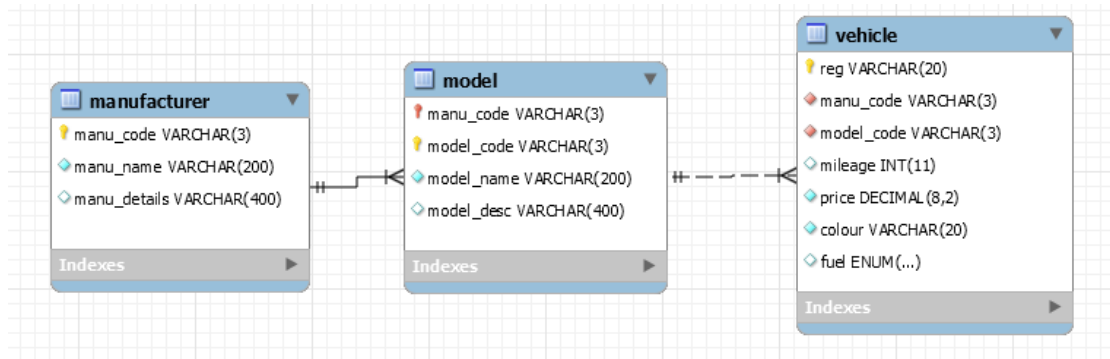


Assignment

Garage Database with JSF front-end



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Introduction

Write a JSF/JDBC dynamic web application that queries and updates a MySQL database.

The database is called *garage* and can be downloaded from the *Project* section of Moodle for this module (*GarageDB.sql*).

The *garage* database consists of 3 tables:

Manufacturer	
Column Name	Details
manu_code	A code representing the car manufacturer e.g. TOY, FOR etc.
manu_name	The manufacturer name e.g. Toyota, Ford etc.
manu_details	Details about the manufacturer e.g. company history.

Model	
Column Name	Details
manu_code	A code representing the car manufacturer e.g. TOY, FOR etc.
model_code	A code representing the car model e.g. ESC, FIE, COR etc.
model_name	The model name e.g. Escape, Fiesta, Corolla etc.
model_desc	Details about the model e.g. type of vehicle, when it was introduced etc.

Vehicle	
Column Name	Details
Reg	The registration of the vehicle e.g. 2010-G-13345
manu_code	A code representing the car manufacturer e.g. TOY, FOR etc.
model_code	A code representing the car model e.g. ESC, FIE, COR etc.
Mileage	The mileage on the car
Price	The price of the car
Colour	The colour of the car
Fuel	The fuel used by the car either <i>petrol</i> or <i>diesel</i>

Full details of the Primary and Foreign Keys as well as datatypes can be found in the database itself.

Marks

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

Submission of the Project

The zipped Eclipse project (named GXXXXXXX.zip where GXXXXXXX is your student number) should be uploaded to the *Project* section of Moodle no later than **Sunday December 11th 2016 at 9:00pm.**

Overview of Web App

The web app should consist of the following pages:

Main Page

The *Main* page simply consists of 4 links:

- One to the *Manage Manufacturers* page
- One to the *Manage Models* page
- One to the *Manage Vehicles* page
- One to the *Find Cars* page

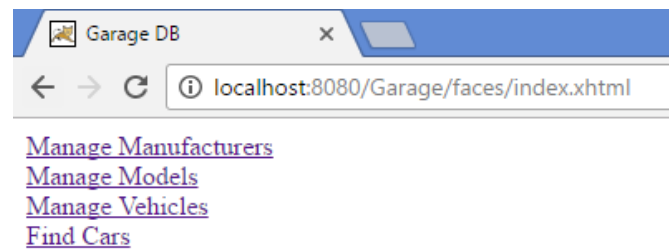


Figure 1 Main Page

Manage Manufacturer Page

The *Manage Manufacturer* page:

- Shows details of all manufacturers
- Has an *Add Manufacturer* button
- Has *Update* and *Delete* actions for each manufacturer
- Has a link back to the *Main* page

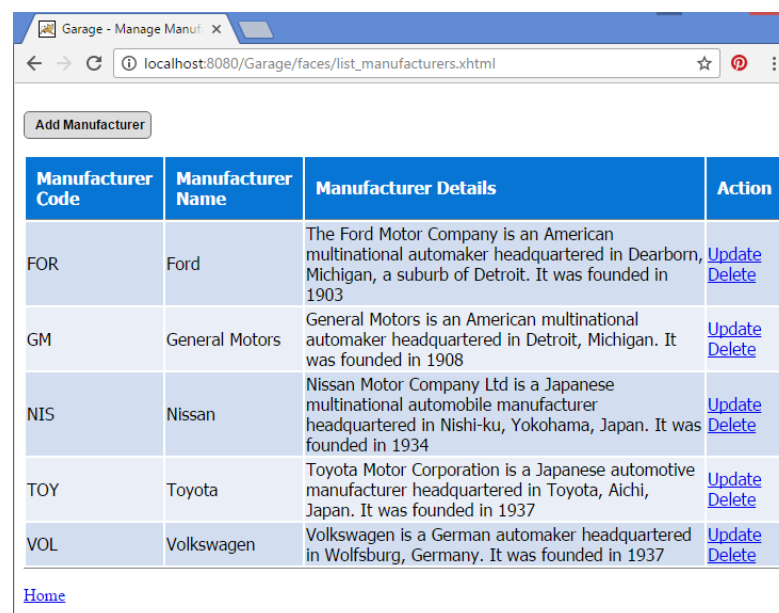
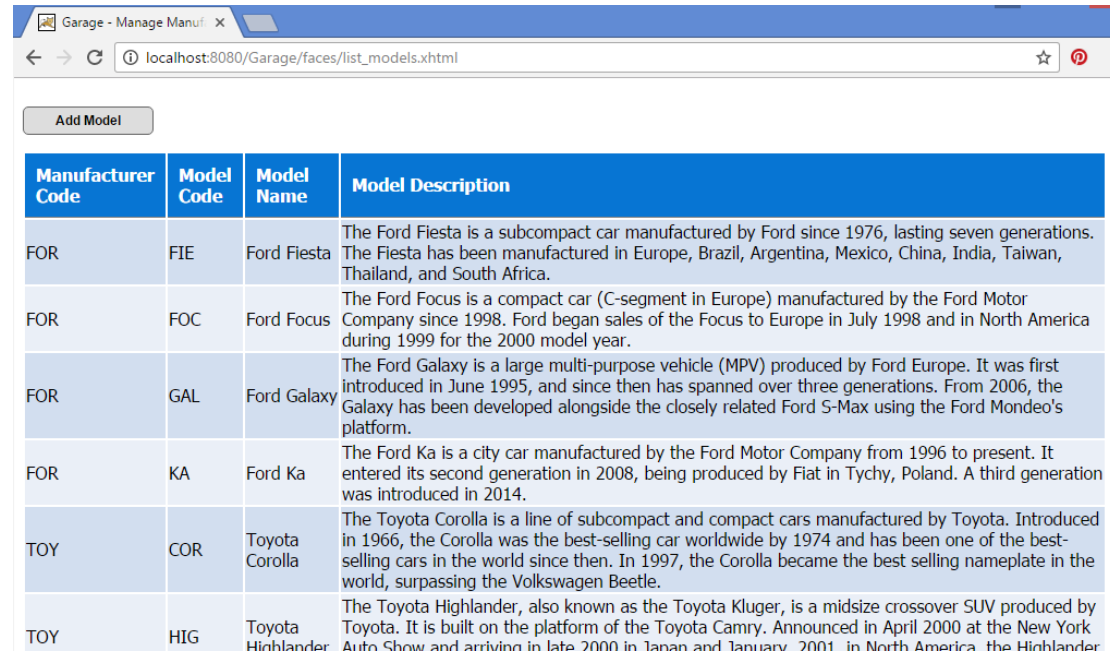


Figure 2 Manage Manufacturers Page

Manage Models Page

The *Manage Models* page:

- Shows details of all models
- Has an *Add Model* button
- Has a link back to the *Main* page



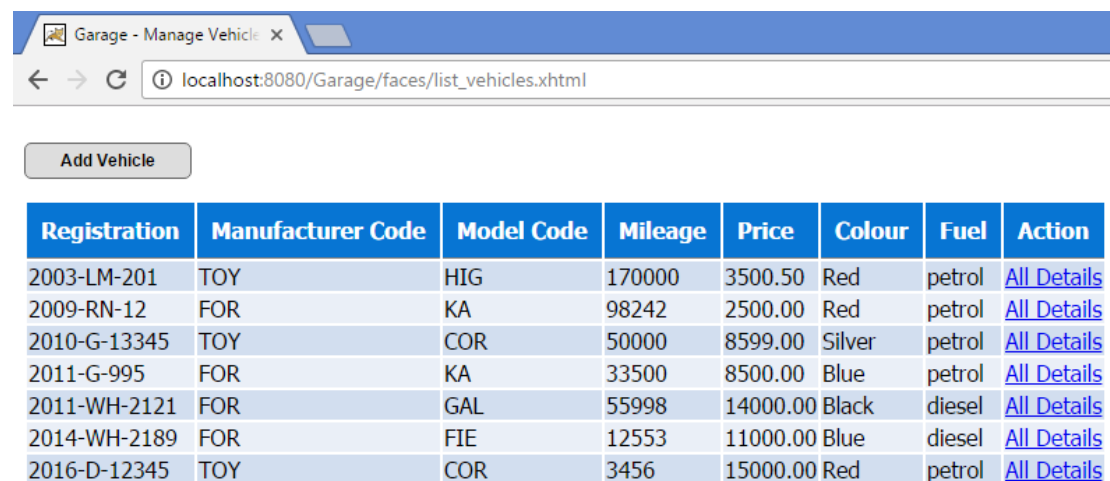
Manufacturer Code	Model Code	Model Name	Model Description
FOR	FIE	Ford Fiesta	The Ford Fiesta is a subcompact car manufactured by Ford since 1976, lasting seven generations. The Fiesta has been manufactured in Europe, Brazil, Argentina, Mexico, China, India, Taiwan, Thailand, and South Africa.
FOR	FOC	Ford Focus	The Ford Focus is a compact car (C-segment in Europe) manufactured by the Ford Motor Company since 1998. Ford began sales of the Focus to Europe in July 1998 and in North America during 1999 for the 2000 model year.
FOR	GAL	Ford Galaxy	The Ford Galaxy is a large multi-purpose vehicle (MPV) produced by Ford Europe. It was first introduced in June 1995, and since then has spanned over three generations. From 2006, the Galaxy has been developed alongside the closely related Ford S-Max using the Ford Mondeo's platform.
FOR	KA	Ford Ka	The Ford Ka is a city car manufactured by the Ford Motor Company from 1996 to present. It entered its second generation in 2008, being produced by Fiat in Tychy, Poland. A third generation was introduced in 2014.
TOY	COR	Toyota Corolla	The Toyota Corolla is a line of subcompact and compact cars manufactured by Toyota. Introduced in 1966, the Corolla was the best-selling car worldwide by 1974 and has been one of the best-selling cars in the world since then. In 1997, the Corolla became the best selling nameplate in the world, surpassing the Volkswagen Beetle.
TOY	HIG	Toyota Highlander	The Toyota Highlander, also known as the Toyota Kluger, is a midsize crossover SUV produced by Toyota. It is built on the platform of the Toyota Camry. Announced in April 2000 at the New York Auto Show and arriving in late 2000 in Japan and January 2001 in North America, the Highlander

Figure 3 Manage Models Page

Manage Vehicles Page

The *Manage Vehicles* page:

- Shows details of all vehicles
- Has an *Add Vehicle* button
- Has an *All Details* action for each vehicle
- Has a link back to the *Main* page



Registration	Manufacturer Code	Model Code	Mileage	Price	Colour	Fuel	Action
2003-LM-201	TOY	HIG	170000	3500.50	Red	petrol	All Details
2009-RN-12	FOR	KA	98242	2500.00	Red	petrol	All Details
2010-G-13345	TOY	COR	50000	8599.00	Silver	petrol	All Details
2011-G-995	FOR	KA	33500	8500.00	Blue	petrol	All Details
2011-WH-2121	FOR	GAL	55998	14000.00	Black	diesel	All Details
2014-WH-2189	FOR	FIE	12553	11000.00	Blue	diesel	All Details
2016-D-12345	TOY	COR	3456	15000.00	Red	petrol	All Details

[Home](#)

Figure 4 Manage Vehicles Page

Full Vehicle Details Page

The Full Vehicle Details page:

- Shows all details of the vehicle plus the manufacturer and model details as shown.
- Has a link back to the *Main* page
- Has a link back to the *Vehicles* page

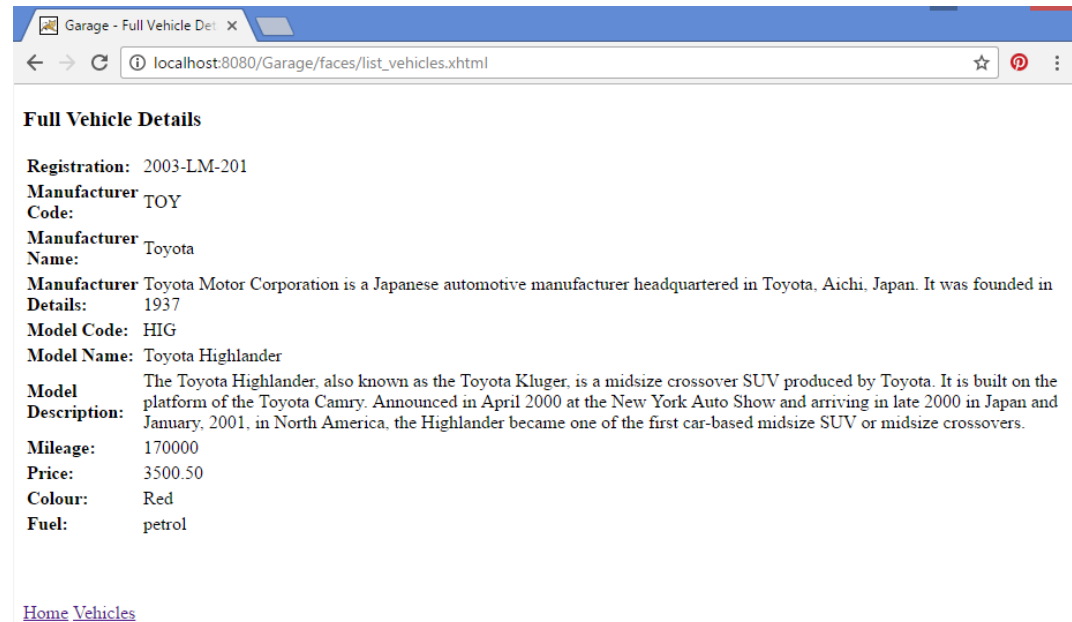


Figure 5 Full Vehicle Details Page

Find All Vehicles Page

The *Find All Vehicles Page* page:

- Has a link back to the *Main* page
- Allows the user to search for cars on the following criteria:
 - Price
 - Colour
 - Fuel

Fuel will always be either *Petrol* or *Diesel*.

Price could be *Less Than*, *Greater Than* or *Equal To* a given value.

Colour could be a given colour.

If there are no values entered for *Price* or *Colour*, these parameters are not searched on.

Figure 6 and Figure 7 show the results when only the *Fuel* parameter is specified.

Find All Vehicles

Price: Less Than

Colour:

Fuel: Petrol

[Home](#)

Figure 6 Find All Vehicles Page - Search only on Fuel

Registration	Manufacturer Code	Manufacturer Name	Model Code	Model Name	Mileage	Price	Colour	Fuel
2003-LM-201	TOY	Toyota Highlander	HIG	Toyota	170000	3500.50	Red	petrol
2009-RN-12	FOR	Ford Ka	KA	Ford	98242	2500.00	Red	petrol
2010-G-13345	TOY	Toyota Corolla	COR	Toyota	50000	8599.00	Silver	petrol
2011-G-995	FOR	Ford Ka	KA	Ford	33500	8500.00	Blue	petrol
2016-D-12345	TOY	Toyota Corolla	COR	Toyota	3456	15000.00	Red	petrol

[Home](#) [Search](#)

Figure 7 Find All Vehicles Results Page - Search only on Fuel

Figure 8 and Figure 9 show the results when only the *Price (Less Than)* and the *Fuel* parameters are specified.

Find All Vehicles

Price: Less Than

Colour:

Fuel: Petrol

[Home](#)

Figure 8 Find All Vehicles Page - Search on Price and Fuel

Registration	Manufacturer Code	Manufacturer Name	Model Code	Model Name	Mileage	Price	Colour	Fuel
2003-LM-201	TOY	Toyota Highlander	HIG	Toyota	170000	3500.50	Red	petrol
2009-RN-12	FOR	Ford Ka	KA	Ford	98242	2500.00	Red	petrol
2010-G-13345	TOY	Toyota Corolla	COR	Toyota	50000	8599.00	Silver	petrol
2011-G-995	FOR	Ford Ka	KA	Ford	33500	8500.00	Blue	petrol
2016-D-12345	TOY	Toyota Corolla	COR	Toyota	3456	15000.00	Red	petrol

[Home](#) [Search](#)

Figure 9 Find All Vehicles Results Page - Search on Price and Fuel

Figure 10 and Figure 11 show the results when the *Price (Less Than)*, *Colour* and *Fuel* parameters are specified.

Find All Vehicles

Price: Less Than ▼ 25000

Colour: red

Fuel: Petrol ▼

[Home](#)

Figure 10 Find All Vehicles Page - Search Price, Colour and Fuel

Registration	Manufacturer Code	Manufacturer Name	Model Code	Model Name	Mileage	Price	Colour	Fuel
2003-LM-201	TOY	Toyota Highlander	HIG	Toyota	170000	3500.50	Red	petrol
2009-RN-12	FOR	Ford Ka	KA	Ford	98242	2500.00	Red	petrol
2016-D-12345	TOY	Toyota Corolla	COR	Toyota	3456	15000.00	Red	petrol

[Home Search](#)

Figure 11 Find All Vehicles Results Page - Search on Price, Colour and Fuel

Add Manufacturer Page

The *Add Manufacturer Page* allows the user to enter a Manufacturer Code, Name and Details.

If an existing manufacturer code is entered an error should be displayed.

• Error: Duplicate entry 'TOY' for key 'PRIMARY'

Add Manufacturer

Code: TOY

Name: New Toyota

Details: New Toyota Motor Co.

[Home Manufacturers](#)

Figure 12 Manufacturer Code already exists

If a manufacturer code or name is not specified an error is also shown:

Garage - Add Manufactu X

localhost:8080/Garage/faces/add_manufa

Add Manufacturer

Code: Code is mandatory

Name: Name is mandatory

Details:

[Home Manufacturers](#)

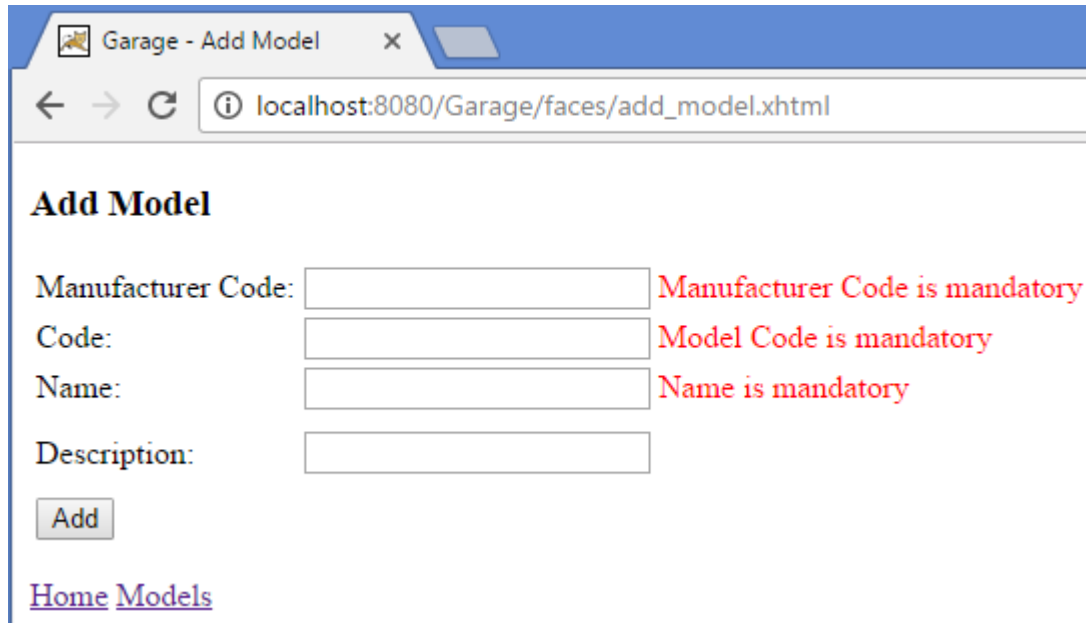
Figure 13 No Manufacturer Code or Name

When a manufacturer has been added successfully, the user is returned to the *Manage Manufacturers Page*.

Add Model Page

The *Add Model Page* allows the user to enter a Manufacturer Code, Model Code, Name and Description.

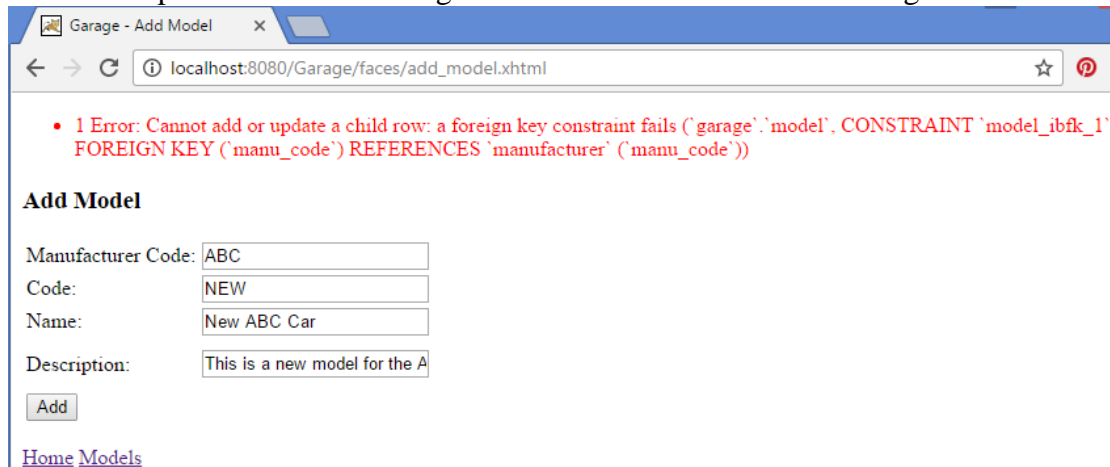
If a Manufacturer Code, Model Code or Model Name are not specified error messages are shown:



The screenshot shows a web browser window titled "Garage - Add Model" with the URL "localhost:8080/Garage/faces/add_model.xhtml". The page has a heading "Add Model" and four input fields: "Manufacturer Code:", "Code:", "Name:", and "Description:". To the right of each empty input field is a red error message: "Manufacturer Code is mandatory", "Model Code is mandatory", and "Name is mandatory". There is an "Add" button below the fields and a "Home Models" link at the bottom.

Figure 14 Manufacturer Code, Model Code, Model Name missing

If the user specified a non-existing Manufacturer Code an error message is shown.



The screenshot shows the same "Add Model" page, but with the "Manufacturer Code" field filled with "ABC". A red error message is displayed at the top: "1 Error: Cannot add or update a child row: a foreign key constraint fails ('garage'. 'model', CONSTRAINT 'model_ibfk_1' FOREIGN KEY ('manu_code') REFERENCES 'manufacturer' ('manu_code'))". The other fields ("Code:", "Name:", "Description:") are filled with "NEW", "New ABC Car", and "This is a new model for the A" respectively. The "Add" button and "Home Models" link are still present.

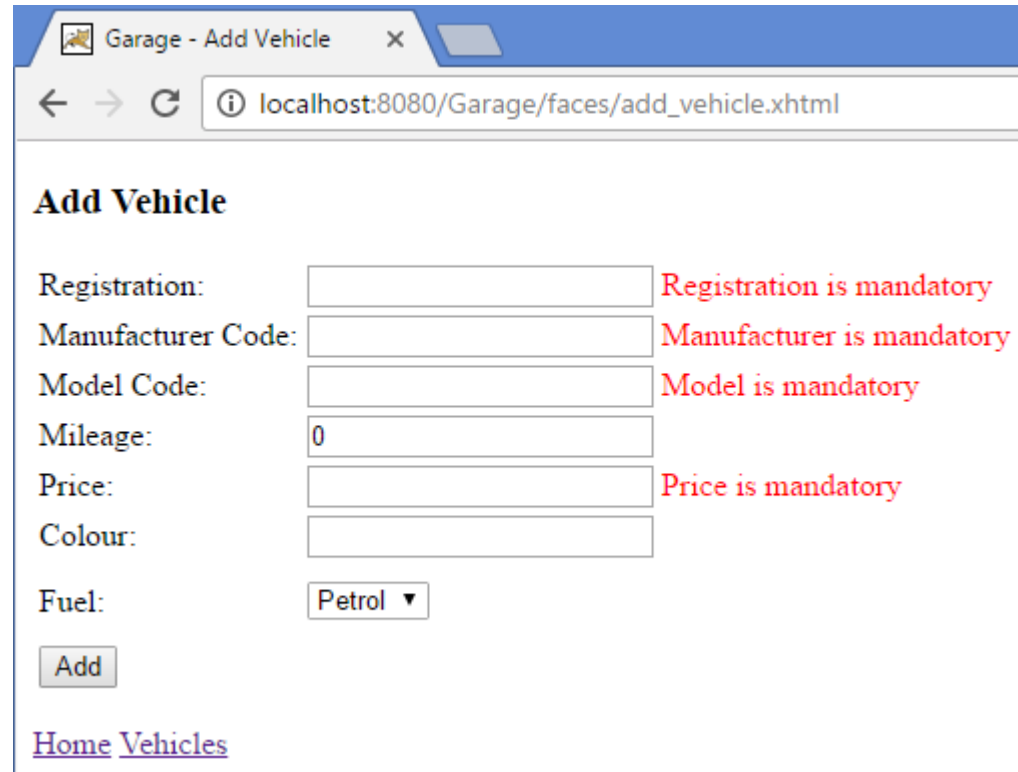
Figure 15 Manufacturer Code does not exist

When a model has been added successfully, the user is returned to the *Manage Models Page*.

Add Vehicle Page

The *Add Vehicle Page* allows the user to enter a Car Registration, Manufacturer Code, Model Code, Mileage, Price, Colour and Fuel for a car.

If the Registration, Manufacturer Code, Model Code or Price are not specified error messages are shown:



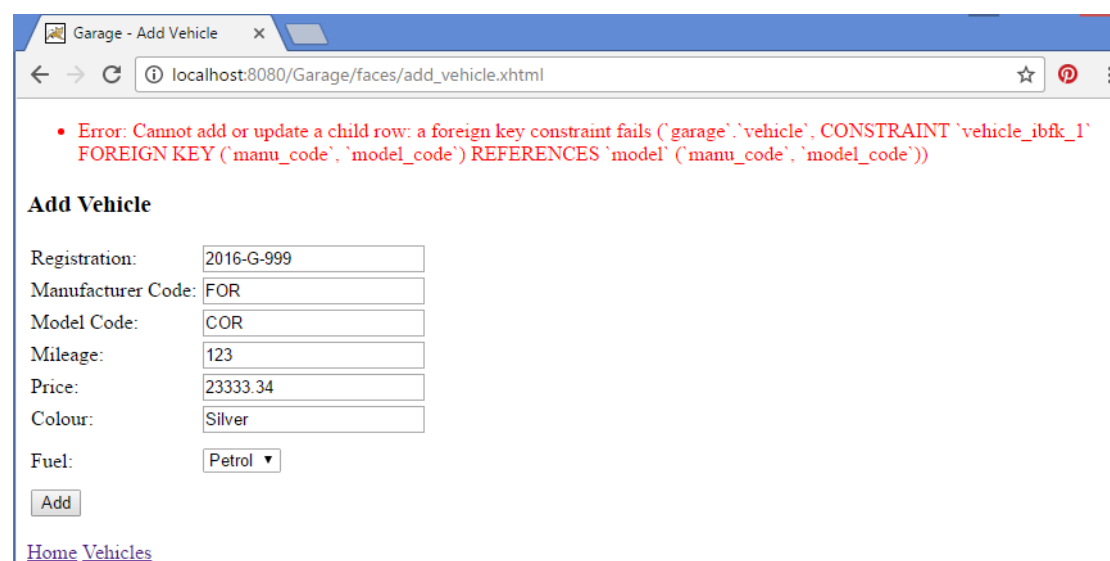
The screenshot shows a web browser window titled 'Garage - Add Vehicle' with the URL 'localhost:8080/Garage/faces/add_vehicle.xhtml'. The page has a heading 'Add Vehicle' and a form with the following fields and error messages:

Field	Value	Error Message
Registration:		Registration is mandatory
Manufacturer Code:		Manufacturer is mandatory
Model Code:		Model is mandatory
Mileage:	0	
Price:		Price is mandatory
Colour:		
Fuel:	Petrol ▼	

Below the form is an 'Add' button and a link labeled 'Home Vehicles'.

Figure 16 Registration, Manufacturer Code, Model Code, Price missing

If a correct Manufacturer Code, Model Code combination is not specified, or an invalid Manufacturer Code and/or Model Code is specified, an error message is shown:



The screenshot shows the same 'Add Vehicle' page, but with the following values entered in the form:

Field	Value
Registration:	2016-G-999
Manufacturer Code:	FOR
Model Code:	COR
Mileage:	123
Price:	23333.34
Colour:	Silver
Fuel:	Petrol ▼

Below the form is an 'Add' button and a link labeled 'Home Vehicles'. Above the form, a red error message is displayed:

- Error: Cannot add or update a child row: a foreign key constraint fails ('garage`.`vehicle`, CONSTRAINT `vehicle_ibfk_1` FOREIGN KEY (`manu_code`, `model_code`) REFERENCES `model` (`manu_code`, `model_code`))

Figure 17 Invalid Manufacturer Code, Model Code combination

Update Manufacturer Page

The Manufacturer code cannot be updated, only the Name and Details:

Update Manufacturer

Code:

Name:

Details:

[Home Manufacturers](#)

Figure 18 Update Manufacturer

Delete Manufacturer Link

When the user clicks on the *Delete* Manufacturer link he/she is presented with a confirmation dialog box:

localhost:8080 says:

Delete this Manufacturer?

Figure 19 Delete Manufacturer Dialog

If the user clicks OK, the manufacturer is deleted – unless it is referenced by a Foreign Key in another table – in which case an error is shown:

Error: Cannot delete or update a parent row: a foreign key constraint fails ('garage', 'vehicle', CONSTRAINT 'vehicle_ibfk_1' FOREIGN KEY ('manu_code', 'model_code') REFERENCES 'model' ('manu_code', 'model_code'))

Manufacturer Code	Model Code	Model Name	Model Description	Action
FOR	FIE	Ford Fiesta	The Ford Fiesta is a subcompact car manufactured by Ford since 1976, lasting seven generations. The Fiesta has been manufactured in Europe, Brazil, Argentina, Mexico, China, India, Taiwan, Thailand, and South Africa.	Delete
FOR	FOC	Ford Focus	The Ford Focus is a compact car (C-segment in Europe) manufactured by the Ford Motor Company since 1998. Ford began sales of the Focus to Europe in July 1998 and in North America during 1999 for the 2000 model year.	Delete
			The Ford Galaxy is a large multi-purpose vehicle (MPV) produced by Ford Europe. It was	

Figure 20 Cannot Delete Manufacturer

Demonstration of Application

Download *Data Centric RAD Project Demo.webm* from the *Project* section of Moodle and open it in a web browser to see a working version of how the finished assignment should look.