

《Web design》 Experimental report

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1.Experimental purposes, Cases and Requirements:

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Experimental purposes:

Web client development technology: HTML+CSS+JAVASCRIPT. Web server development technology: JSP, using JSP to access database system.

Experimental Cases:

1、 Roles in online shopping website: Administrator and user

2、 Online shopping website functions:

① User login information validation and processing: If both user name and password are correct, then enter the online shopping homepage and allow purchasing goods, otherwise steer error handling page and gives an error message, after that, return to the login page. Design error handling page, handling errors. Correctness of a user name and password is verified by the database.

② User registration: if the new name is not registered by other users, this new user registration information is saved to the database. In the meanwhile, other information, such as email address format, QQ number (not allow not-numeric), etc, is also verified.

③ Adding modifying and deleting merchandise and its category: This function is only visible to the administrator role. Note added goods must belong to a certain category. It is not allowed to modify the ID number when modifying a product.

④ Merchandise classification display: When entering the online shopping homepage, you should be able to display product information according to the category information stored in the database: for example, books category, electronic products category and etc. For each category, you should also be able to display the latest product information.

⑤ Product list and product details display: After selecting the product category, you can display the list of goods belonging to the same category in pagination display way, after the user clicks a product title, you can jump to the details display page of the product.

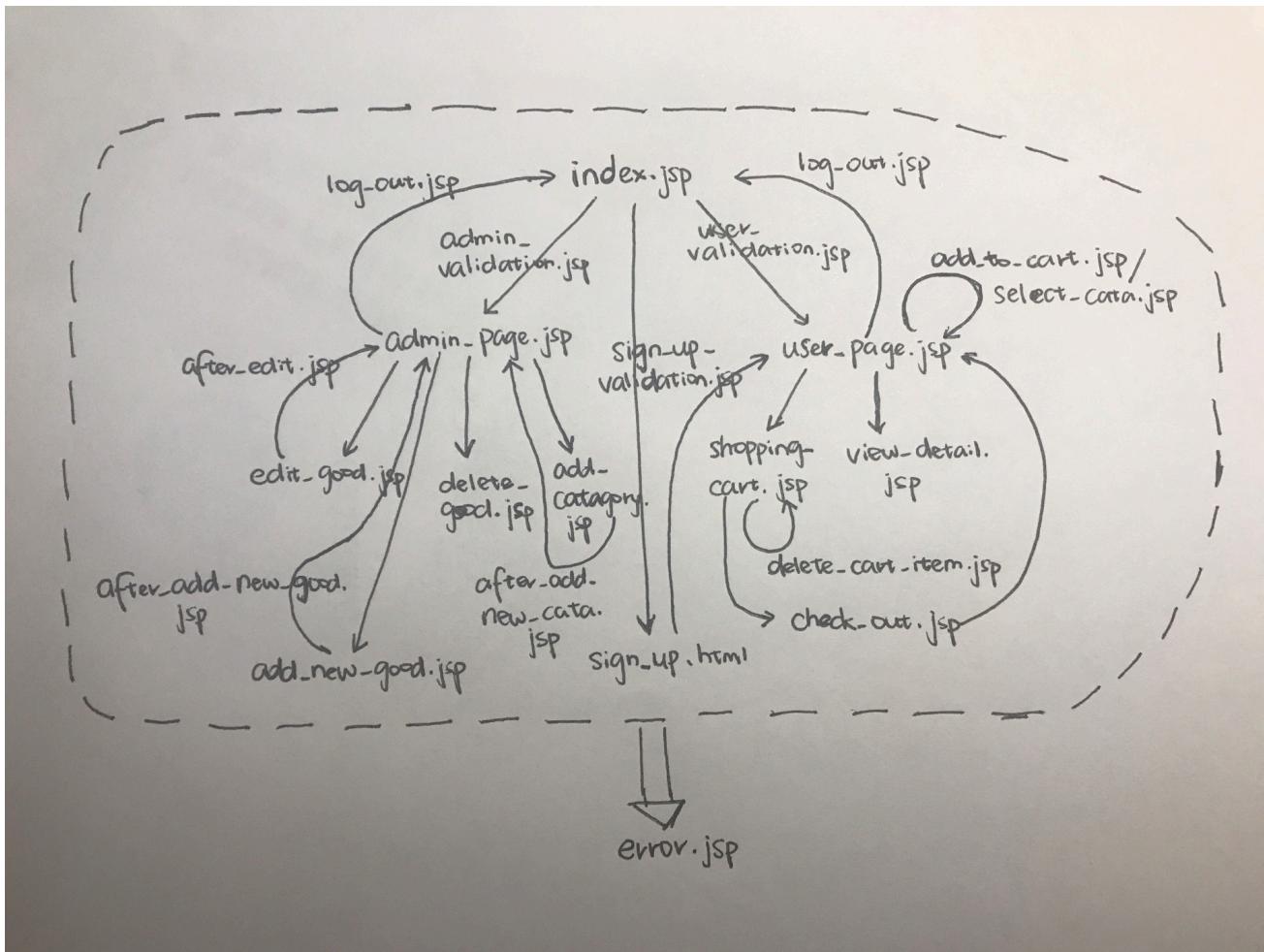
⑥ Implementing shopping function: in product list and product details display page, click "Add to Cart" to add one or more products to a cart, and give all product information and the total amount of money in the shopping cart. You can also delete an item from this shopping cart. After finishing shopping, a shopping order will be generated. In addition, you can click "continue shopping" on the shopping cart page to jump back to the online shopping home page to continue shopping.

2. Experimental environment: experiment with the hardware and software environment (configuration)

Hardware: MacBook Pro, Intel i7

Software: IntelliJ IDEA, Tomcat 9.0.19, MySQL 5.7.2, JDBC 5.1.47, jakarta-taglibs-standard-1.1.2

3. Experimental Design: Describe the structure and layout of the site, indicate that the site designing ideas and designing steps, draw diagrams of relationships between each page, and give descriptions about diagrams.



The structure of the whole website is the picture above. The website starts with the **index.jsp** and can then jump to **admin_page.jsp**, **user_page.jsp** or **sign_up.html** using the validation of **admin_validation.jsp** and **user_validation.jsp**. If there exists any error like the **user's password is wrong** or the **user doesn't exists** or the **registration email has already been taken**, then the website will jump to **error.jsp** with the **error message** shown.

In **user_page.jsp**, user can view the detail of a good by clicking the **View Detail** button and can add a specific good to his/her shopping cart by clicking the **Add To Cart** button. Moreover, the user can browse the goods by category. Detail will be shown using **view_detail.jsp** and the shopping cart uses **shopping_cart.jsp**. The **Add To Cart** button and **browse by category** function are implemented by **add_to_cart.jsp** and **select_cara.jsp** respectively. In the shopping cart, user can delete the goods by clicking **DELETE** button and the goods will be put back to the inventory. And user can check out by clicking

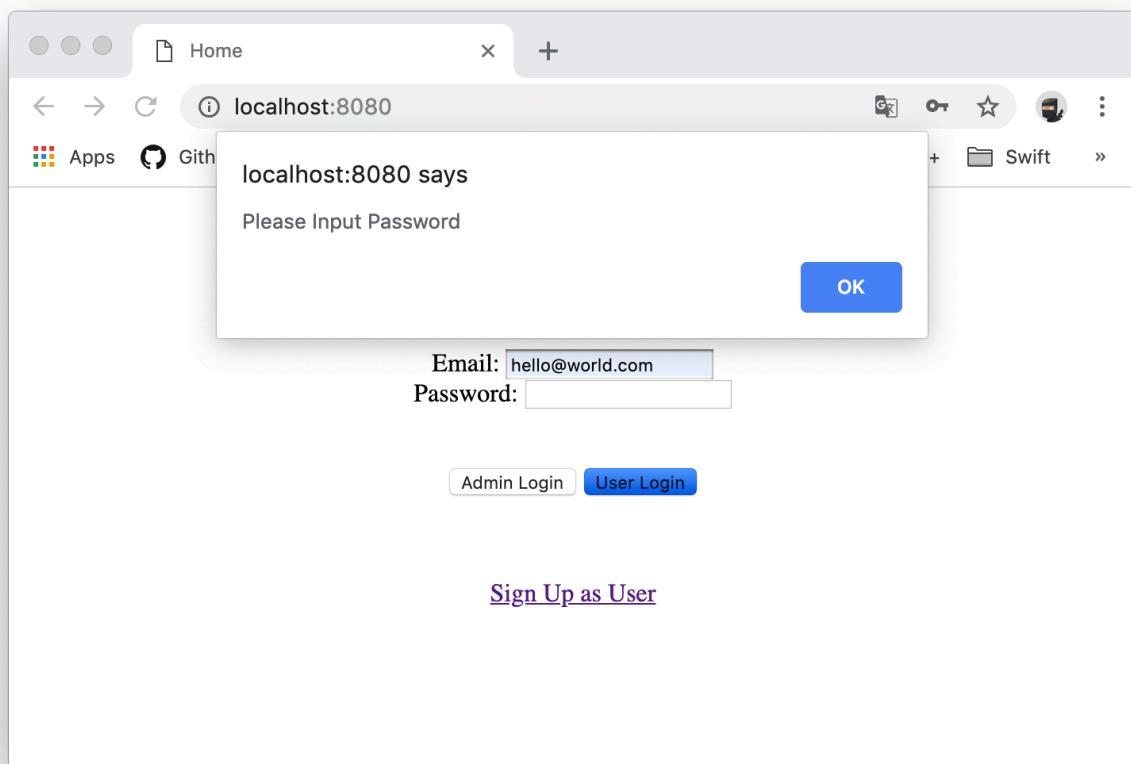
Check out button.

In `admin_page.jsp`, admin can edit the good information, delete a good, add a category and add a new good. These are achieved by `edit_good.jsp`, `delete_good.jsp`, `add_catagory.jsp` and `add_new_good.jsp`. If the action involves input some information by the user, e.g. when you edit the good, you need to enter the new information, the accessing database and write data part of job will be done in the JSP file begin with `after-`.

In the `sign_up.html`, the format correctness of the user's input is examined by **Javascript**. For example, if the user hasn't input his/her user name or the format of the email is not correct or the two password are not the same, there will be a message box prompting, reminding the user that there is a mistake. Other errors like the email has already been registered will be implemented in the `sign_up_validation.jsp`.

4. Experimental results

At `index.jsp`, when the user hasn't input password and hit **User Login**



User Center

localhost:8080/user_page.jsp

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Hello, Evan

[Log Out](#)

[My Shopping Cart](#)

ALL

ID	Name	Price	Stock		
1	Camera	2340.50	13	<input type="button" value="Add to Cart"/>	<input type="button" value="View Detail"/>
2	Phone	5400.00	5	<input type="button" value="Add to Cart"/>	<input type="button" value="View Detail"/>
3	Head First Servlets & JSP	138.99	11	<input type="button" value="Add to Cart"/>	<input type="button" value="View Detail"/>
4	Minna no Nihongo	23.00	0	<input type="button" value="Add to Cart"/>	<input type="button" value="View Detail"/>
5	iPhone XS	999.00	2	<input type="button" value="Add to Cart"/>	<input type="button" value="View Detail"/>

Browse by category

User Center +

localhost:8080/user_page.jsp

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Hello, Evan

[Log Out](#)

ALL
✓ 0.Eletronic Devidec
1.Book
2.F
3.Food
4.Spice
9.test

OK

Name	Price	Stock		
	2340.50	13	Add to Cart	View Detail
2 Phone	5400.00	5	Add to Cart	View Detail
3 Head First Servlets & JSP	138.99	11	Add to Cart	View Detail
4 Minna no Nihongo	23.00	0	Add to Cart	View Detail
5 iPhone XS	999.00	1	Add to Cart	View Detail

User Center +

localhost:8080/user_page.jsp

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Hello, Evan

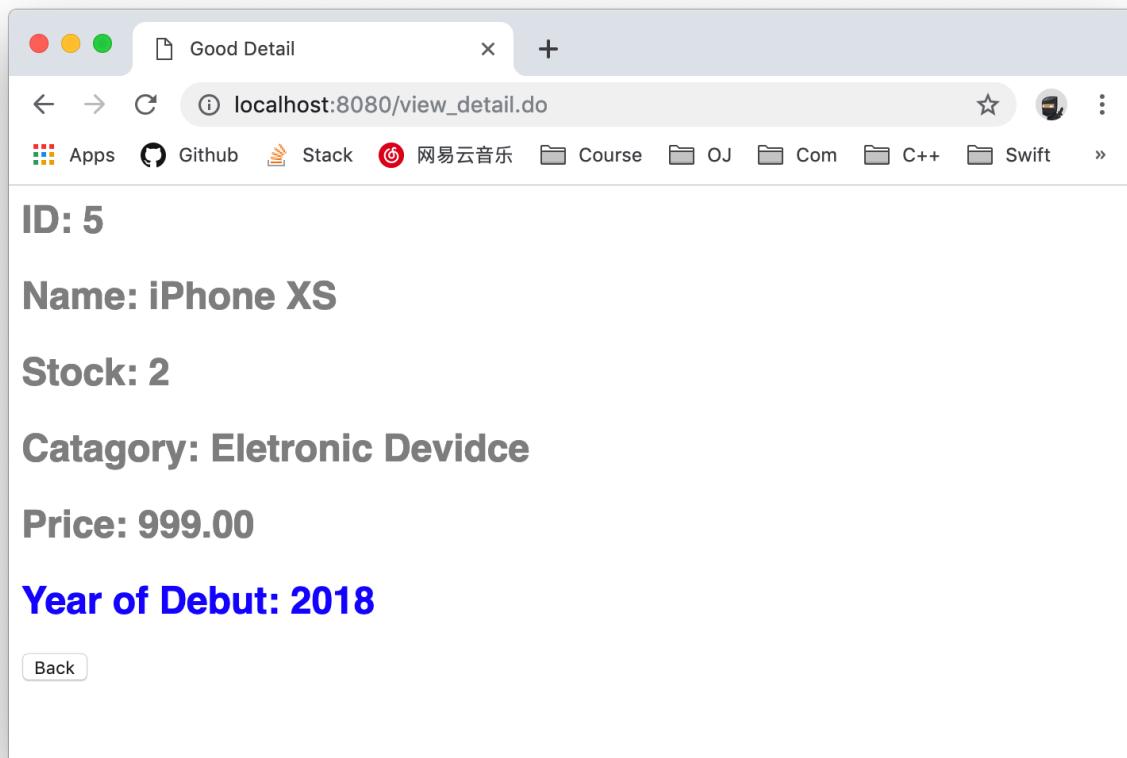
[Log Out](#)

[My Shopping Cart](#)

0.Eletronic Devidec

ID	Name	Price	Stock		
1	Camera	2340.50	13	Add to Cart	View Detail
2	Phone	5400.00	5	Add to Cart	View Detail
5	iPhone XS	999.00	1	Add to Cart	View Detail

View good detail. Different kinds of goods will be displayed differently. Like the **eletronic device** has information about its **debut year** whereas **book** has their **ISBN number** presented.



The screenshot shows a web browser window titled "Good Detail" with the URL "localhost:8080/view_detail.do". The page displays a product with ID 4, named "Minna no Nihongo". The product is listed as "out of stock". It belongs to the category "Book" and has a price of "23.00". The ISBN number is highlighted in red as "LIKEWECARE". A "Back" button is visible at the bottom left.

ID: 4

Name: Minna no Nihongo

Stock: out of stock

Catagory: Book

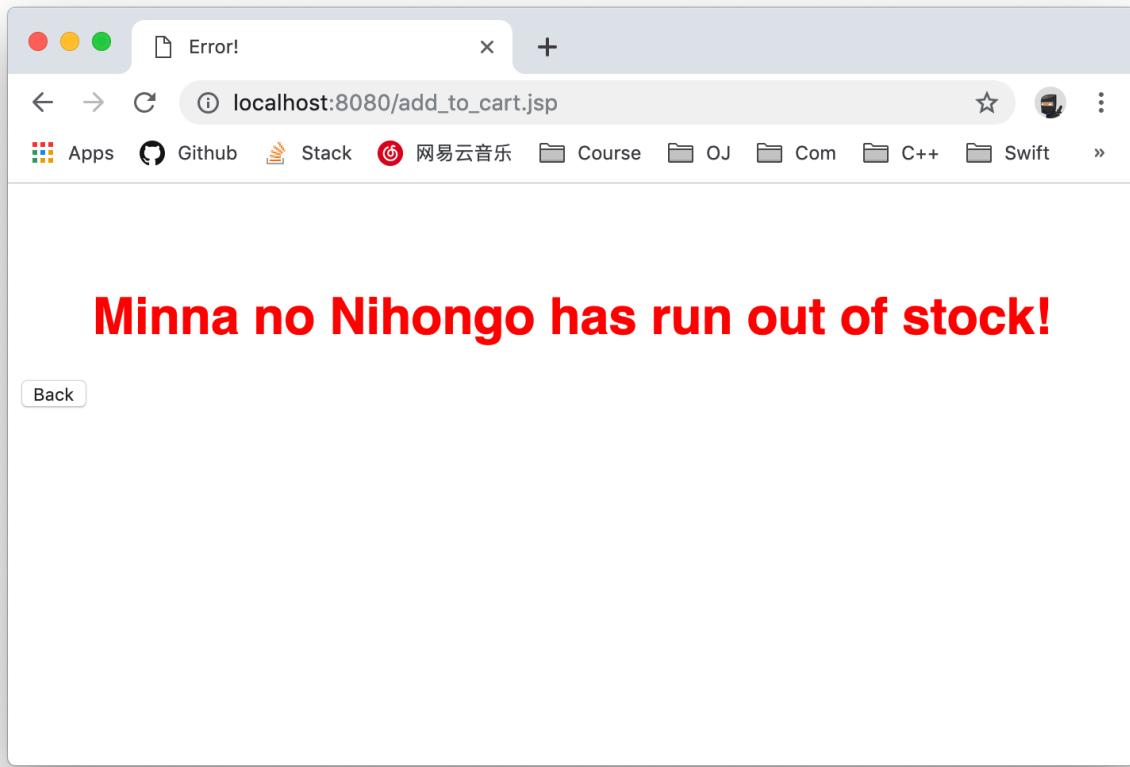
Price: 23.00

ISBN Number: LIKEWECARE

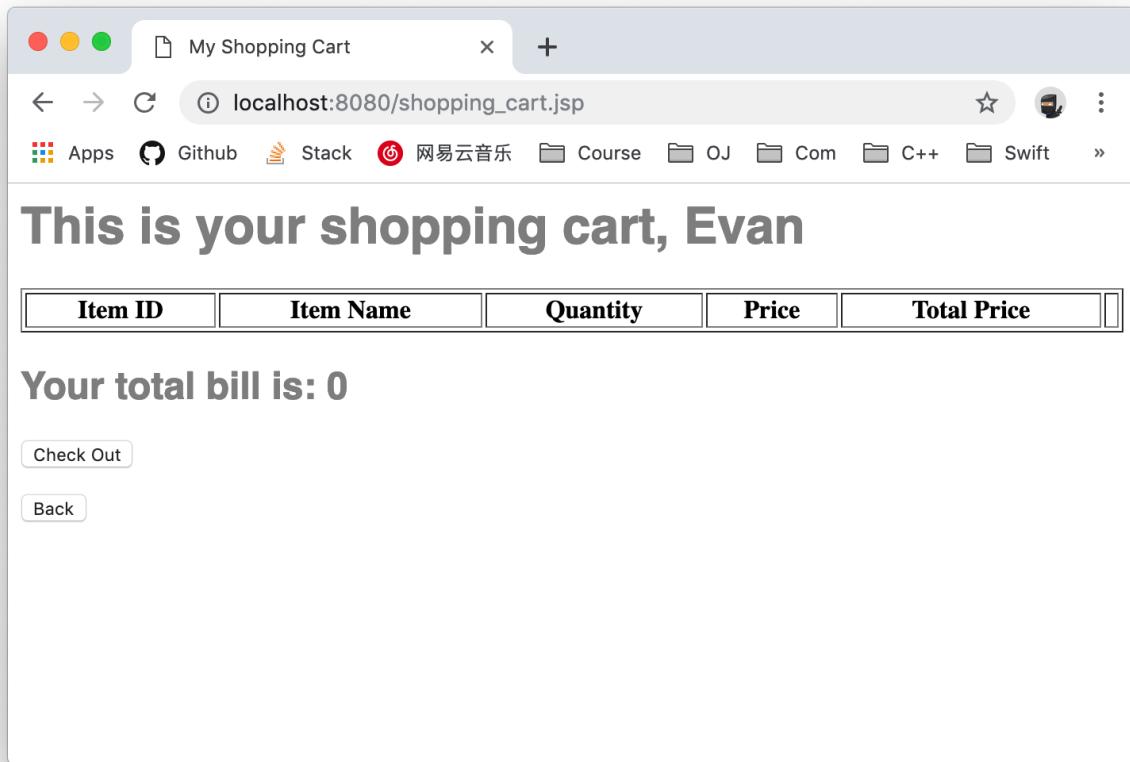
Back

If we add a good which is out of stock to the shopping cart, there will be an error indicating the good has run out of stock and thus can't be added to the shopping cart.

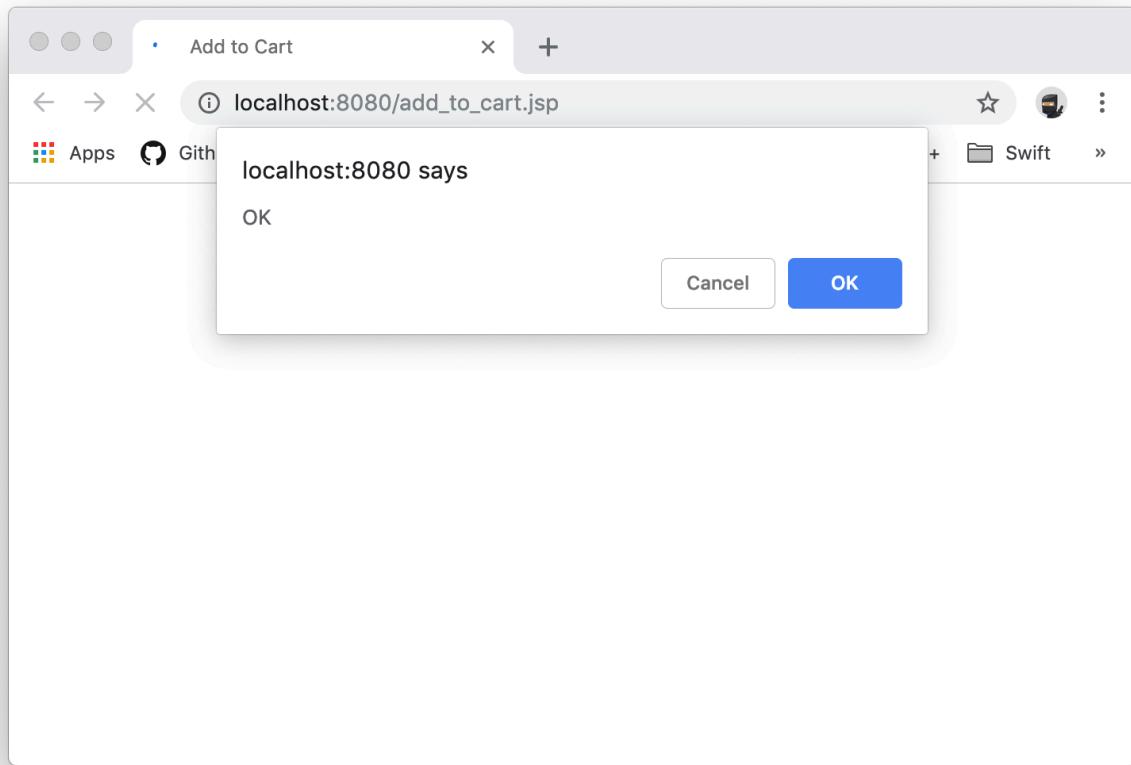
For example, we add *Minna no Nihongo* to the cart. And then get the following page.



This is the cart before we add an iPhone XS and a *Head First Servlets and JSP* to our cart.



And then we click add to cart respectively.



And now our cart is like the following.

My Shopping Cart

localhost:8080/shopping_cart.jsp

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This is your shopping cart, Evan

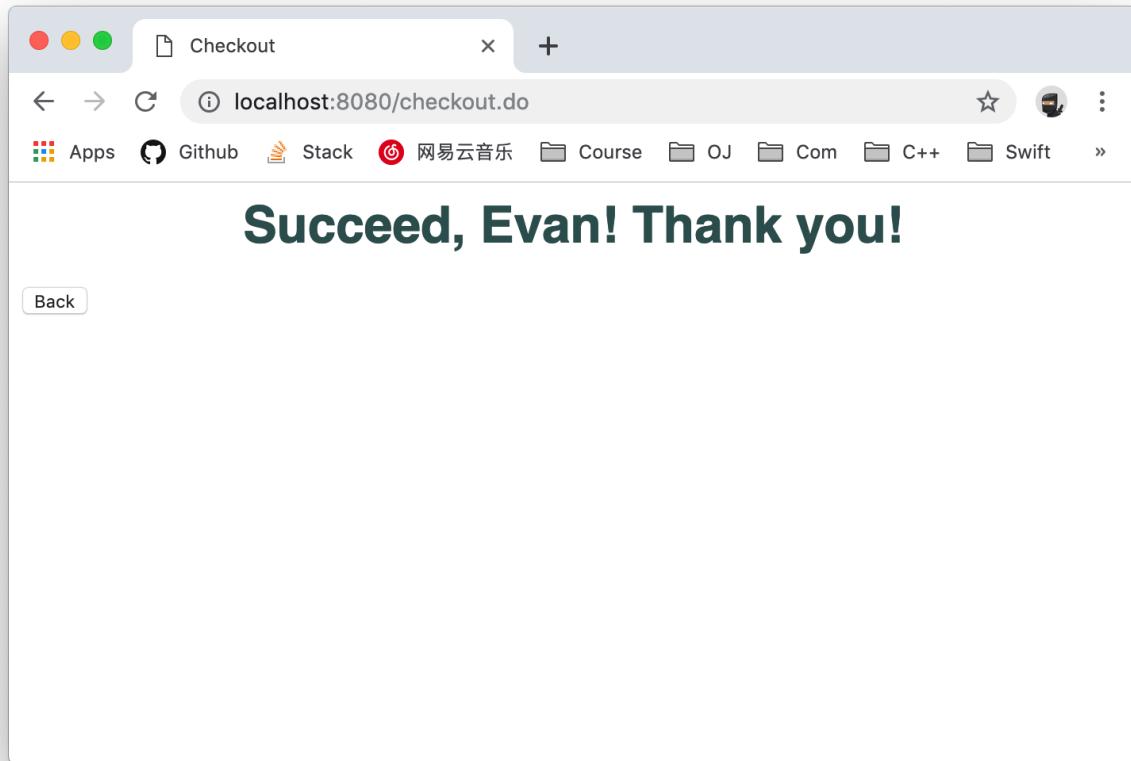
Item ID	Item Name	Quantity	Price	Total Price	
3	Head First Servlets & JSP	1	138.99	138.99	<button>DELETE</button>
5	iPhone XS	1	999.00	999.00	<button>DELETE</button>

Your total bill is: 1137.99

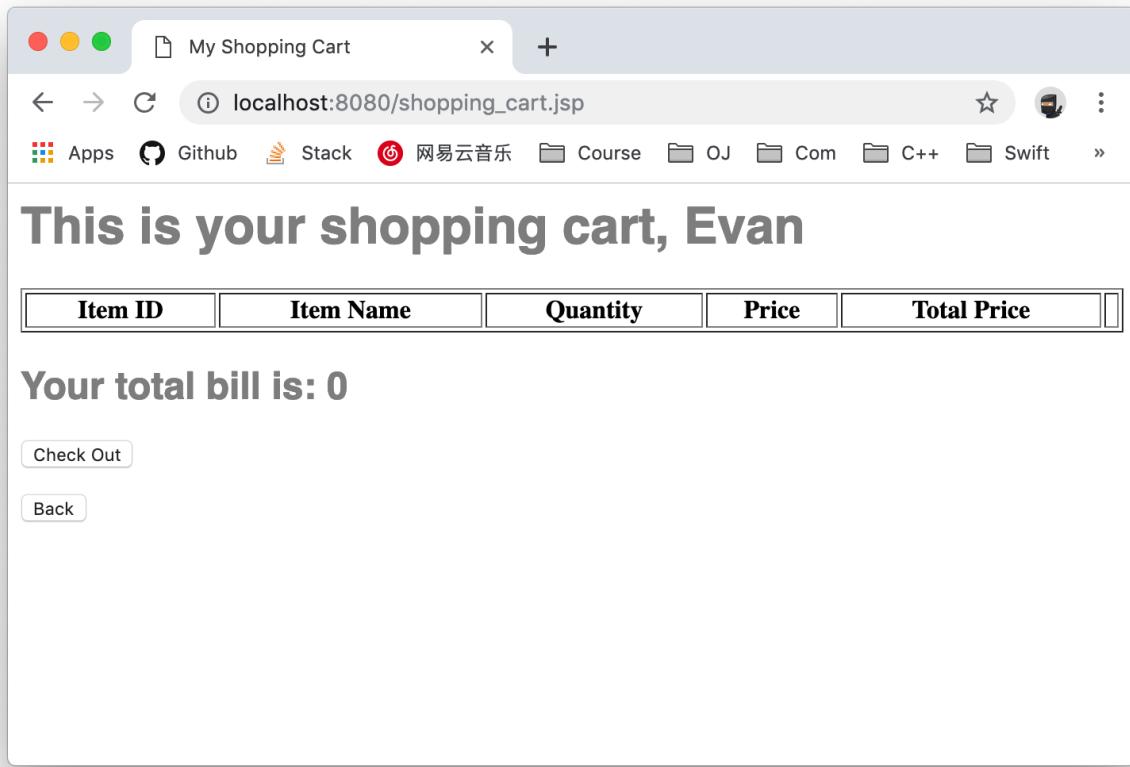
[Check Out](#)

[Back](#)

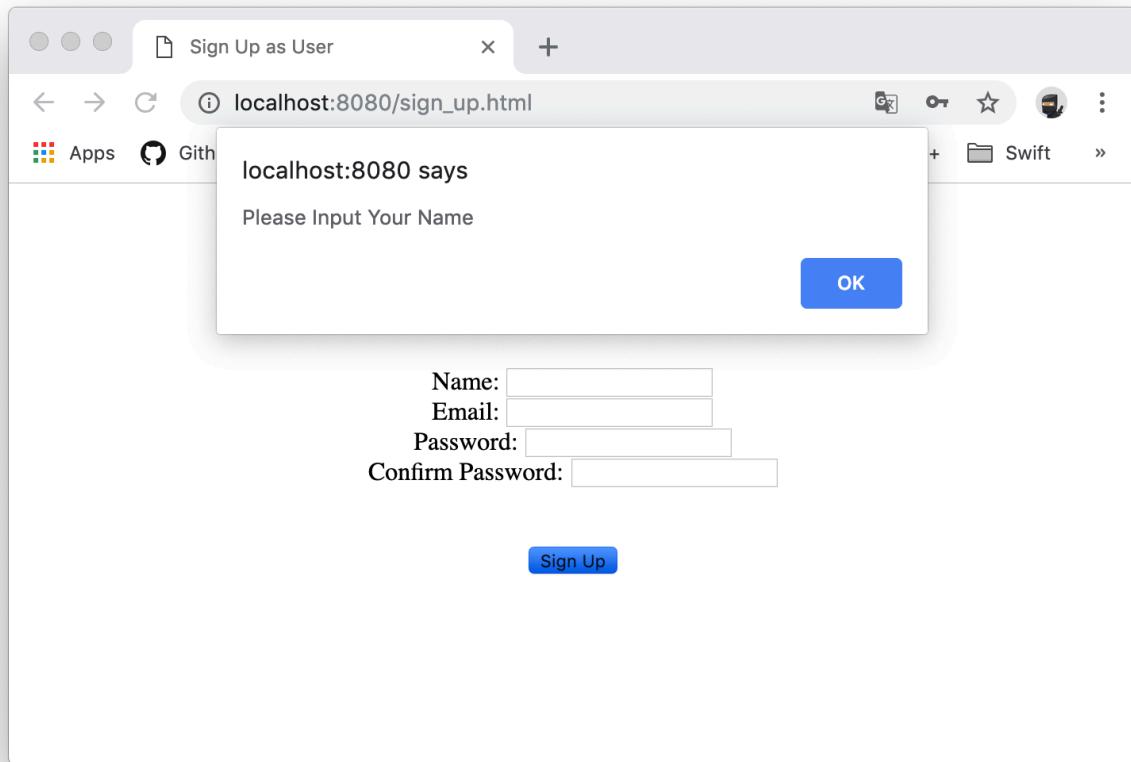
And then we check out. And get the following.



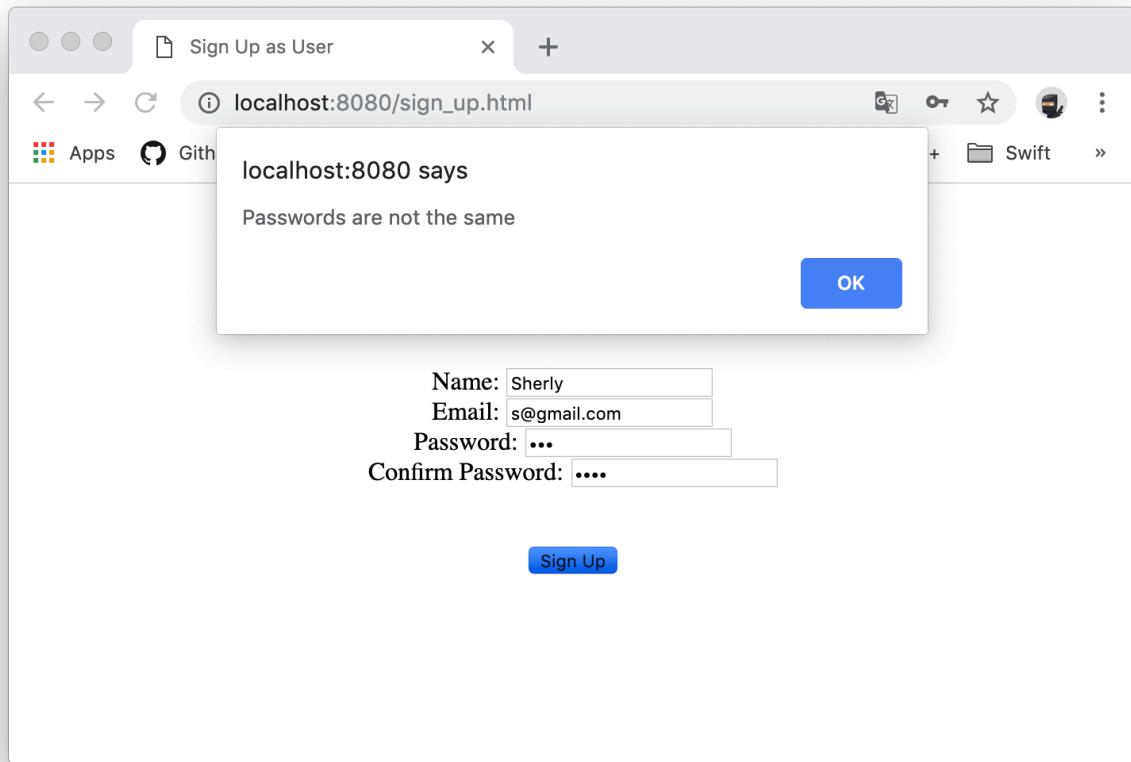
Click back we go to our shopping cart and now it's empty.



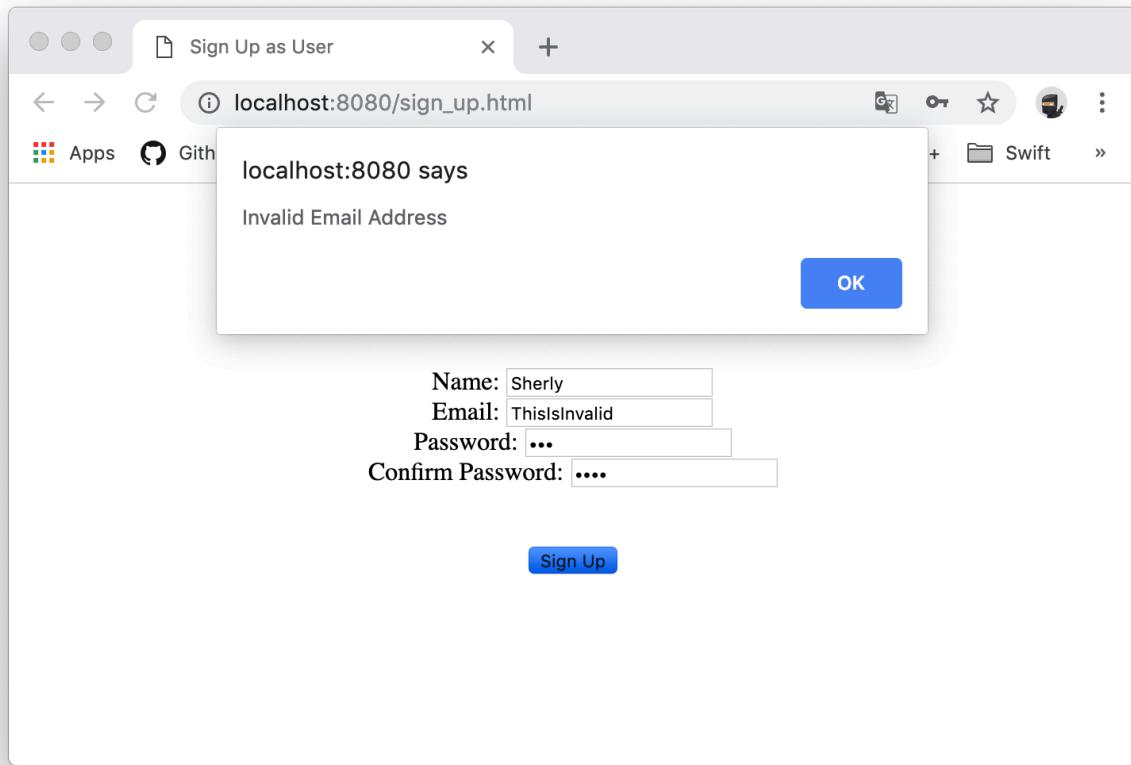
In `sign_up.html` page we can register our account. If we don't input anything and hit **Sign Up**, there will be a prompt.



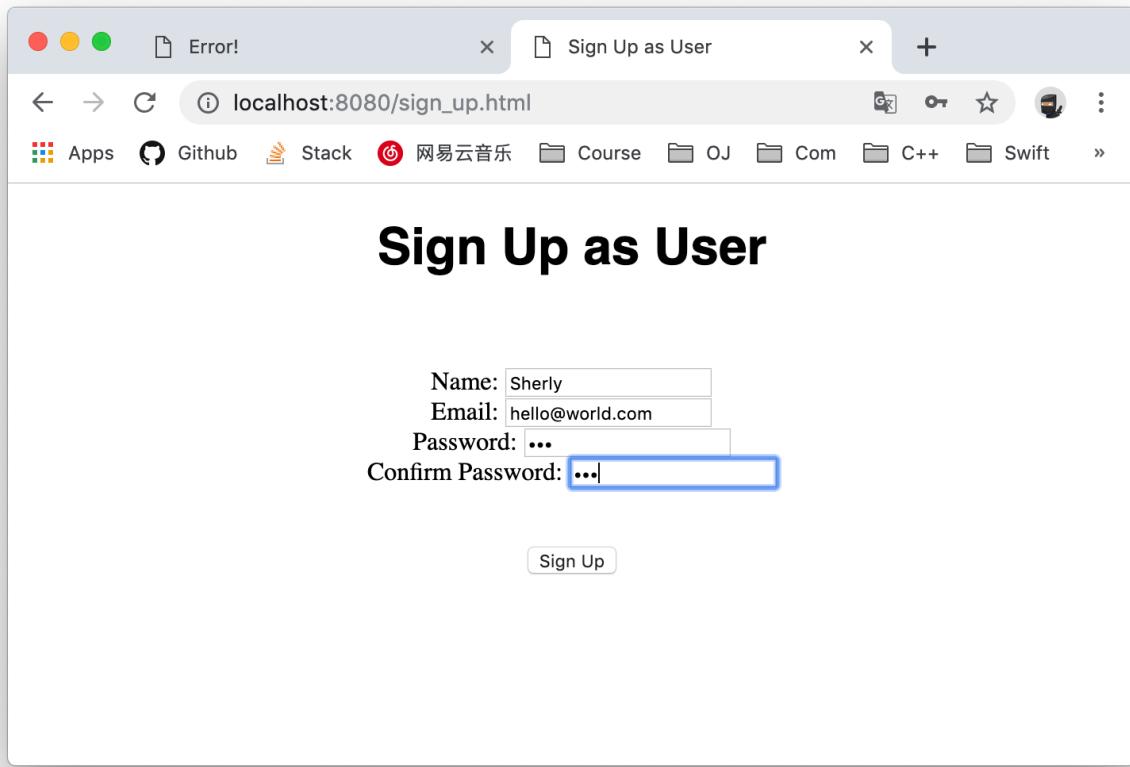
If the two passwords are not the same.

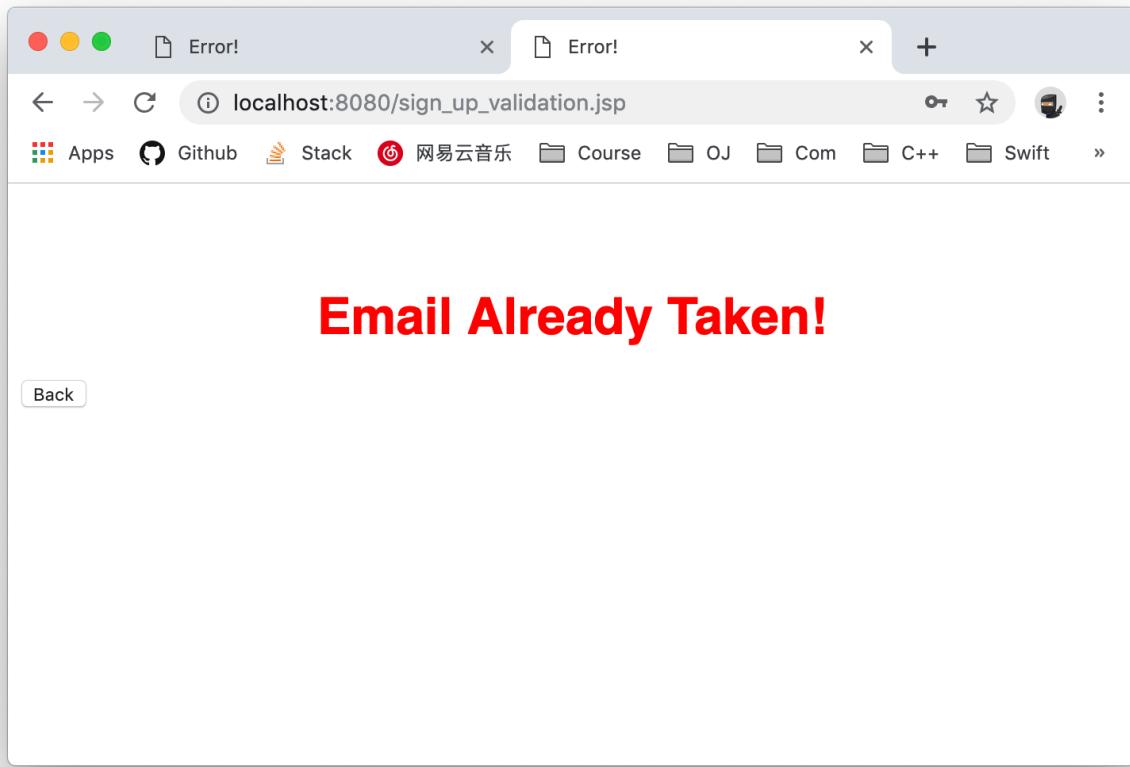


And invalid email address.

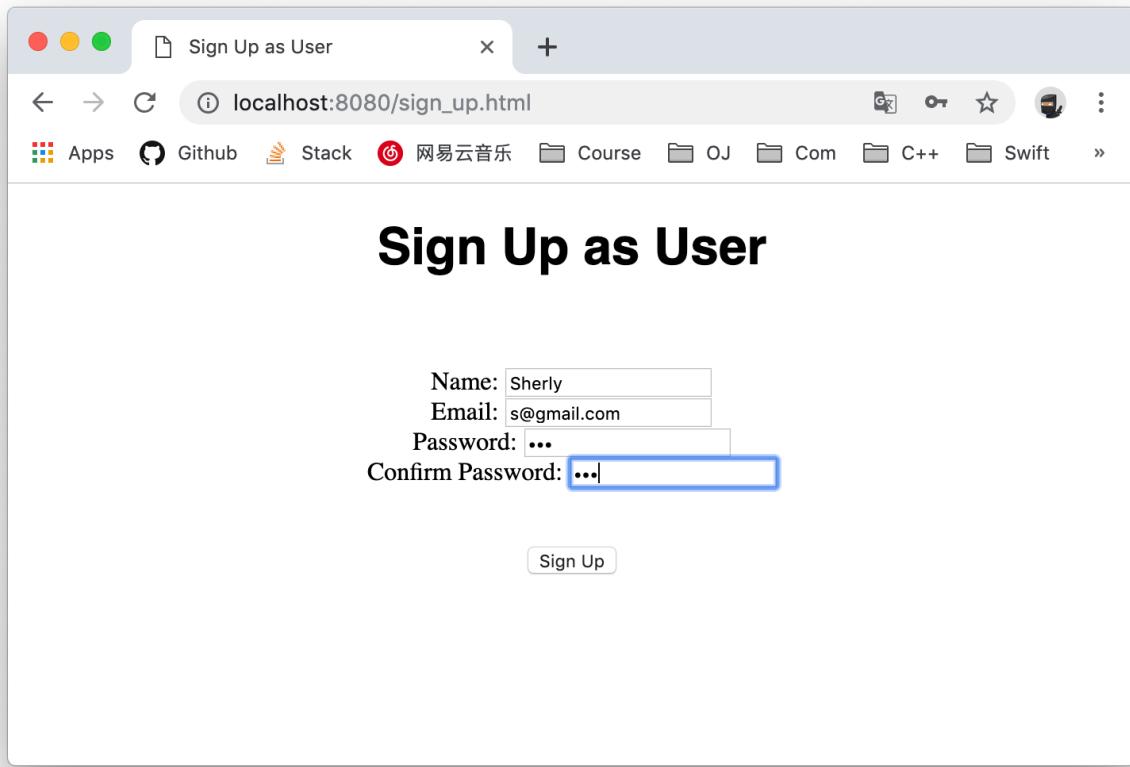


If we use an email that's already been registered.





If everything is fine, we can go to the `user_page.jsp`.



The screenshot shows a web browser window titled "User Center" with the URL "localhost:8080/user_page.jsp". The page displays a greeting "Hello, Sherly" and links for "Log Out" and "My Shopping Cart". A dropdown menu is open, showing "ALL" and "OK". Below is a table listing items in the shopping cart:

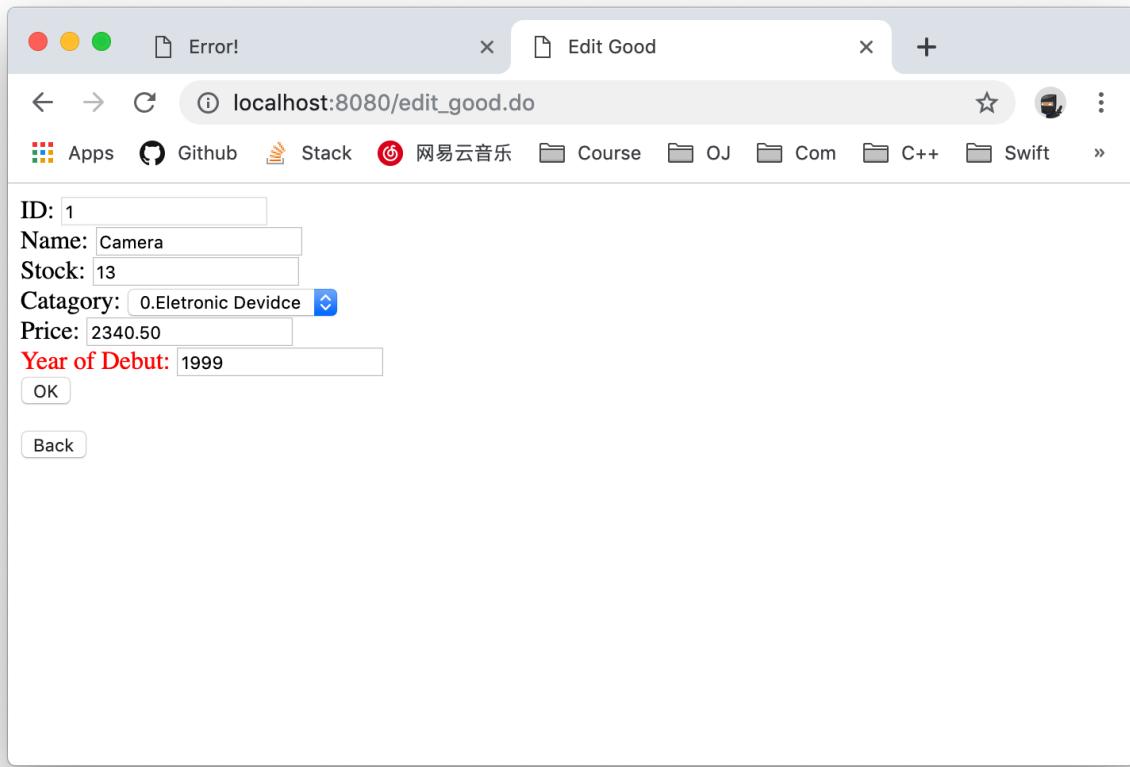
ID	Name	Price	Stock		
2	Phone	5400.00	5	Add to Cart	View Detail
3	Head First Servlets & JSP	138.99	10	Add to Cart	View Detail
4	Minna no Nihongo	23.00	0	Add to Cart	View Detail
5	iPhone XS	999.00	0	Add to Cart	View Detail

Admin can't registered for safty concerns. After you get the right admin email and password, you can go to the [admin_page.jsp](#)

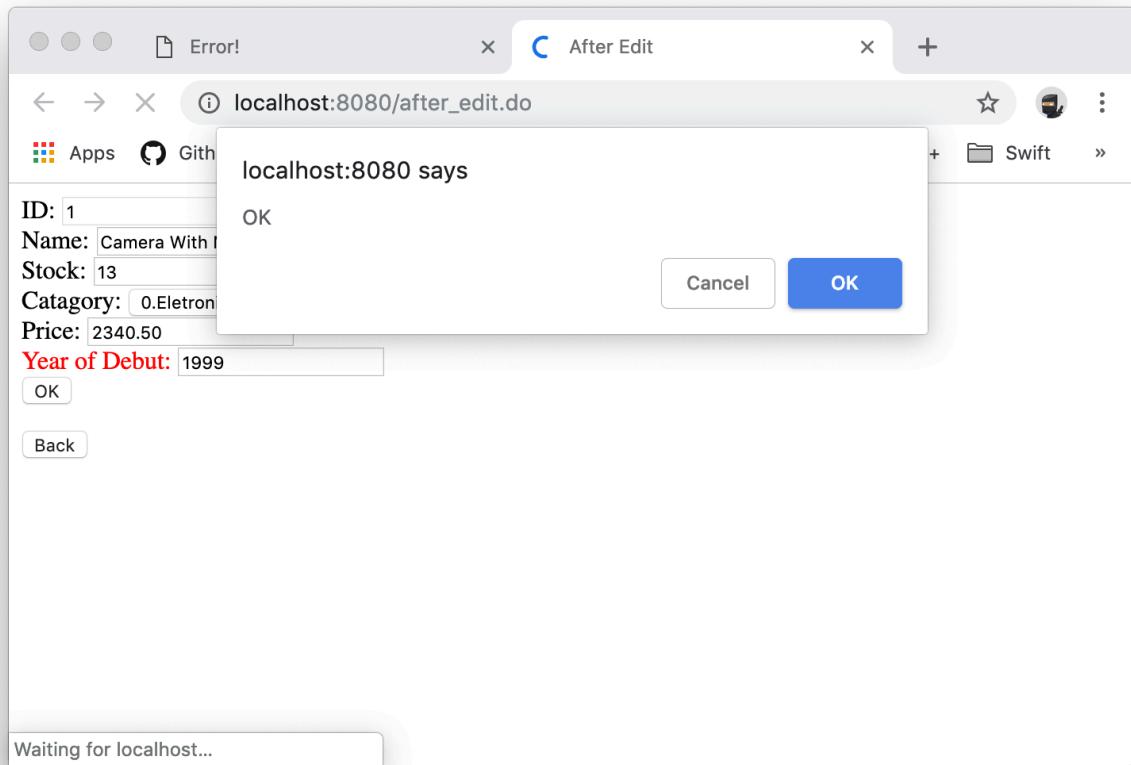
The screenshot shows a web browser window titled "Admin Center" with the URL "localhost:8080/admin_page.jsp". The page displays a table of five items with columns: ID, Name, Stock, Catagory, Price, Edit Info, and DELETE. The items are:

ID	Name	Stock	Catagory	Price	Edit Info	DELETE
1	Camera	13	0	2340.50	Edit Info	DELETE
2	Phone	5	0	5400.00	Edit Info	DELETE
3	Head First Servlets & JSP	11	1	138.99	Edit Info	DELETE
4	Minna no Nihongo	0	1	23.00	Edit Info	DELETE
5	iPhone XS	1	0	999.00	Edit Info	DELETE

Below the table, there is a message: "You can edit good information. For example, if we hit the **Edit info** for Camera".



We change the name. And the prompt appears.



And then the name is changed.

Hello, Admin(admin@admin.com)

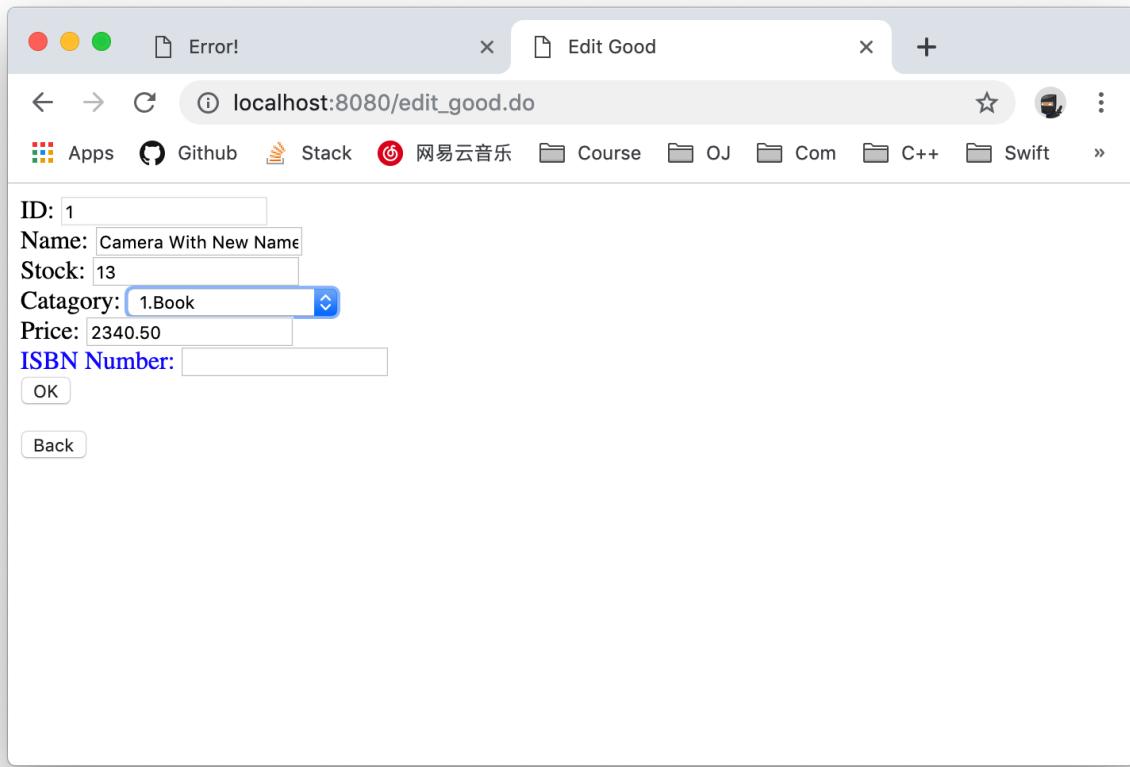
[Log Out](#)

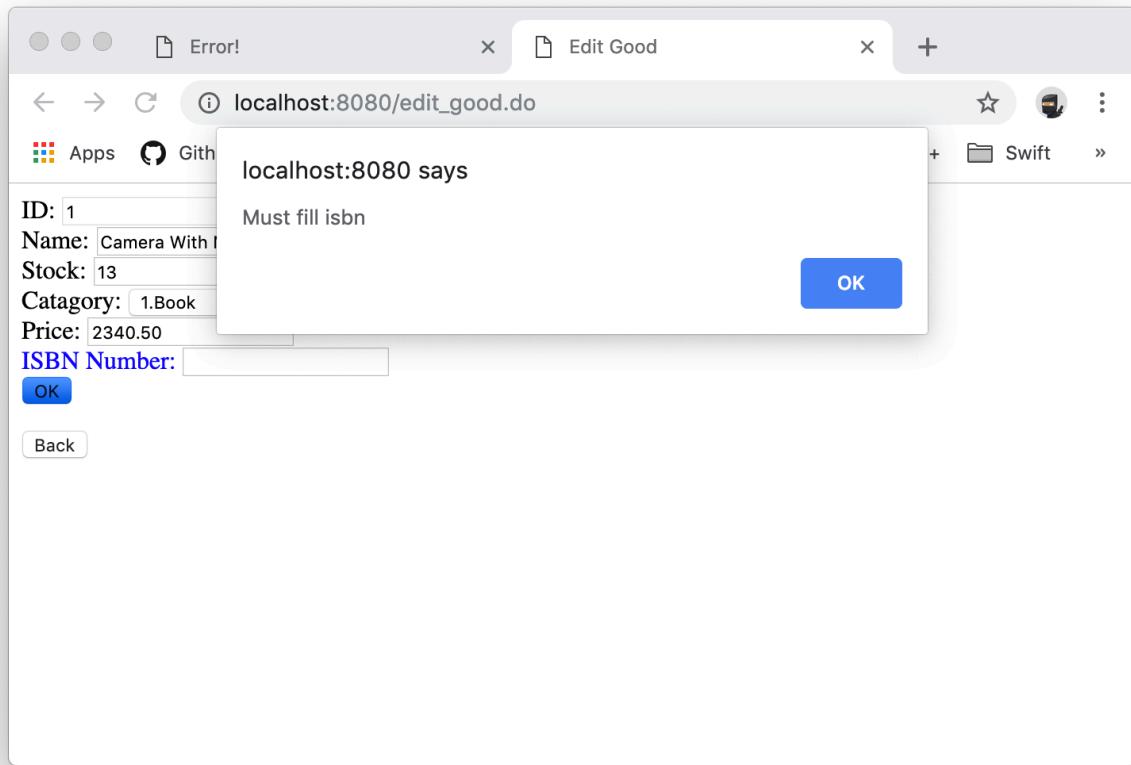
[Add Catagory](#)

[Add New Good](#)

ID	Name	Stock	Catagory	Price		
1	Camera With New Name	13	0	2340.50	Edit Info	DELETE
2	Phone	5	0	5400.00	Edit Info	DELETE
3	Head First Servlets & JSP	11	1	138.99	Edit Info	DELETE
4	Minna no Nihongo	0	1	23.00	Edit Info	DELETE
5	iPhone XS	1	0	999.00	Edit Info	DELETE

If we change the category of it. We must fill the according information. Otherwise we get a prompt.





If we delete the good, we need to confirm it. Click **OK** and we can delete it.

Delete Good

localhost:8080/delete_good.do

localhost:8080 says

OK

Cancel OK

[Log Out](#)

[Add Catagory](#)

[Add New Good](#)

ID	Name	Stock	Catagory	Price		
1	Camera With New Name	13	0	2340.50	Edit Info	DELETE
2	Phone	5	0	5400.00	Edit Info	DELETE
3	Head First Servlets & JSP	11	1	138.99	Edit Info	DELETE
4	Minna no Nihongo	0	1	23.00	Edit Info	DELETE
5	iPhone XS	1	0	999.00	Edit Info	DELETE

Waiting for localhost...

Hello, Admin(admin@admin.com)

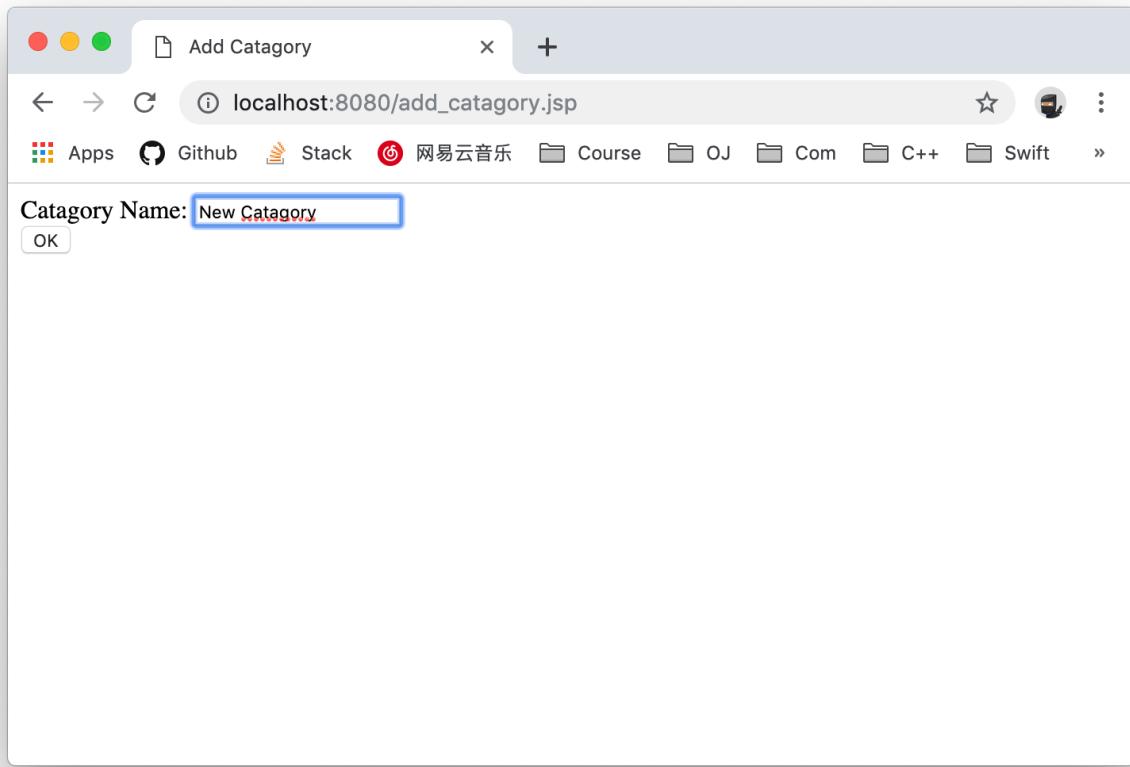
[Log Out](#)

[Add Catagory](#)

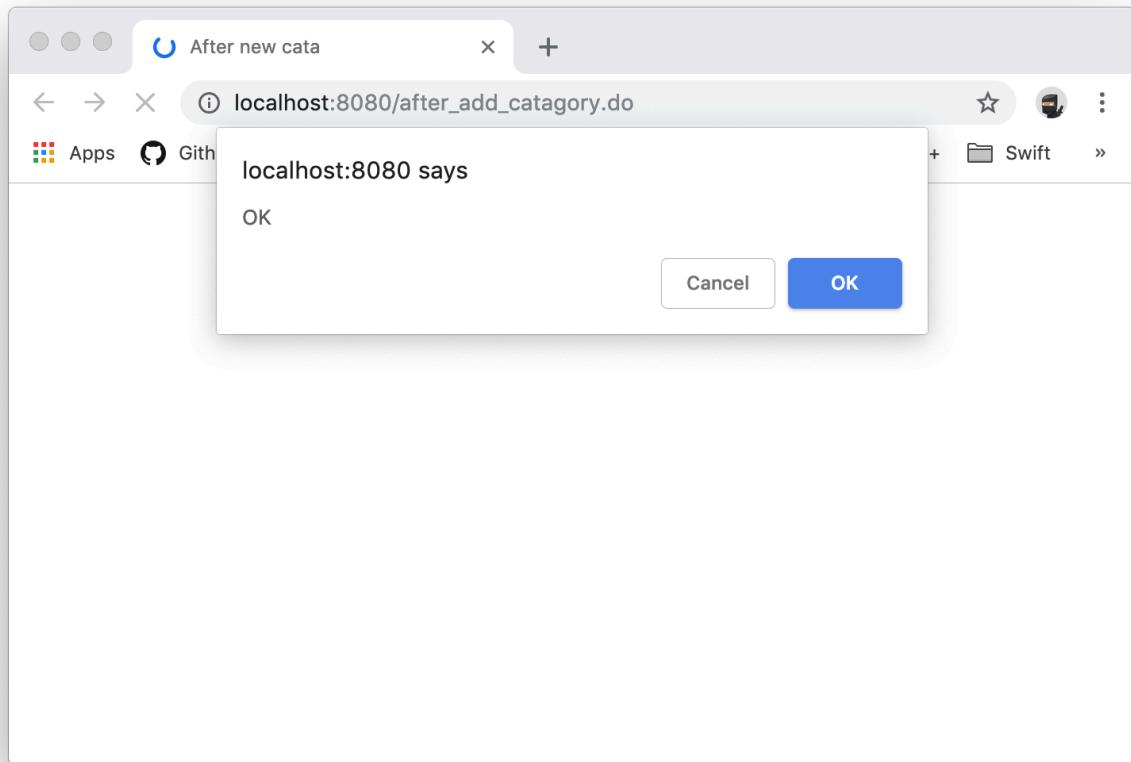
[Add New Good](#)

ID	Name	Stock	Category	Price	Edit Info	Delete
2	Phone	5	0	5400.00	Edit Info	DELETE
3	Head First Servlets & JSP	11	1	138.99	Edit Info	DELETE
4	Minna no Nihongo	0	1	23.00	Edit Info	DELETE
5	iPhone XS	1	0	999.00	Edit Info	DELETE

Admin can also add a new category by clicking **Add Category**.



And click **OK**



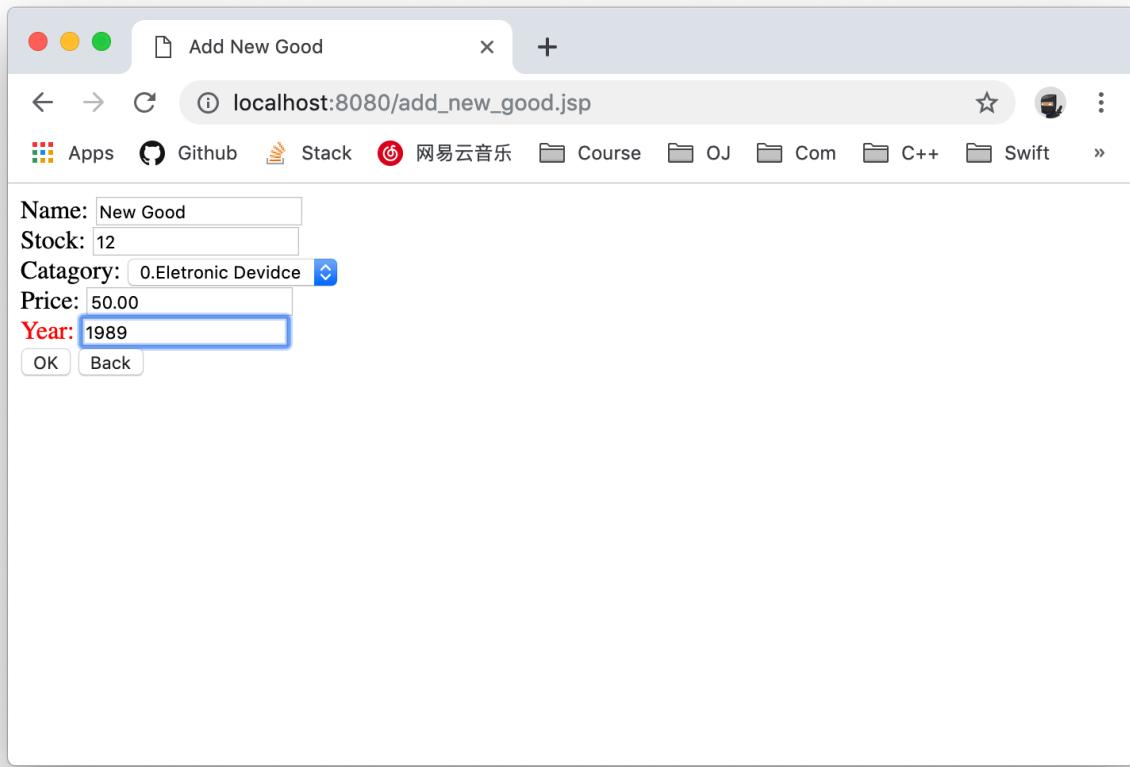
And now we can see that there is a new category.

A screenshot of a macOS application window titled "Edit Good". The window has a standard OS X title bar with close, minimize, and zoom buttons. Below the title bar is a toolbar with icons for "Apps", "Github", "Stack", "网易云音乐", "Course", "OJ", "Com", "C++", "Swift", and others. The main content area contains a form with fields for "ID: 2", "Name: Phone", "Stock: 5", and "Price: 54". Below the "Name" field is a dropdown menu with the following options:

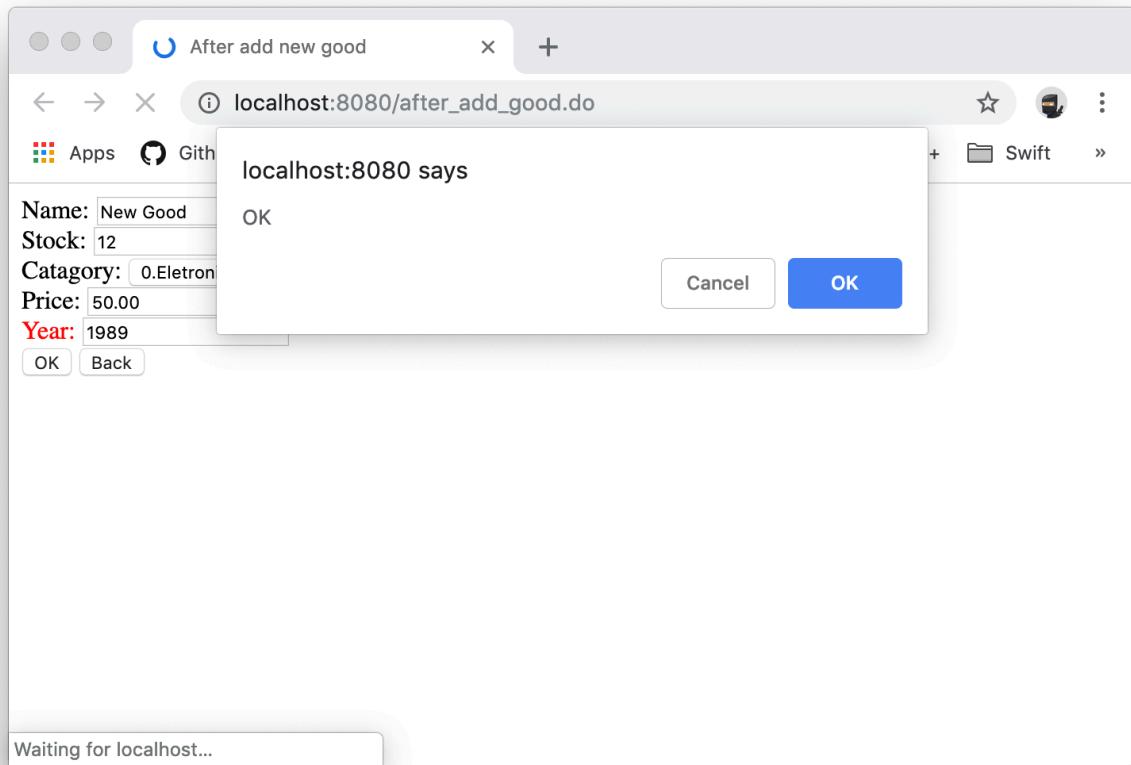
- 0.Eletronic Devidece
- 1.Book
- 2.F
- 3.Food
- 4.Spice
- 9.test
- 10.New Catagory** (highlighted in blue)

At the bottom left of the form are "OK" and "Back" buttons.

Finally we can add a new good by clicking Add New Good.



Clicking OK to confirm.



And see, there is a new good now.

ID	Name	Stock	Catagory	Price	Edit Info	DELETE
2	Phone	5	0	5400.00	<button>Edit Info</button>	<button>DELETE</button>
3	Head First Servlets & JSP	11	1	138.99	<button>Edit Info</button>	<button>DELETE</button>
4	Minna no Nihongo	0	1	23.00	<button>Edit Info</button>	<button>DELETE</button>
5	iPhone XS	1	0	999.00	<button>Edit Info</button>	<button>DELETE</button>
13	New Good	12	0	50.00	<button>Edit Info</button>	<button>DELETE</button>

5.Summary: give your thoughts and suggestions.

This experiment of a small goods system is mainly implemented using JSP and some servlets(they are added at the early time and were deprecated after). The whole development process took about 3 days. From my point of view, web programming is mainly about dealing with request, maintaining user state using session and interacting with database. However, it's also closely related to other common techniques. Like the MVC model and use of .xml configuration file.

The biggest harvest I had this time is that I can now clearly understand the process of web request and response and have a clear mind of the structure of Tomcat server side, and the lifecycle of a JSP. More over, I learnt the services a web container can provide like maintaining a session attribute or context parameters.

And I also got some insight on how to write more sophisticated and robust programs. Like, we should get rid of hard-encoding at our best try and try to use a programming-in-general way, like put the parameters that may change later in a .xml configuration file and so on.