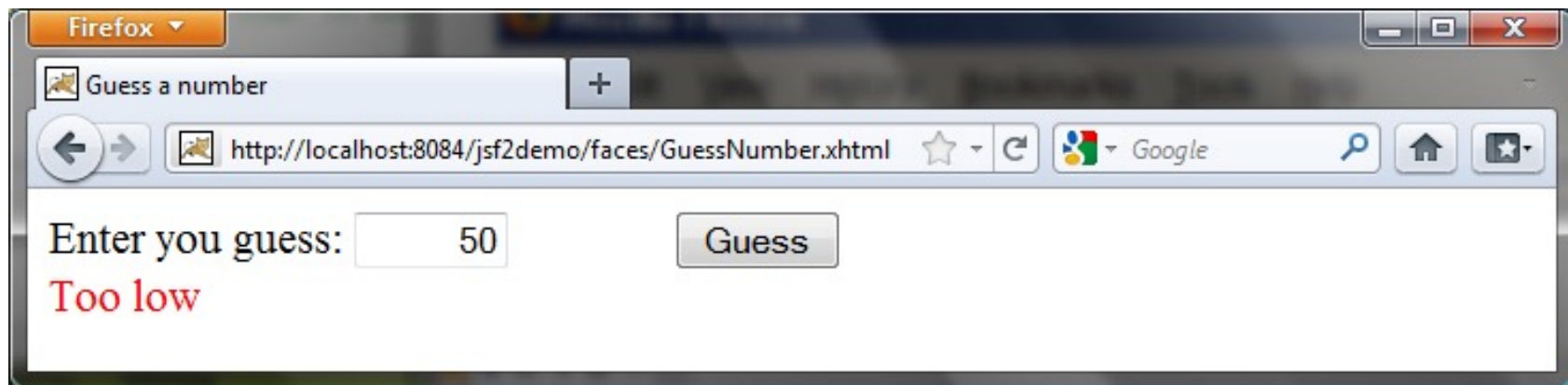
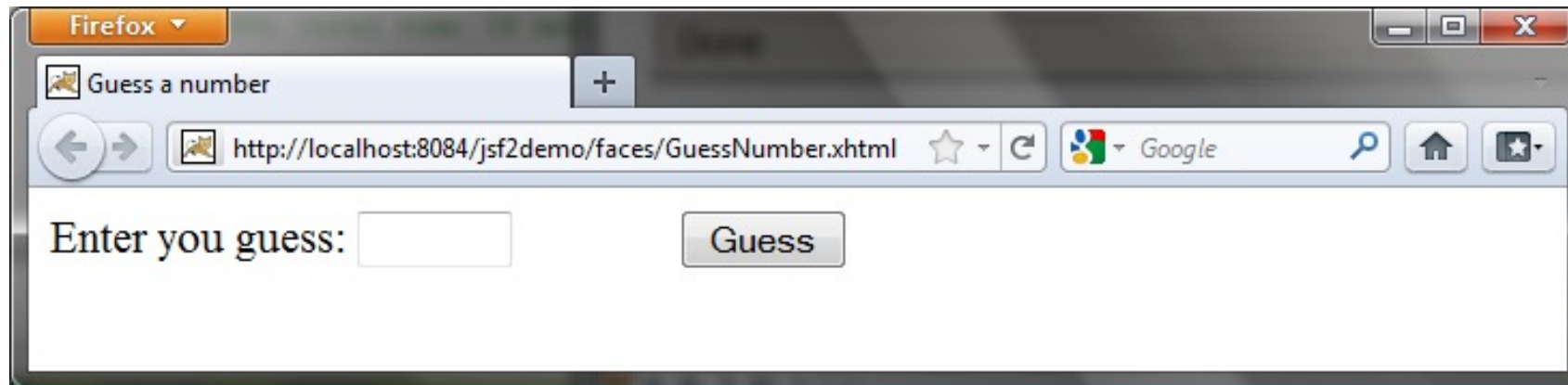
Register

Run

# 39.5 Case Study: Calculator



# 39.6 Session Tracking



Run

# 39.7 Validating Input

JSF Tag	Description
<code>f:validateLength</code>	validates the length of the input.
<code>f:validateDoubleRange</code>	validates whether numeric input falls within acceptable range of double values.
<code>f:validateLongRange</code>	validates whether numeric input falls within acceptable range of long values.
<code>f:validateRequired</code>	validates whether a field is not empty.
<code>f:validateRegex</code>	validates whether the input matches a regular expression.
<code>f:validateBean</code>	invokes a custom method in a bean to perform custom validation.



Run

# 39.8 Bind Database with Facelets

Display Student - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Display Student +

localhost:8080/jsf2demo/faces/DisplayStudent.xhtml Google

Choose a Course: Intro to Java I Display Students

SSN	First	Last	Phone	Birth Date	Dept
444111110	Jacob	Smith	9129219434	1985-04-09	BIOL
444111111	John	Kennedy	9129229434	1974-03-19	CS
444111112	George	Peterson	9129229434	1964-04-29	MATH
444111113	Frank	Smith	9129219434	1973-02-09	BIOL
444111116	Josh	R. Smith	9129219434	1973-02-09	BIOL
444111117	Joy	P. Kennedy	9129229434	1974-03-19	CS
444111118	Toni	R. Peterson	9129229434	1964-04-29	MATH



# 39.9 Opening New JSF Pages

Run

Student Registration Form

Please register to your instructor's student address book.

Last Name  First Name  MI

Telephone  Email

Street

City  State  Zip

Last Name and First Name are required

Address Stored?

John Smith is now registered in the database.

Confirm Student Registration

You entered

Last Name: Smith

First Name: John

MI: C

Telephone: 213549989

Email: smith@gmail.com

Street: 100 Main Street

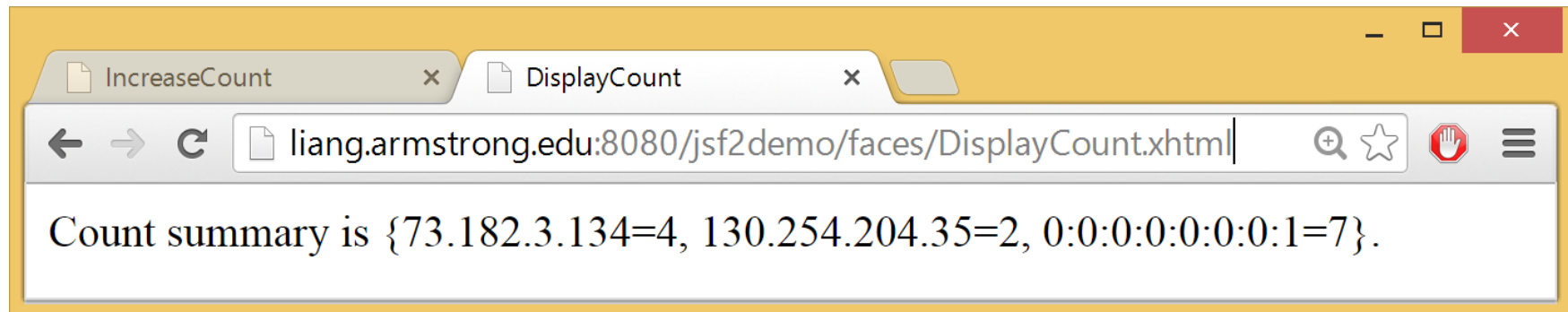
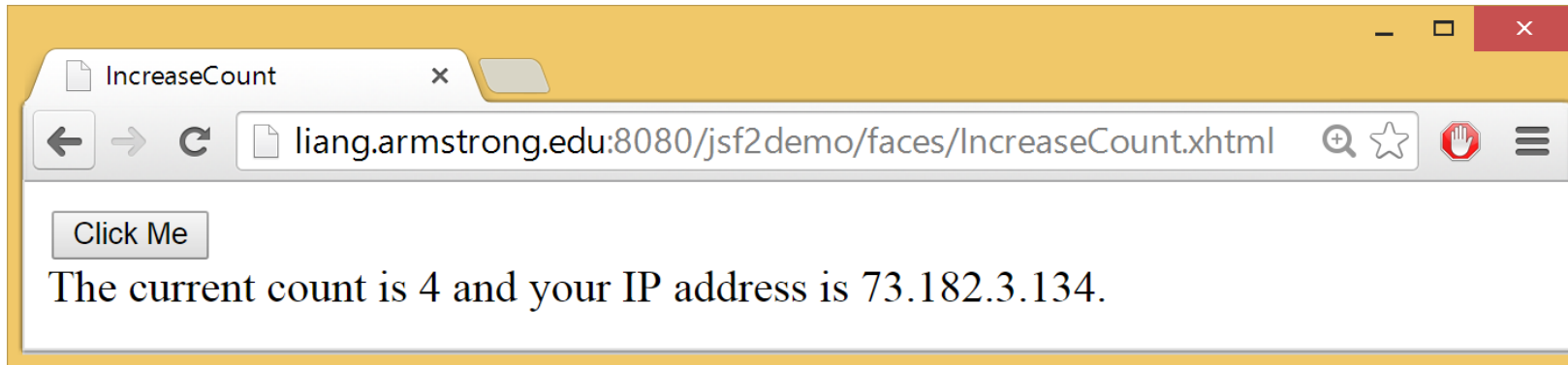
City: Atlanta

State: GA

Zip: 34313



# 39.10 Contexts and Dependency Injection



IncreaseCount

DisplayCount