

Server-Side RAD Shipping System

1	Description	3
2	Requirements	3
3	Marks.....	3
4	Submission	3
5	Skeleton.....	4
6	Functionality.....	4
6.1	Main Screen.....	4
6.2	List Ships	4
6.3	Add Ship	5
6.3.1	Success Conditions	5
6.3.2	Invalid user input conditions	6
6.4	List Shipping Companies.....	7
6.5	Add Shipping Company	8
6.5.1	Success Conditions	8
6.5.2	Invalid user input conditions	9
6.6	List Orders	10
6.7	Create Order.....	11
6.7.1	Success Conditions	11
6.7.2	Business Logic for Order Creation:	12
6.7.3	Invalid user input conditions	15
6.8	Security.....	16
6.8.1	Logout.....	16

1 Description

Write a Spring Boot MVC application that allows a user to manage Ships, Shipping Companies and Orders.

2 Requirements

The application should be written in Spring Boot based on the skeleton application available on Moodle and should use the Spring MVC n-tier architecture – Controllers, Services, Repositories, Views, with the appropriate data/logic in each tier.

The Model for the application consists of three objects:

- Ship
 - Ship ID
 - Name
 - Number of Passengers
 - Cost
 - Size (metres)
 - Associated Shipping Company
- Shipping Company
 - Shipping Company ID
 - Name
 - Home Port
 - Company Balance
 - Associated Ships
 - Associated Orders
- OrderInfo
 - Order ID
 - Associated Shipping Company
 - Associated Ship
 - Order Date

These models have been given in the skeleton code for the project and their dependencies already set up.

3 Marks

This project is worth 50% of the marks for the module.

4 Submission

A zipped file containing the source code of the entire application should be uploaded to Moodle before 5:00pm on Friday April 27th 2018.

5 Skeleton

The application should be created by updating the skeleton application available on Moodle.

6 Functionality

6.1 Main Screen

When the application starts, the user should see the following screen:

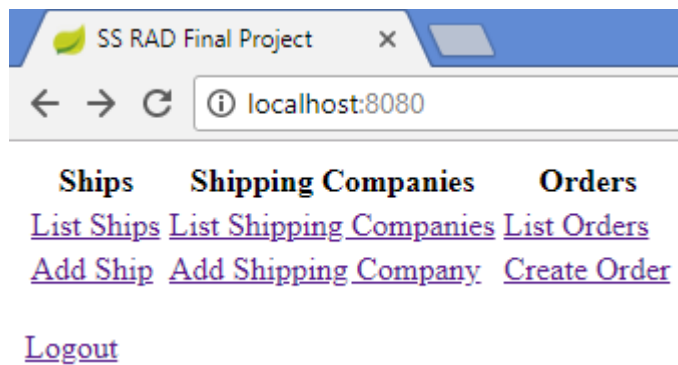


Figure 1 Main Screen

6.2 List Ships

This screen shows the list of Ships in the shipping database:

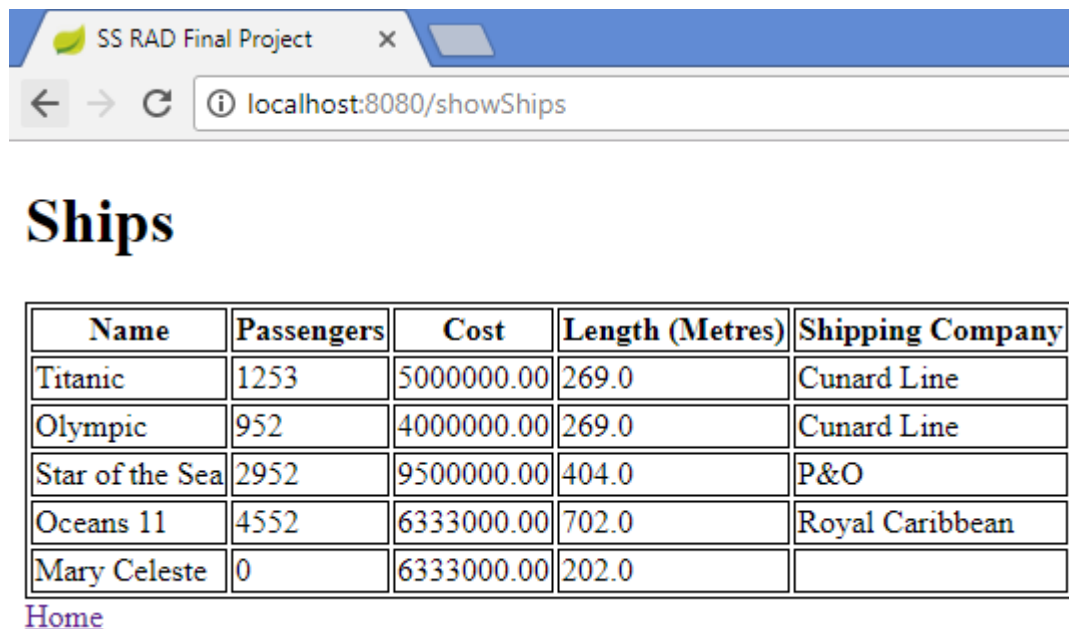


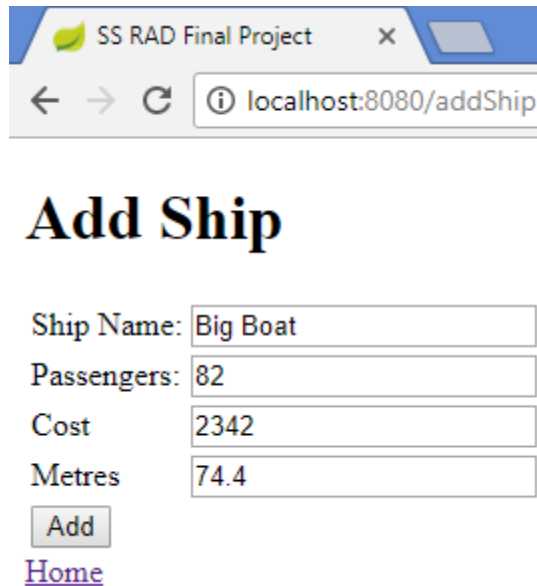
Figure 2 List Ships

6.3 Add Ship

This screen allows the user to add a new Ship.

6.3.1 Success Conditions

If all information is entered correctly, the shipping database is updated with the new Ship information:



SS RAD Final Project

localhost:8080/addShip

Add Ship

Ship Name:

Passengers:

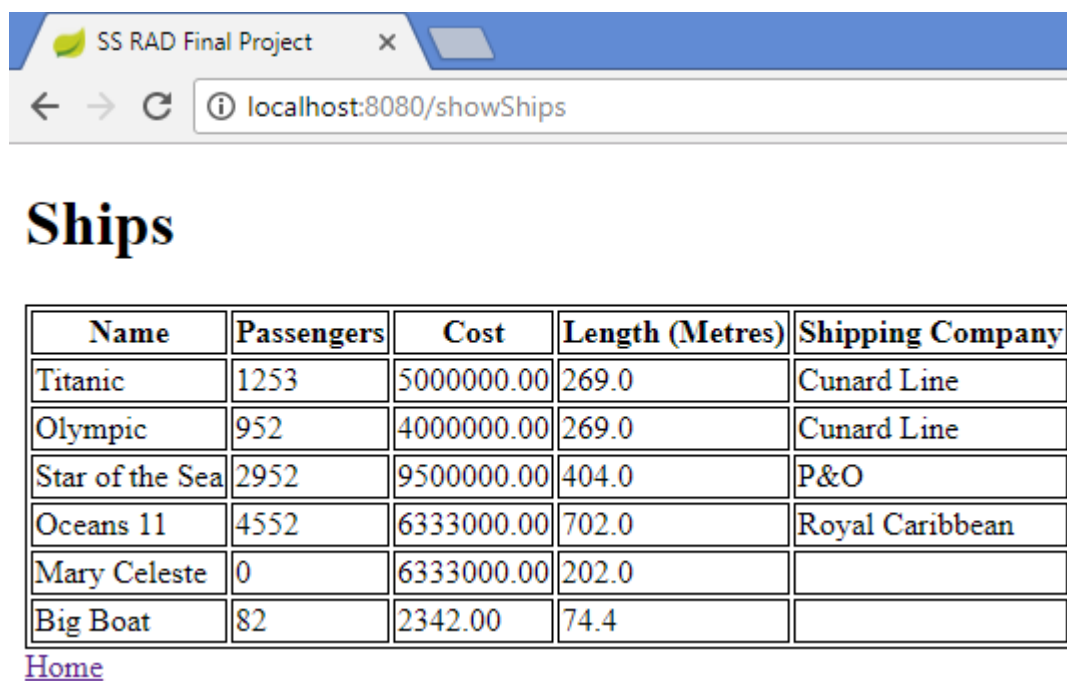
Cost:

Metres:

[Home](#)

Figure 3 Add Ship – OK

And the user is immediately brought to the List Ships page, where the Ship just entered is shown:



SS RAD Final Project

localhost:8080/showShips

Ships

Name	Passengers	Cost	Length (Metres)	Shipping Company
Titanic	1253	5000000.00	269.0	Cunard Line
Olympic	952	4000000.00	269.0	Cunard Line
Star of the Sea	2952	9500000.00	404.0	P&O
Oceans 11	4552	6333000.00	702.0	Royal Caribbean
Mary Celeste	0	6333000.00	202.0	
Big Boat	82	2342.00	74.4	

[Home](#)

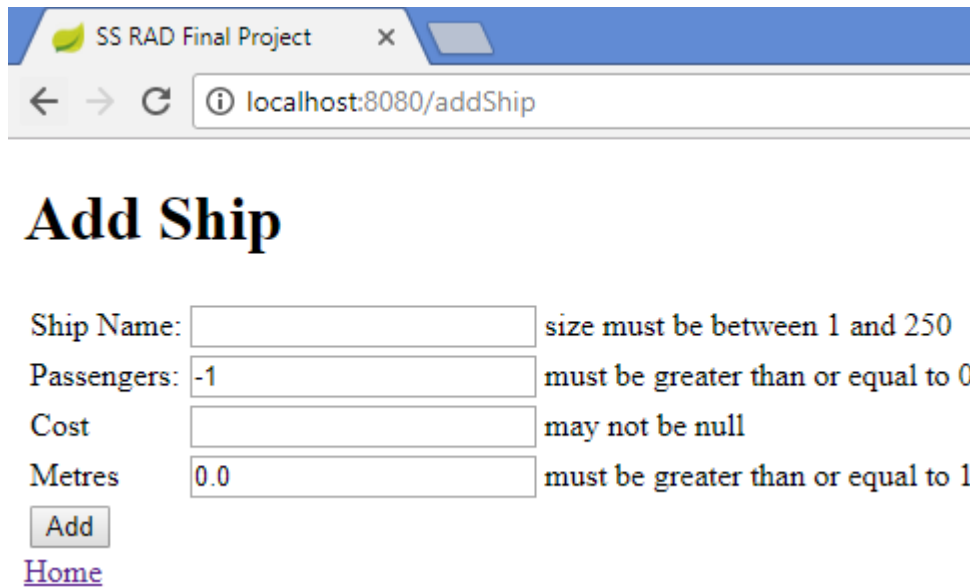
Figure 4 List of Ships after Ship added

6.3.2 Invalid user input conditions

If any of the following errors exist:

- The Ship name is blank
- The number of passengers is less than 0
- The cost is less than 1
- The cost is blank
- The size is less than 1

Appropriate error messages should be shown, and no Ship should be added to the shipping database.



The screenshot shows a web browser window titled "SS RAD Final Project" with the address bar displaying "localhost:8080/addShip". The page has a heading "Add Ship" in a large, bold, serif font. Below the heading, there are four input fields with associated labels and error messages:

Ship Name:	<input type="text"/>	size must be between 1 and 250
Passengers:	<input type="text" value="-1"/>	must be greater than or equal to 0
Cost	<input type="text"/>	may not be null
Metres	<input type="text" value="0.0"/>	must be greater than or equal to 1

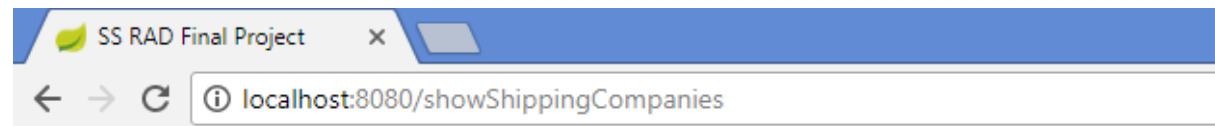
Below the input fields, there is an "Add" button and a "Home" link.

Figure 5 Add Ship – NOK

6.4 List Shipping Companies

This screen shows the list of Shipping Companies in the shipping database.

The **Ships** column lists the ship(s) associated with each Shipping Company.



Name	Home Port	Balance	Ships
P&O	Cork Harbour	20000000.00	<ul style="list-style-type: none">Star of the Sea, 404.0 Mtrs, 9500000.00
Cunard Line	Portsmouth	97000000.00	<ul style="list-style-type: none">Titanic, 269.0 Mtrs, 5000000.00Olympic, 269.0 Mtrs, 4000000.00
Maersk	Rotterdam	97000000.00	
Royal Caribbean	Miami	107000000.00	<ul style="list-style-type: none">Oceans 11, 702.0 Mtrs, 6333000.00

[Home](#)

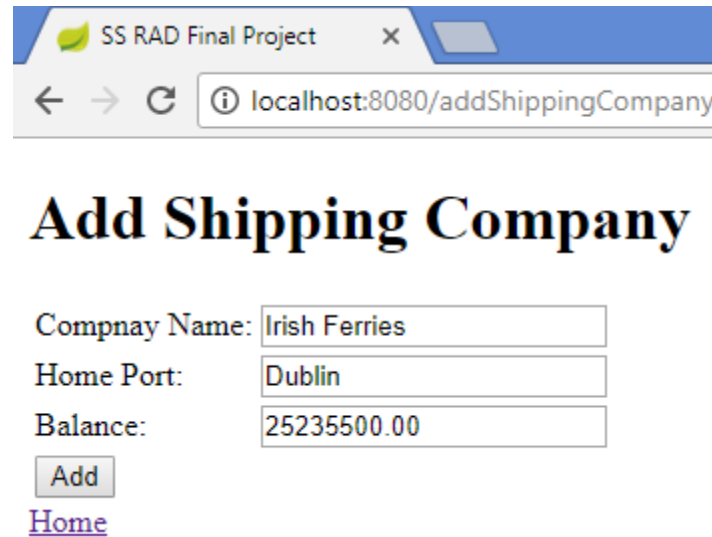
Figure 6 List of Shipping Companies

6.5 Add Shipping Company

This screen allows the user to add a Shipping Company.

6.5.1 Success Conditions

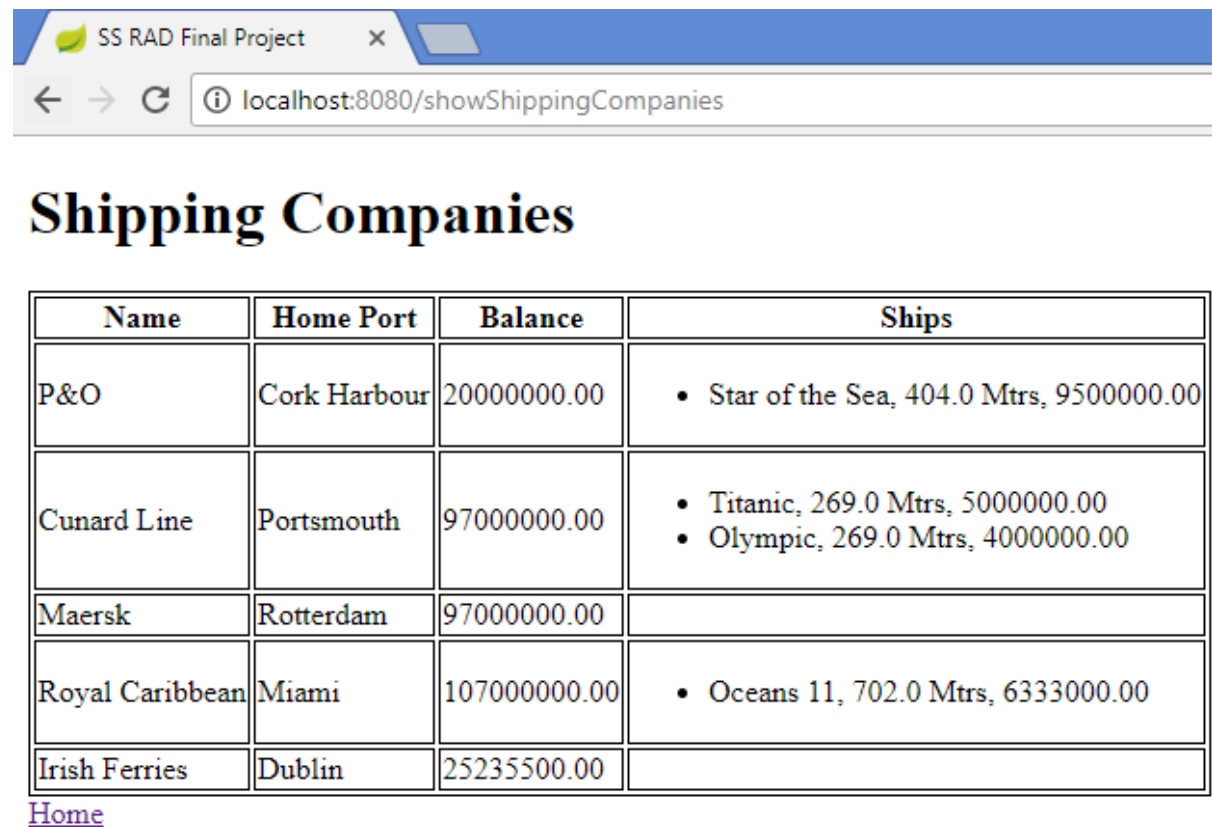
If all information is entered correctly, the shipping database is updated with the new Shipping Company:



The screenshot shows a web browser window with the title 'SS RAD Final Project'. The address bar displays 'localhost:8080/addShippingCompany'. The main heading is 'Add Shipping Company'. Below the heading, there are three input fields: 'Compnay Name:' with the value 'Irish Ferries', 'Home Port:' with the value 'Dublin', and 'Balance:' with the value '25235500.00'. There is an 'Add' button and a 'Home' link below the form.

Figure 7 Add Shipping Company – OK

And the user is immediately brought to the List Shipping Companies page, where the Shipping Company just entered is shown:



The screenshot shows a web browser window with the title 'SS RAD Final Project'. The address bar displays 'localhost:8080/showShippingCompanies'. The main heading is 'Shipping Companies'. Below the heading, there is a table listing shipping companies. The table has four columns: 'Name', 'Home Port', 'Balance', and 'Ships'. The data rows are as follows:

Name	Home Port	Balance	Ships
P&O	Cork Harbour	20000000.00	• Star of the Sea, 404.0 Mtrs, 9500000.00
Cunard Line	Portsmouth	97000000.00	• Titanic, 269.0 Mtrs, 5000000.00 • Olympic, 269.0 Mtrs, 4000000.00
Maersk	Rotterdam	97000000.00	
Royal Caribbean	Miami	107000000.00	• Oceans 11, 702.0 Mtrs, 6333000.00
Irish Ferries	Dublin	25235500.00	

Below the table, there is a 'Home' link.

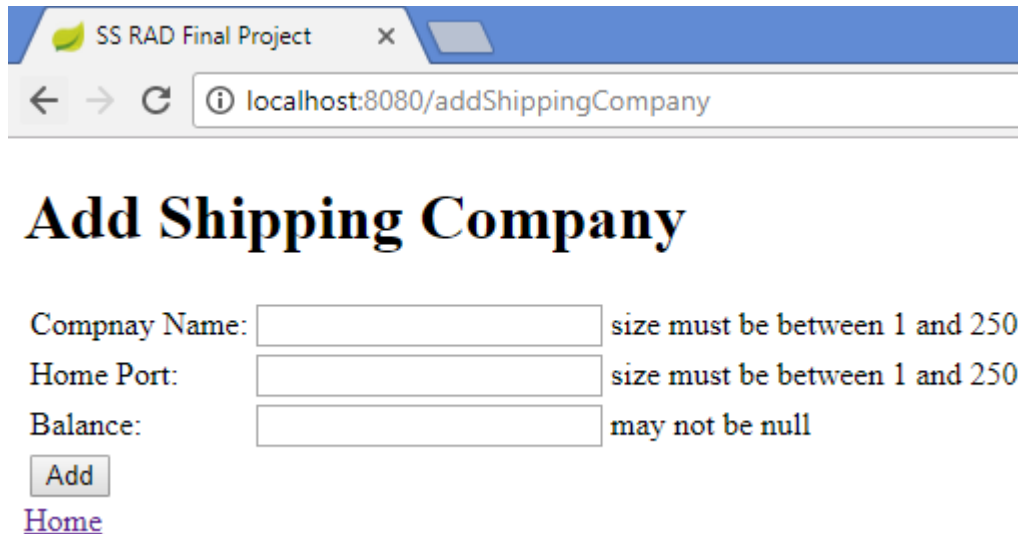
Figure 8 List of Shipping Companies after new Shipping Company added

6.5.2 Invalid user input conditions

If any of the following errors exist:

- The Shipping Company name is blank
- The Home Port is blank
- The cost is less than 1
- The cost is blank

Appropriate error messages should be shown, and no Shipping Company should be added to the shipping database.



The screenshot shows a web browser window with the title 'SS RAD Final Project'. The address bar displays 'localhost:8080/addShippingCompany'. The main heading is 'Add Shipping Company'. Below the heading, there are three input fields with associated error messages:

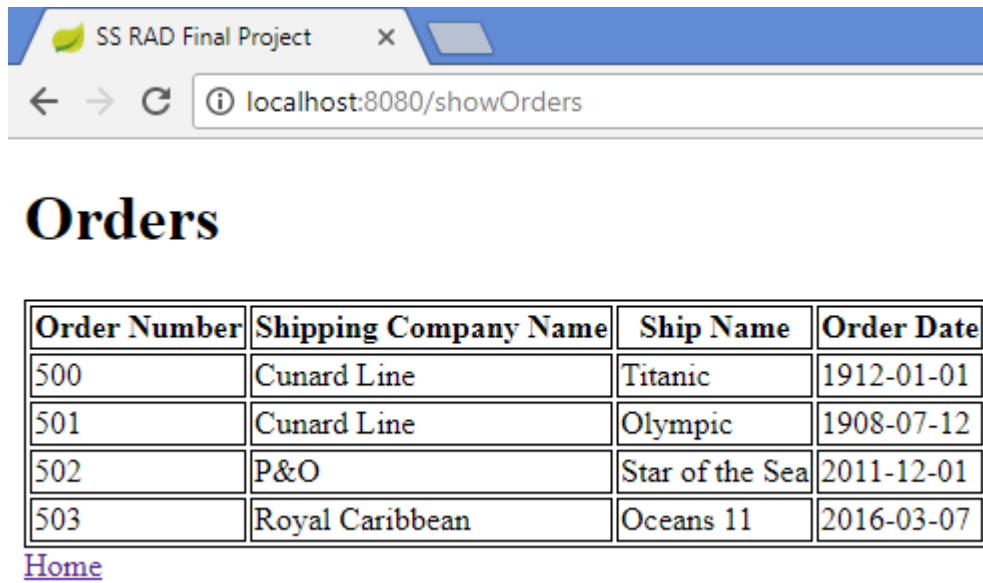
- Compnay Name:** [input field] size must be between 1 and 250
- Home Port:** [input field] size must be between 1 and 250
- Balance:** [input field] may not be null

Below the input fields, there is an 'Add' button and a 'Home' link.

Figure 9 Add Shipping Company – NOK

6.6 List Orders

This screen shows the list of Orders in the shipping database, indicating the Shipping Company name and Ship name.



Order Number	Shipping Company Name	Ship Name	Order Date
500	Cunard Line	Titanic	1912-01-01
501	Cunard Line	Olympic	1908-07-12
502	P&O	Star of the Sea	2011-12-01
503	Royal Caribbean	Oceans 11	2016-03-07

[Home](#)

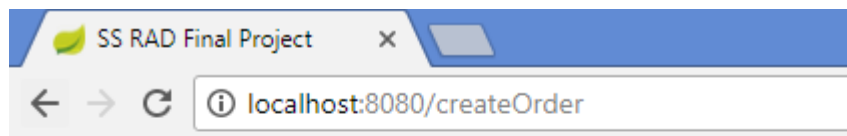
Figure 10 List of Orders

6.7 Create Order

This screen allows the user to create an Order.

It contains two fields:

- Ship Name – This is a drop-down list of all ships that are not currently associated with any Shipping Company. Also displayed is the cost of the ship.
- Shipping Company – This is a drop-down list of all Shipping companies. Also displayed is the Shipping company balance.



New Order

Ship Name:

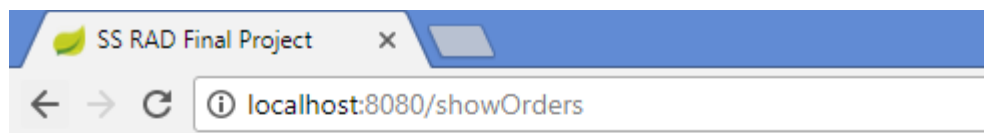
Shipping Company:

[Home](#)

Figure 11 New Order

6.7.1 Success Conditions

If both a Ship and a Shipping Company are successfully selected, an order may be placed, and if the order is valid, the user is immediately brought to the List Orders page, where the new Order is shown:



Orders

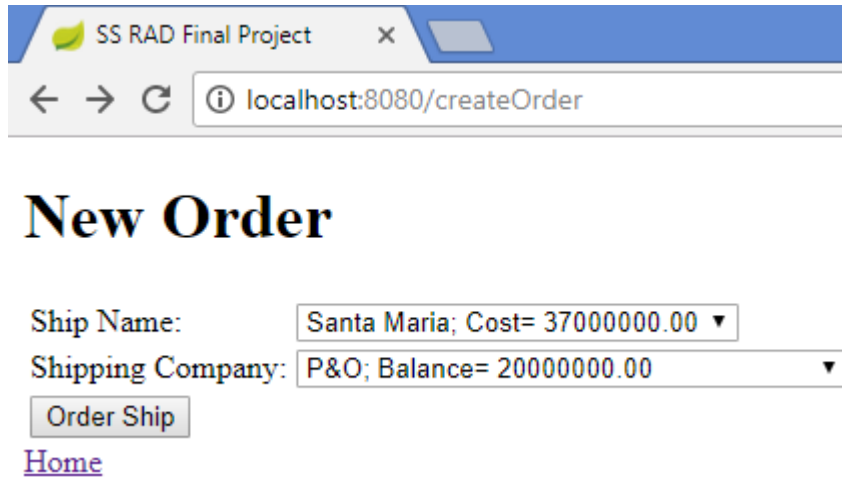
Order Number	Shipping Company Name	Ship Name	Order Date
500	Cunard Line	Titanic	1912-01-01
501	Cunard Line	Olympic	1908-07-12
502	P&O	Star of the Sea	2011-12-01
503	Royal Caribbean	Oceans 11	2016-03-07
504	P&O	Mary Celeste	2018-03-05

[Home](#)

Figure 12 List of Orders after new order added

6.7.2 Business Logic for Order Creation:

- The Cost of a Ship should not be greater than the balance of the Shipping Company attempting to order a Ship, if so an error page should be shown:



SS RAD Final Project x

localhost:8080/createOrder

New Order

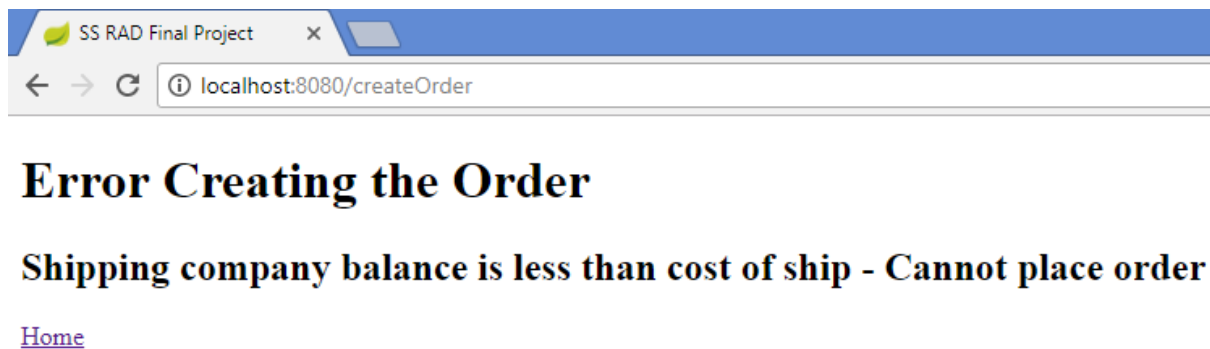
Ship Name: Santa Maria; Cost= 37000000.00 ▼

Shipping Company: P&O; Balance= 20000000.00 ▼

Order Ship

[Home](#)

Figure 13 Attempting to order a Ship when Cost > Shipping Company Balance



SS RAD Final Project x

localhost:8080/createOrder

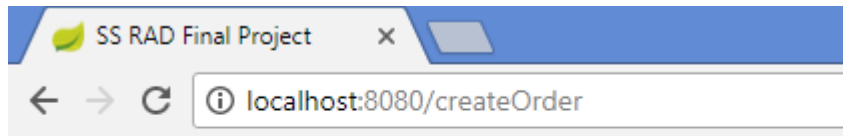
Error Creating the Order

Shipping company balance is less than cost of ship - Cannot place order

[Home](#)

Figure 14 Error after attempting to order a Ship when Cost > Shipping Company Balance

- If the cost of a Ship is not greater than the Shipping Company balance a new order should be created specifying the Ship ID and the Shipping Company ID. Also, the Order date (the current date) should be automatically inserted by the application.
After successful order creation, the user is returned to the List Orders page.



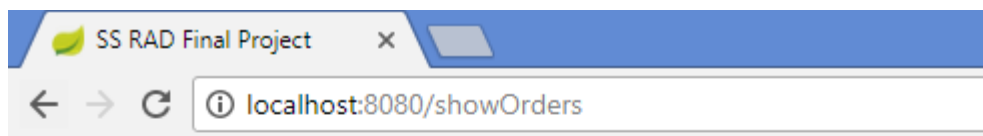
New Order

Ship Name:

Shipping Company:

[Home](#)

Figure 15 Ordering a Ship where Cost <= Shipping Company Balance



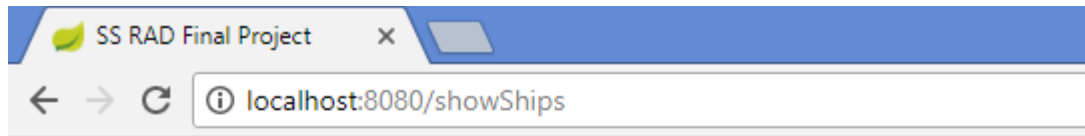
Orders

Order Number	Shipping Company Name	Ship Name	Order Date
500	Cunard Line	Titanic	1912-01-01
501	Cunard Line	Olympic	1908-07-12
502	P&O	Star of the Sea	2011-12-01
503	Royal Caribbean	Oceans 11	2016-03-07
504	P&O	Mary Celeste	2018-03-06

[Home](#)

Figure 16 List of Orders with newly created Order

- As part of creating a new order, the Ship table should be updated to reflect the fact that the Ship being ordered is now associated with the Shipping Company.



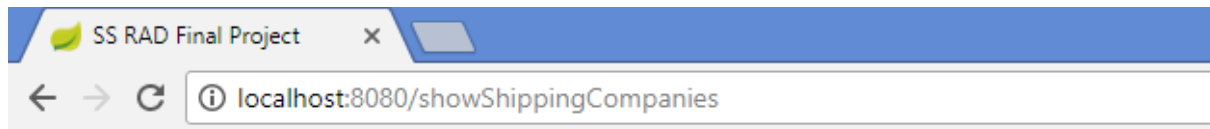
Ships

Name	Passengers	Cost	Length (Metres)	Shipping Company
Titanic	1253	5000000.00	269.0	Cunard Line
Olympic	952	4000000.00	269.0	Cunard Line
Star of the Sea	2952	9500000.00	404.0	P&O
Oceans 11	4552	6333000.00	702.0	Royal Caribbean
Mary Celeste	0	6333000.00	202.0	P&O
Santa Maria	0	37000000.00	98.0	

[Home](#)

Figure 17 Ship associated with Shipping Company

- Also, as part of creating a new order, the Shipping Company table should be updated to reflect the new balance (previous balance – cost of Ship).



Shipping Companies

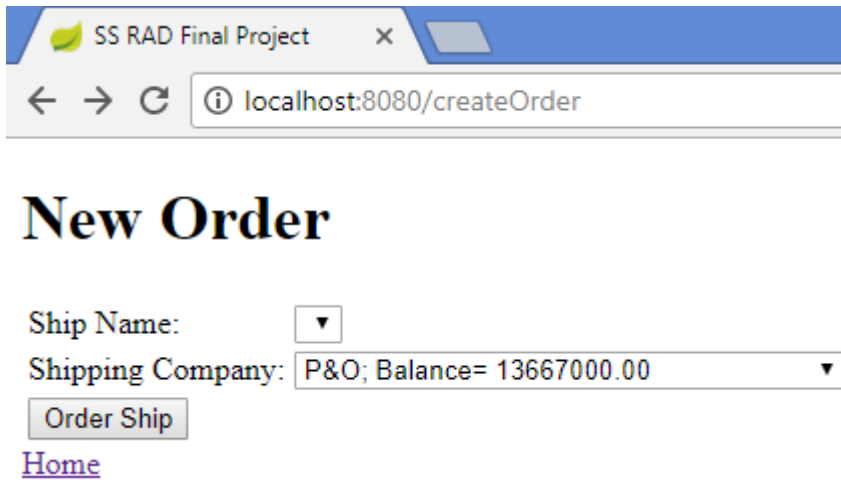
Name	Home Port	Balance	Ships
P&O	Cork Harbour	13667000.00	<ul style="list-style-type: none"> Star of the Sea, 404.0 Mtrs, 9500000.00 Mary Celeste, 202.0 Mtrs, 6333000.00
Cunard Line	Portsmouth	97000000.00	<ul style="list-style-type: none"> Titanic, 269.0 Mtrs, 5000000.00 Olympic, 269.0 Mtrs, 4000000.00
Maersk	Rotterdam	97000000.00	
Royal Caribbean	Miami	107000000.00	<ul style="list-style-type: none"> Oceans 11, 702.0 Mtrs, 6333000.00

[Home](#)

Figure 18 Shipping Company with new Balance

6.7.3 Invalid user input conditions

If no Ship and/or Shipping Company is/are selected, an error page should be displayed informing the user of this.



SS RAD Final Project x

localhost:8080/createOrder

New Order

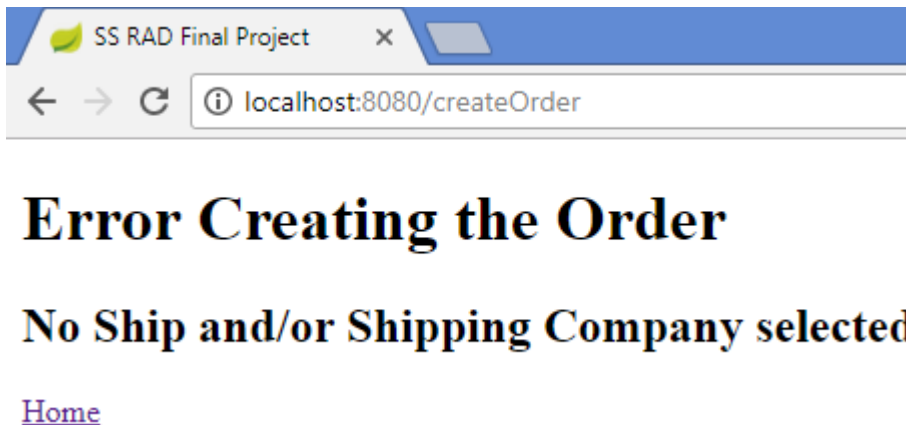
Ship Name: ▼

Shipping Company: P&O; Balance= 13667000.00 ▼

Order Ship

[Home](#)

Figure 19 Attempting to create an order without selecting a Ship



SS RAD Final Project x

localhost:8080/createOrder

Error Creating the Order

No Ship and/or Shipping Company selected

[Home](#)

Figure 20 Attempting to create an order without selecting a Ship - Error Page

6.8 Security

The application should implement security on the following pages:

- Add Ship
- Add Shipping Company
- Create Order

Only logged in users should be able to access these pages.

There should be one user (**user**) with password **user**.

6.8.1 Logout

There should be a logout option on the Main Screen.

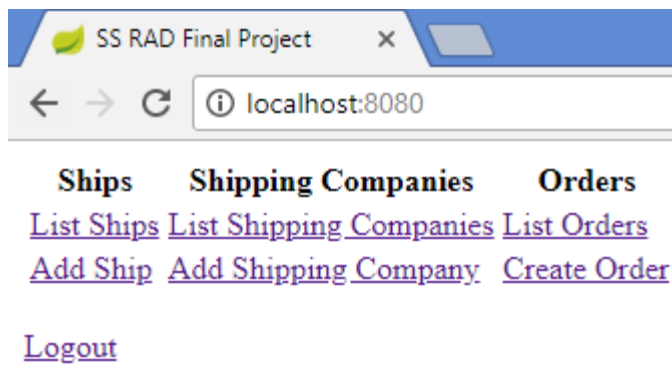


Figure 21 Logout option on Main Screen