Startdocument for the Taxi assignment

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Problem Description

A taxi company wants an application where the start and end time (formatted as hhmm), weekday and distance can be entered. For each trip, the amount of due money should be calculated and shown. Furthermore, the total revenue, the average distance and the distance of the longest trip should be shown.

The following tariffs should be maintained:

- € 0,50 per km ridden.
- On top of the above: € 0,17 per minute ridden.
- From Friday night 10 p.m. to Monday morning 7 a.m., a surcharge of 15% applies. (the starting time is decisive for this)

Input & Output

In this section the in- and output of the application will be described.

Input

In the table below all the input (that the user has to input in order to make the application work) are described.

Case	Type	Conditions
License plate	`String`	Cannot be empty. This value must be a valid formatted license plate.
Car Brand	`String`	Cannot be empty.
Max Passengers	`Integer`	Cannot be empty. Cannot be less than 0.
Start Time	`DateTime`	Cannot be empty. Only hours and minutes are changeable.
End Time	`DateTime`	Cannot be empty. Only hours and minutes are changeable. Cannot be before begin time.
Weekday	`Enum`	Cannot be empty.
Distance	`Double`	Cannot be empty. Cannot be less than 0. Value must be in kilometers.
Company Name	`String`	Cannot be empty.

Output

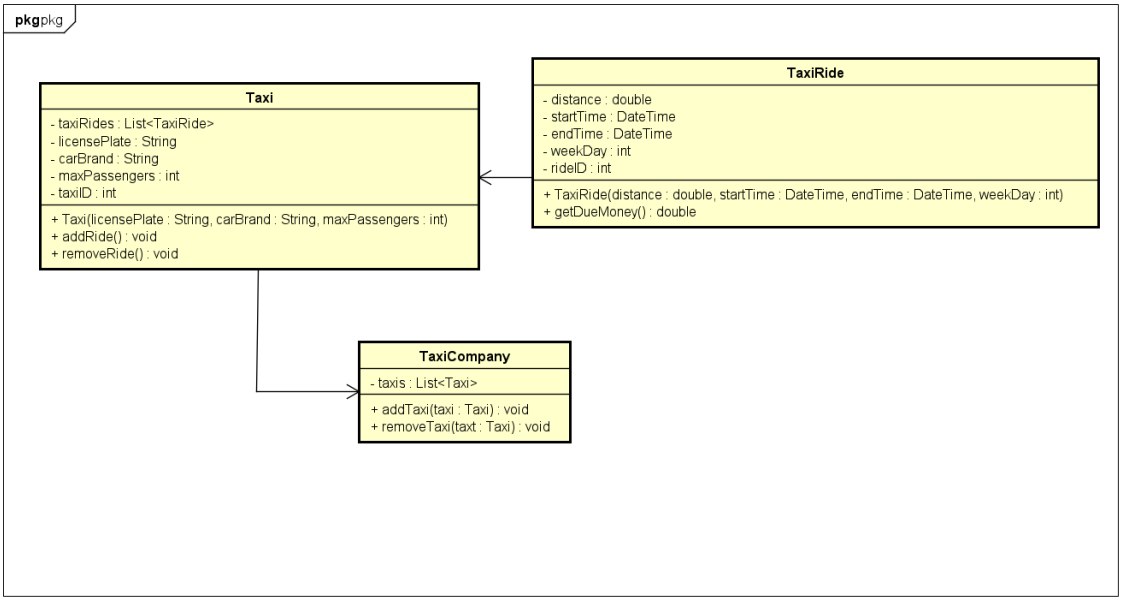
Case	Type	Description
Taxi ID	`Integer`	The ID of the Taxi. Can be used to identify the Taxi.

Licenseplate	String	The license plate of the Taxi. Can be used to identidy which specific car the Taxi info is referring to. Is used in dropdowns to select a Taxi.
Car Brand	String	The brand of the car.
Max Passengers	Integer	The max amount of passengers that can be in the Taxi.
Ride Amount	Integer	The amount of rides the Taxi currently has.
Ride ID	String	The ID of the TaxiRide. Can be used to identify the Ride.
Start Time	String	The start time of the Ride. Is shown as a String.
End Time	String	The end time of the Ride. Is shown as a String.
Distance	Double	The distance of the ride, shows in kilometers.
Weekday	String	The weekday of the Ride.
Due Money	Double	The money that still needs to be paid.
Average distance	Double	The average distance of all Taxi's of the TaxiCompany.
Longest ride distance	Double	The longest distance of all the rides of the Taxi's of the TaxiCompany.
Duration	String	The difference between the start and end time Is shown to get a better overview of the ride time.

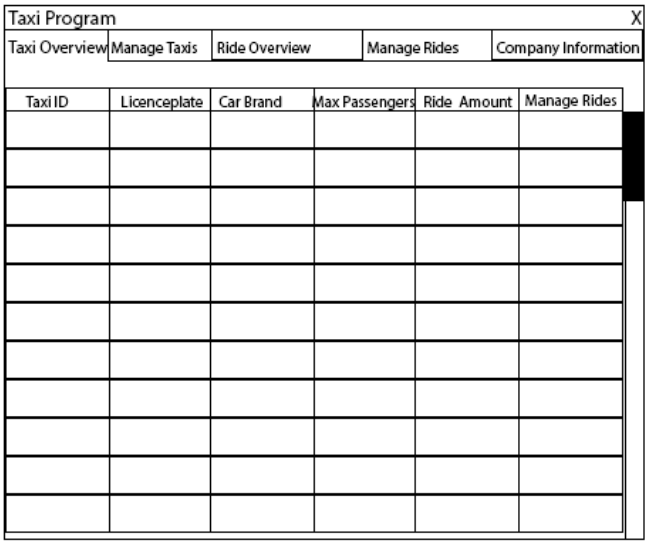
Calculations

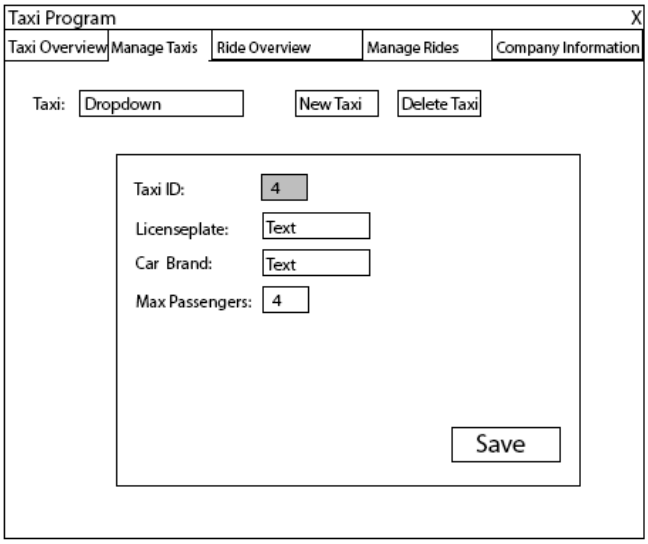
Case	Calculation
Due money	The money based on the begin and start time and the distance based on the tariffs in the first section of this document.
Average distance	The average of the distances of all Taxi objects in the Taxi list.
Longest ride distance	Loop over all the Taxi objects and then the Ride objects of those Taxis to find the ride with the longest distance.
Duration	The difference between the start time and end time.

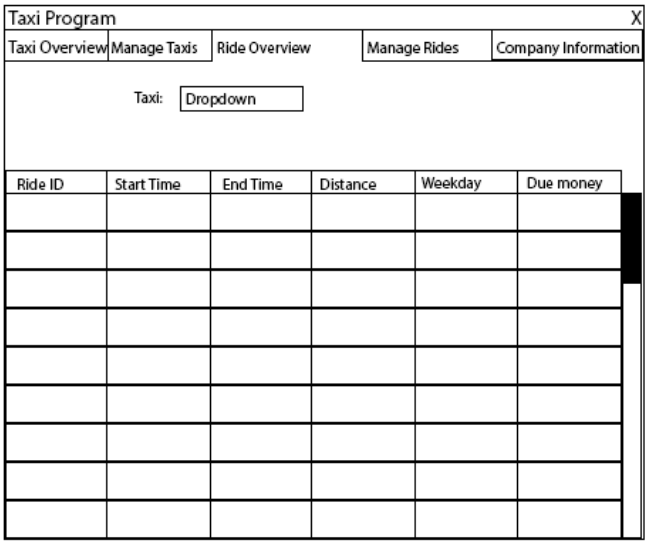
Class Diagram

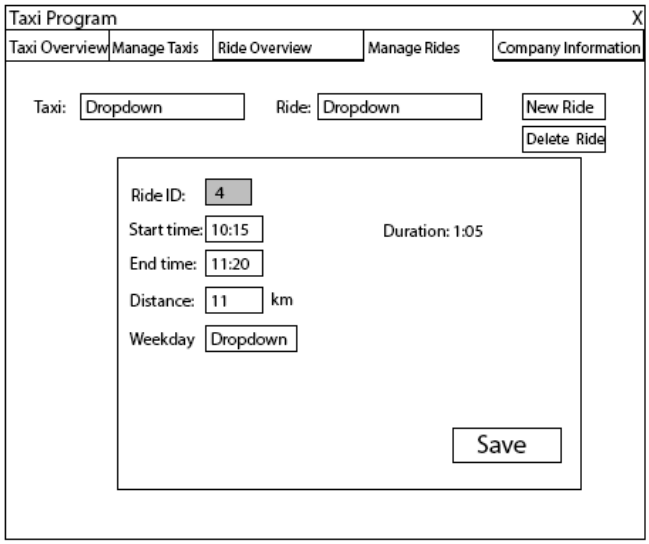

pkgpkg
Taxi
- taxiRides : List<TaxiRide>
- licensePlate : String
- carBrand : String
- maxPassengers : int
- taxiID : int
+ Taxi(licensePlate : String, carBrand : String, maxPassengers : int)
+ addRide() : void
+ removeRide() : void
TaxiRide
- distance : double
- startTime : DateTime
- endTime : DateTime
- weekDay : int
- rideID : int
+ TaxiRide(distance : double, startTime : DateTime, endTime : DateTime, weekDay : int)
+ getDueMoney() : double
TaxiCompany
- taxis : List<Taxi>
+ addTaxi(taxi : Taxi) : void
+ removeTaxi(taxt : Taxi) : void

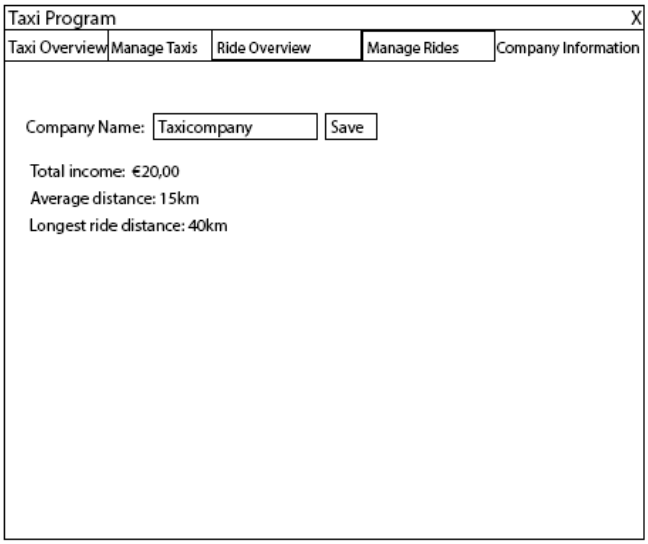
GUI drawing


Taxi Program
X
Taxi Overview
Manage Taxis
Ride Overview
Manage Rides
Company Information
Taxi ID
Licenceplate
Car Brand
Max Passengers
Ride Amount
Manage Rides


Taxi Program
X
Taxi Overview
Manage Taxis
Ride Overview
Manage Rides
Company Information
Taxi:
Dropdown
New Taxi
Delete Taxi
Taxi ID:
4
Licenseplate:
Text
Car Brand:
Text
Max Passengers:
4
Save


Taxi Program
X
Taxi Overview
Manage Taxis
Ride Overview
Manage Rides
Company Information
Taxi:
Dropdown
Ride ID
Start Time
End Time
Distance
Weekday
Due money


Taxi Program
X
Taxi Overview
Manage Taxis
Ride Overview
Manage Rides
Company Information
Taxi:
Dropdown
Ride:
Dropdown
New Ride
Delete Ride
Ride ID:
4
Start time:
10:15
Duration: 1:05
End time:
11:20
Distance:
11
km
Weekday
Dropdown
Save



Testplan

Testdata

Taxi

Type	Data
License plate	75-DN-GP
Car Brand	Ford
Max Passengers	3

TaxiRide

Type	Data
Start time	10:15
End time	11:20
Distance	11
Weekday	Tuesday

TaxiCompany

Type	Data
CompanyName	NHL Stenden

In this section the testcases will be described to test the application. At the start of this testplan there should be no existing data in the database.

#1 Test Taxi creation.

Testing if the creation of Taxis and the input validation of the form is working correctly.

Step	Input	Action	Expected output
1		Check Taxi overview	No entries in the table.
2		Go to 'Manage Taxis'.	The Manage Taxi menu.
3		Click on 'New Taxi'.	The input fields become editable.
4		Click Save with no data input.	Popup saying that you need to fill in all the fields.
5	The car brand, max passengers and the License plate string with the dashes (-) removed.	Fill in the Car Brand, Max Passengers and a invalid Licenseplate string and press Save.	Popup saying that the licenseplate is invalid.
6	The correct licenseplate.	Click Save with the correct licenseplate.	Popup saying that the data was saved correctly.
7		Go back to the Taxi overview.	The new data in the table.

#2 Test Ride creation.

Testing if the creation of Taxi Rides and the input validation of the form is working correctly.

Step	Input	Action	Expected output
1	The licenseplate of the previously created Taxi.	Check Ride overview	No entries in the table.
2	The licenseplate of the previously created Taxi.	Go to 'Manage Rides' and select the previously created Taxi.	The ride manage form.

3		Click on 'New Ride'.	The form becomes editable.
4	The distance, dropdown, start time and a endtime that is before the start time.	Check if the end time cannot be before the start time.	Popup saying that the end time cannot be before the start time.
5	The correct end time and some text for the distance.	Check if the application handles text in the distance input correctly.	Popup saying that the distance should be a number.
6	The correct distance.	Fill in the correct distance and press the Save button.	Popup saying that the data was saved correctly.
7	The licenseplate of the previously created Taxi.	Go back to the Ride overview.	The new data in the table.

#3 Test database saving and loading.

Test if the data is saved to the database and loaded correctly.

Step	Input	Action	Expected output
1		Go to the Company Information tab,	The Company Information menu.
2	The company name.	Change the company name to the value in the test data and press save.	A popup saying that the company name was saved correctly.
3		Restart the application.	The Taxi Overview with the previously added data still there.
4	The licenseplate of the previously created Taxi.	Go to the Ride Overview and check the Rides of the give Taxi.	The Ride Overview with the previously added data still there.
5		Go to the Company Information tab.	The name of the company still being the same changed value.

#4 Modify Taxi.

Test if editing values works correctly.

Step	Input	Action	Expected output
1		Go to the Manage Taxi tab.	The Manage Taxi menu.
2	The licenseplate of the previously created Taxi.	Select the existing Taxi.	The form filled with the existing data.

3	Tesla as car brand.	Change the car brand and press Save.	Popup saying that the data was saved correctly.
4		Go to the Taxi Overview and check if the value was changed correctly.	The Taxi overview with the new updated data.

#5 Delete Taxi.

Test if deleting values works correctly.

Step	Input	Action	Expected output
1		Go to the Manage Taxi tab.	The Manage Taxi menu.
2	The licenseplate of the previously created Taxi.	Select the existing Taxi.	The form filled with the existing data.
3		Click on the Delete Taxi button.	Popup saying if you are sure that you want to delete the Taxi.
4		Go to the Taxi Overview and check if the value was deleted correctly.	A empty Taxi Overview.
5		Go to the Ride Overview and check if the Taxi dropdown is empty.	A empty Taxi dropdown.