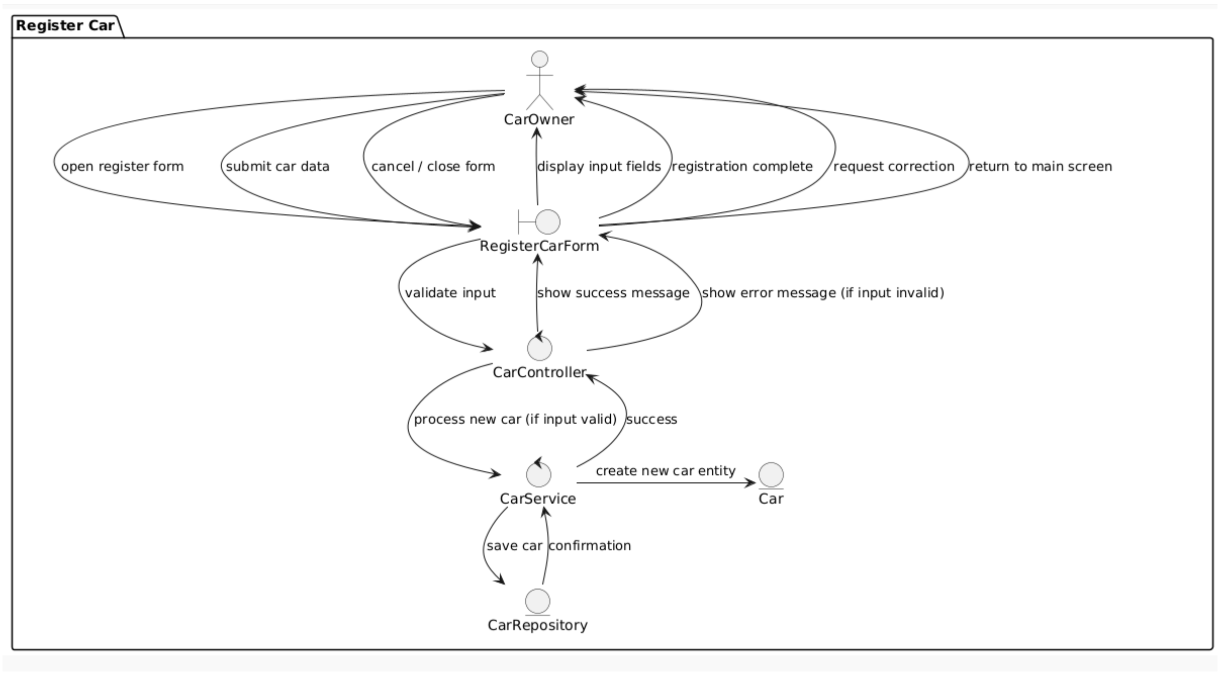
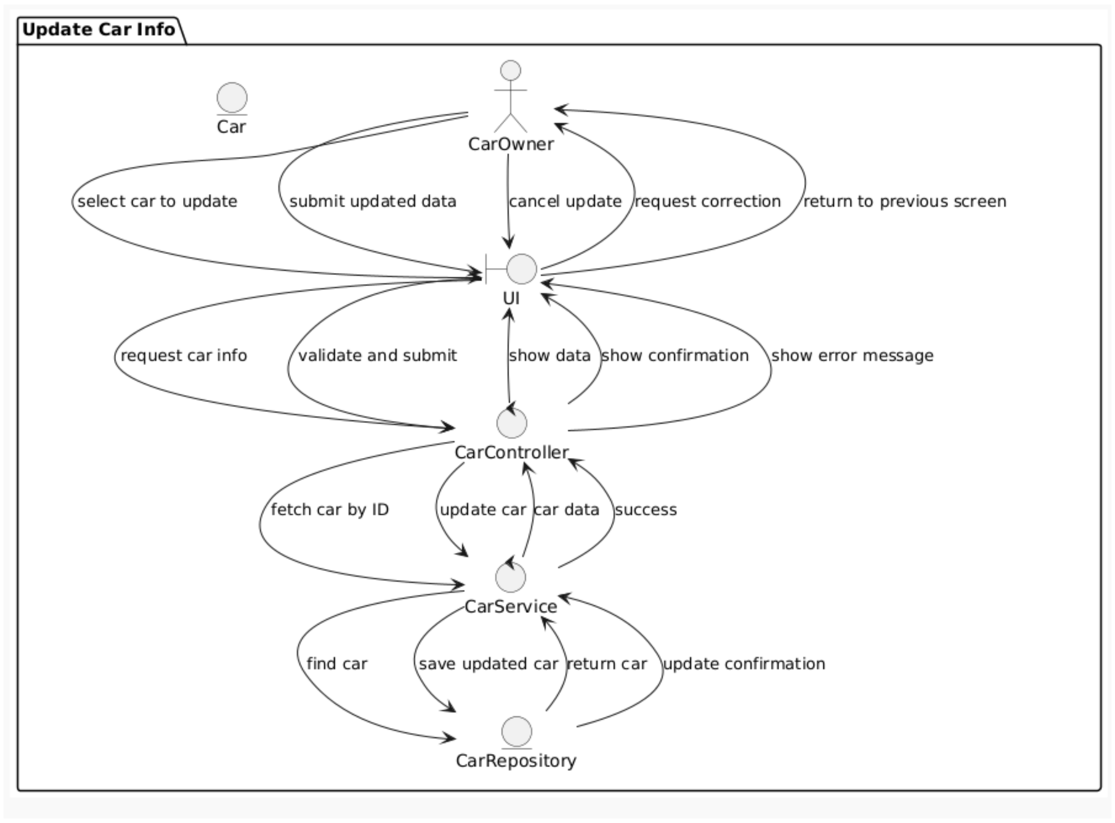
Register Car

```
@startuml
package "Register Car" {
  actor CarOwner

  boundary UI as "RegisterCarForm"
  control Controller as "CarController"
  control Service as "CarService"
  entity Repo as "CarRepository"
  entity Car

  CarOwner -> UI : open register form
  UI --> CarOwner : display input fields

  CarOwner -> UI : submit car data
  UI -> Controller : validate input

  Controller -> Service : process new car (if input valid)
  Service -> Car : create new car entity
  Service -> Repo : save car
  Repo --> Service : confirmation
  Service --> Controller : success
  Controller --> UI : show success message
  UI --> CarOwner : registration complete

  Controller --> UI : show error message (if input invalid)
  UI --> CarOwner : request correction
  CarOwner -> UI : cancel / close form

  UI --> CarOwner : return to main screen

}

@enduml
```



Update Car Info

```
@startuml

package "Update Car Info" {

  actor CarOwner



  boundary UI

  control Controller as "CarController"

  control Service as "CarService"

  entity Repo as "CarRepository"

  entity Car



  CarOwner -> UI : select car to update
  UI -> Controller : request car info


  Controller -> Service : fetch car by ID
  Service -> Repo : find car
  Repo --> Service : return car
  Service --> Controller : car data
  Controller --> UI : show data


  CarOwner -> UI : submit updated data
  UI -> Controller : validate and submit


  Controller -> Service : update car
  Service -> Repo : save updated car
  Repo --> Service : update confirmation
  Service --> Controller : success
  Controller --> UI : show confirmation


  Controller --> UI : show error message
  UI --> CarOwner : request correction


  CarOwner -> UI : cancel update
  UI --> CarOwner : return to previous screen
}
@enduml
```

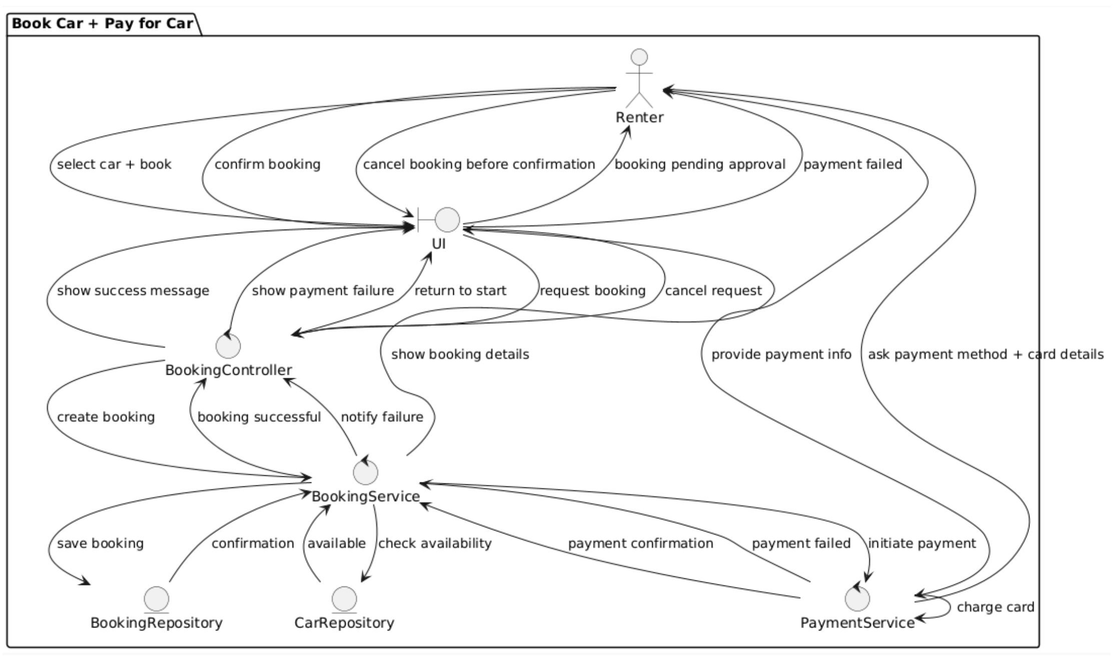


Book Car + Pay for Car

```
@startuml

package "Book Car + Pay for Car" {

  actor Renter



  boundary UI

  control BookingController

  control BookingService

  entity CarRepository

  control PaymentService

  entity BookingRepository



  Renter -> UI : select car + book

  UI -> BookingController : request booking
```

```
BookingController -> BookingService : create booking
BookingService -> CarRepository : check availability
CarRepository --> BookingService : available

BookingService -> UI : show booking details
Renter -> UI : confirm booking

BookingService -> PaymentService : initiate payment
PaymentService -> Renter : ask payment method + card details
Renter -> PaymentService : provide payment info

PaymentService -> PaymentService : charge card
PaymentService --> BookingService : payment confirmation

BookingService -> BookingRepository : save booking
BookingRepository --> BookingService : confirmation

BookingService --> BookingController : booking successful
BookingController --> UI : show success message
UI --> Renter : booking pending approval

PaymentService --> BookingService : payment failed
BookingService --> BookingController : notify failure
BookingController --> UI : show payment failure
UI --> Renter : payment failed

Renter -> UI : cancel booking before confirmation
UI --> BookingController : cancel request
```

```
  BookingController --> UI : return to start
}
@enduml
```

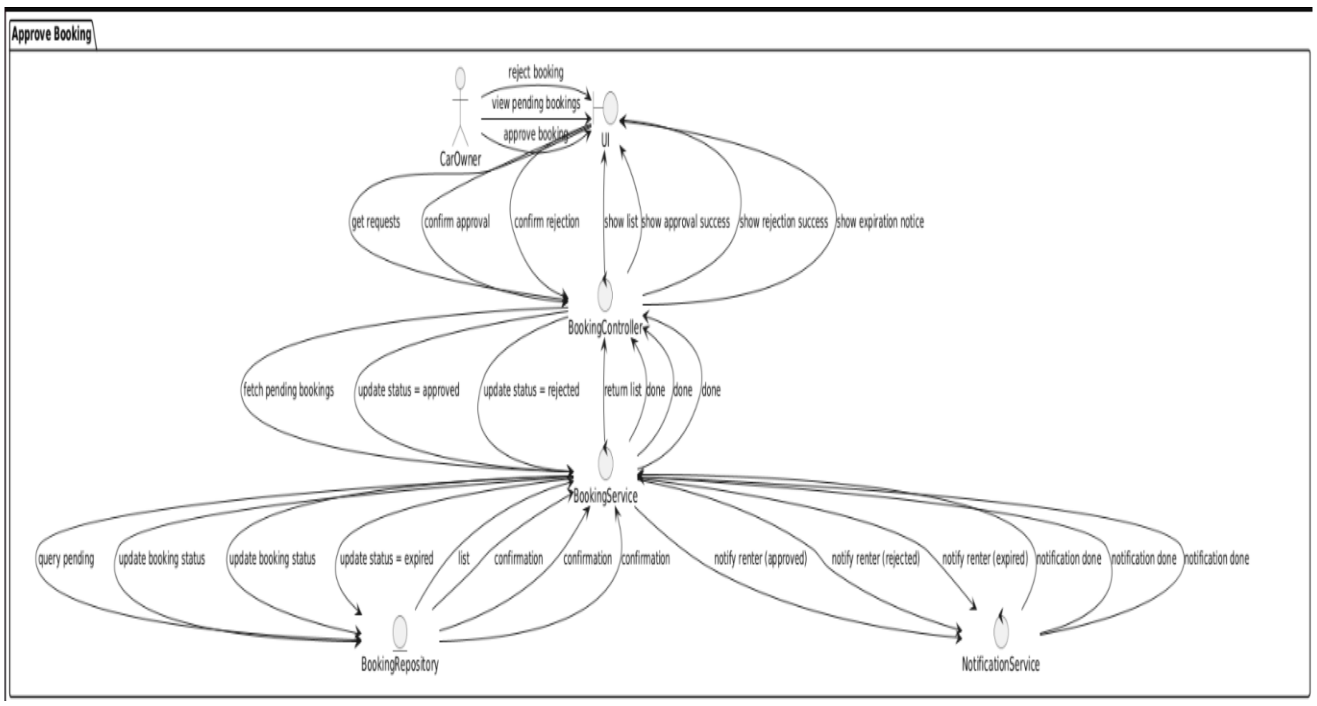


Approve Booking

```
@startuml
package "Approve Booking" {
  actor CarOwner

  boundary UI
  control Controller as "BookingController"
  control Service as "BookingService"
  entity Repo as "BookingRepository"
  control NotificationService

  CarOwner -> UI : view pending bookings
  UI -> Controller : get requests
  Controller -> Service : fetch pending bookings
```

```
Service -> Repo : query pending
Repo --> Service : list
Service --> Controller : return list
Controller --> UI : show list

CarOwner -> UI : approve booking
UI -> Controller : confirm approval
Controller -> Service : update status = approved
Service -> Repo : update booking status
Repo --> Service : confirmation
Service -> NotificationService : notify renter (approved)
NotificationService --> Service : notification done
Service --> Controller : done
Controller --> UI : show approval success

CarOwner -> UI : reject booking
UI -> Controller : confirm rejection
Controller -> Service : update status = rejected
Service -> Repo : update booking status
Repo --> Service : confirmation
Service -> NotificationService : notify renter (rejected)
NotificationService --> Service : notification done
Service --> Controller : done
Controller --> UI : show rejection success

Service -> Repo : update status = expired
Repo --> Service : confirmation
Service -> NotificationService : notify renter (expired)
```

```
  NotificationService --> Service : notification done
  Service --> Controller : done
  Controller --> UI : show expiration notice
}
@enduml
```

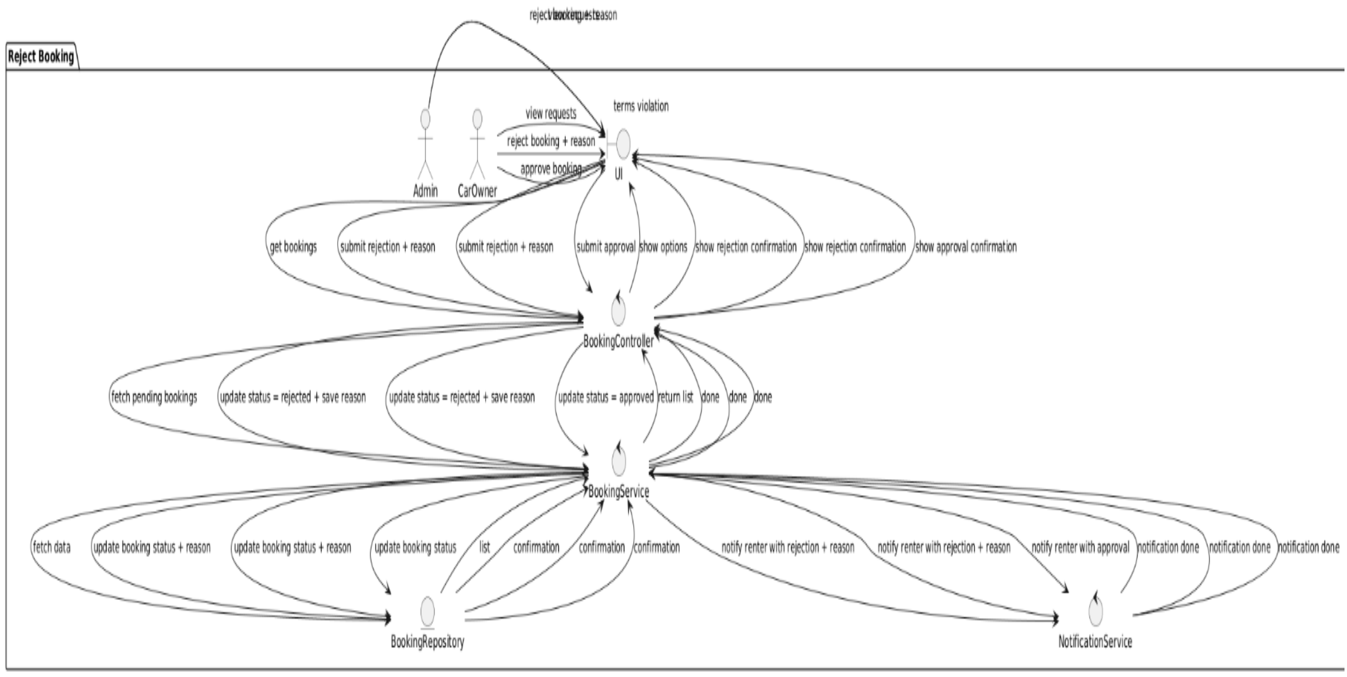


Reject Booking

```
@startuml
package "Reject Booking" {
  actor CarOwner
  actor Admin

  boundary UI
  control Controller as "BookingController"
  control Service as "BookingService"
  entity Repo as "BookingRepository"
```

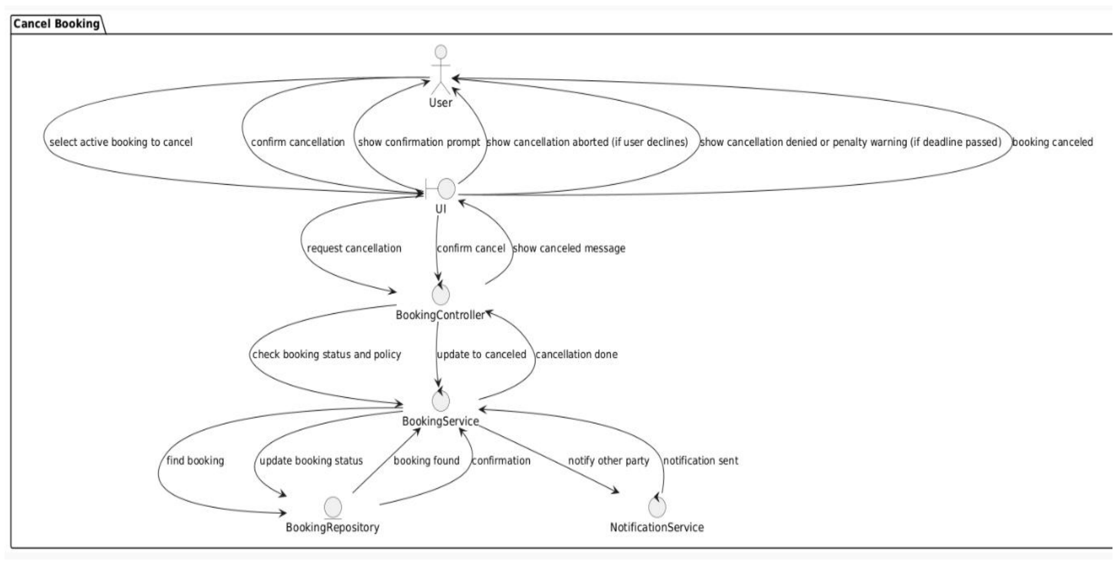
```
control NotificationService


CarOwner -> UI : view requests

Admin -> UI : view requests

UI -> Controller : get bookings

Controller -> Service : fetch pending bookings

Service -> Repo : fetch data

Repo --> Service : list

Service --> Controller : return list

Controller --> UI : show options


CarOwner -> UI : reject booking + reason

UI -> Controller : submit rejection + reason

Controller -> Service : update status = rejected + save reason

Service -> Repo : update booking status + reason

Repo --> Service : confirmation

Service -> NotificationService : notify renter with rejection + reason

NotificationService --> Service : notification done

Service --> Controller : done

Controller --> UI : show rejection confirmation


Admin -> UI : reject booking + reason "terms violation"

UI -> Controller : submit rejection + reason

Controller -> Service : update status = rejected + save reason

Service -> Repo : update booking status + reason

Repo --> Service : confirmation

Service -> NotificationService : notify renter with rejection + reason

NotificationService --> Service : notification done
```

```
  Service --> Controller : done
  Controller --> UI : show rejection confirmation

  CarOwner -> UI : approve booking
  UI -> Controller : submit approval
  Controller -> Service : update status = approved
  Service -> Repo : update booking status
  Repo --> Service : confirmation
  Service -> NotificationService : notify renter with approval
  NotificationService --> Service : notification done
  Service --> Controller : done
  Controller --> UI : show approval confirmation
}
@enduml
```



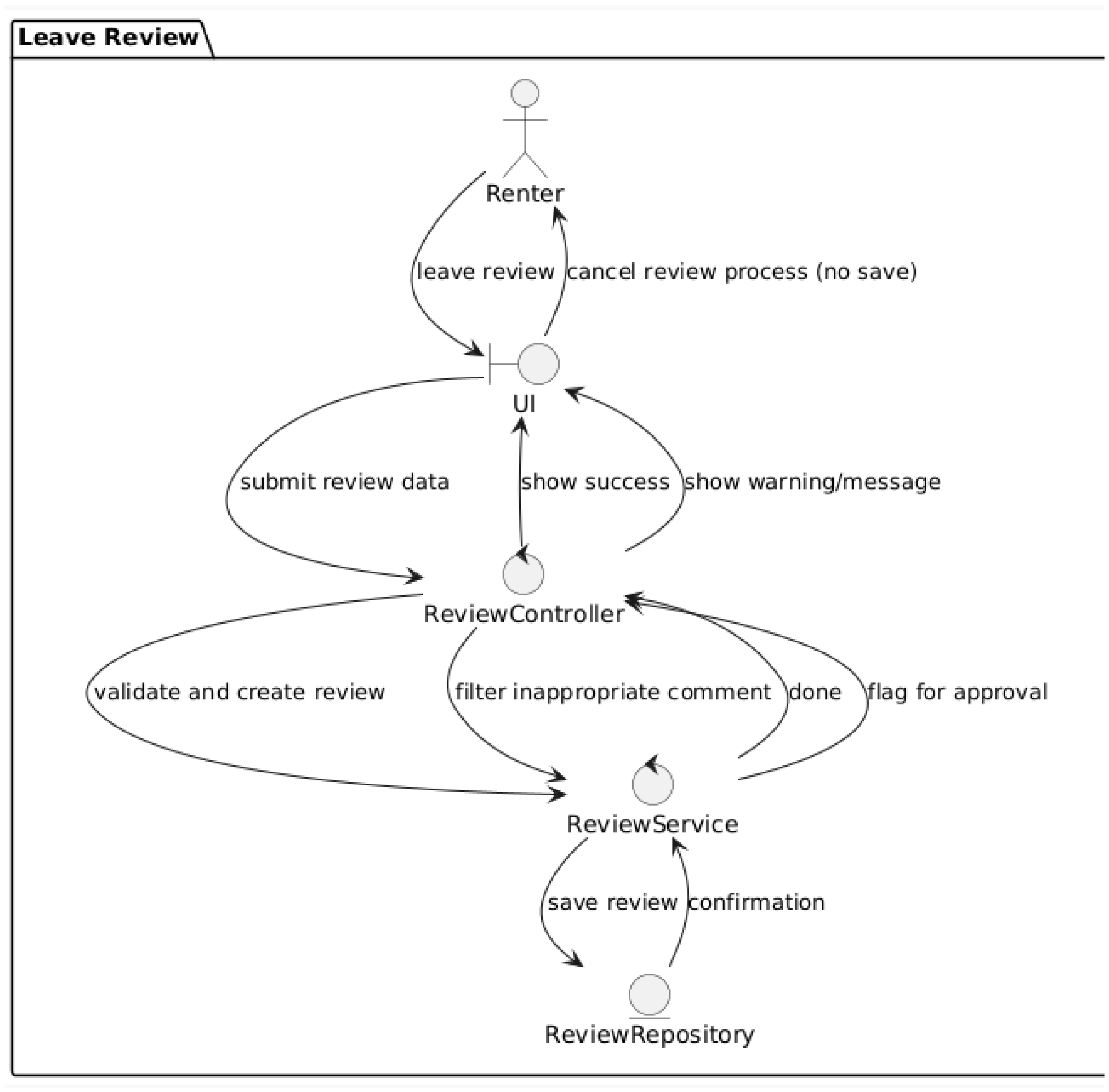
Cancel Booking

```
@startuml
package "Cancel Booking" {
  actor User


  boundary UI
  control Controller as "BookingController"
  control Service as "BookingService"
  entity Repo as "BookingRepository"
  control NotificationService


  User -> UI : select active booking to cancel
  UI -> Controller : request cancellation
  Controller -> Service : check booking status and policy
  Service -> Repo : find booking
  Repo --> Service : booking found


  UI -> User : show confirmation prompt
  User -> UI : confirm cancellation
  UI -> Controller : confirm cancel
  Controller -> Service : update to canceled
  Service -> Repo : update booking status
  Repo --> Service : confirmation
  Service -> NotificationService : notify other party
  NotificationService --> Service : notification sent
  Service --> Controller : cancellation done
  Controller --> UI : show canceled message
  UI --> User : booking canceled
  UI -> User : show cancellation aborted (if user declines)

  UI -> User : show cancellation denied or penalty warning (if deadline passed)

}

@enduml
```



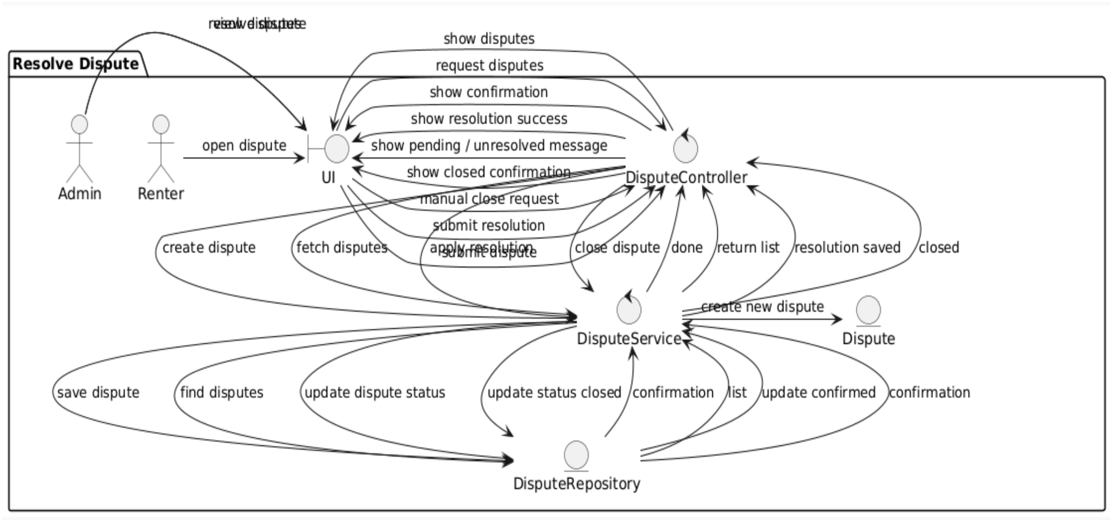
Leave Review

```
@startuml

package "Leave Review" {

  actor Renter


  boundary UI

  control Controller as "ReviewController"

  control Service as "ReviewService"

  entity Repo as "ReviewRepository"


  Renter -> UI : leave review

  UI -> Controller : submit review data


  Controller -> Service : validate and create review

  Service -> Repo : save review
  Repo --> Service : confirmation
  Service --> Controller : done
  Controller --> UI : show success

  UI --> Renter : cancel review process (no save)
  Controller -> Service : filter inappropriate comment
  Service --> Controller : flag for approval
  Controller --> UI : show warning/message
}
@enduml
```



Resolve Dispute

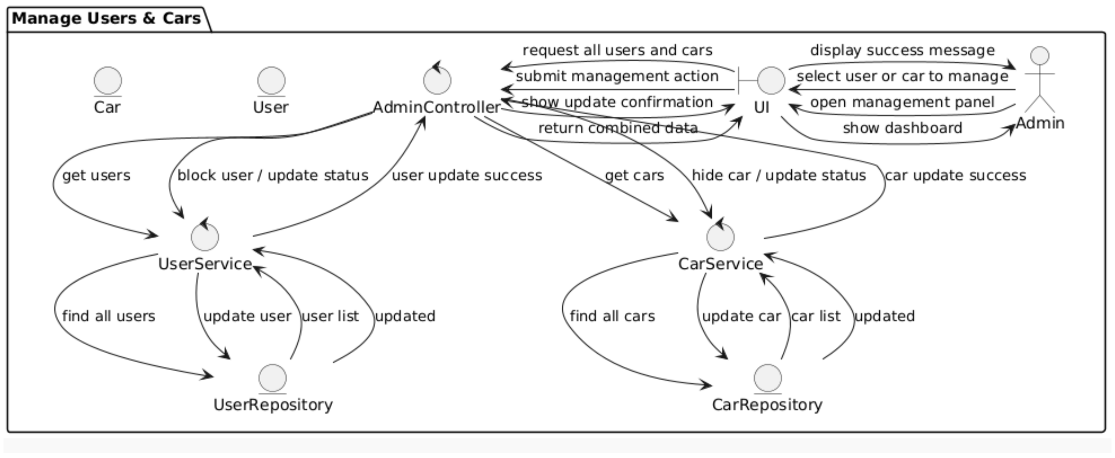
```
@startuml
package "Resolve Dispute" {
  actor Renter
  actor Admin

  boundary UI
  control DisputeController as Controller
  control DisputeService as Service
  entity DisputeRepository as Repo
  entity Dispute

  Renter -> UI : open dispute
  UI -> Controller : submit dispute
  Controller -> Service : create dispute
  Service -> Dispute : create new dispute
  Service -> Repo : save dispute
  Repo --> Service : confirmation
  Service --> Controller : done
  Controller -> UI : show confirmation

  Admin -> UI : view disputes
  UI -> Controller : request disputes
  Controller -> Service : fetch disputes
  Service -> Repo : find disputes
  Repo --> Service : list
  Service --> Controller : return list
  Controller -> UI : show disputes
  Admin -> UI : resolve dispute
  UI -> Controller : submit resolution
  Controller -> Service : apply resolution
  Service -> Repo : update dispute status
  Repo --> Service : update confirmed
  Service --> Controller : resolution saved
  Controller -> UI : show resolution success


  UI -> Controller : manual close request
  Controller -> Service : close dispute
  Service -> Repo : update status closed
  Repo --> Service : confirmation
  Service --> Controller : closed
  Controller -> UI : show closed confirmation


  Controller -> UI : show pending / unresolved message
}
@enduml
```



Manage Users & Cars

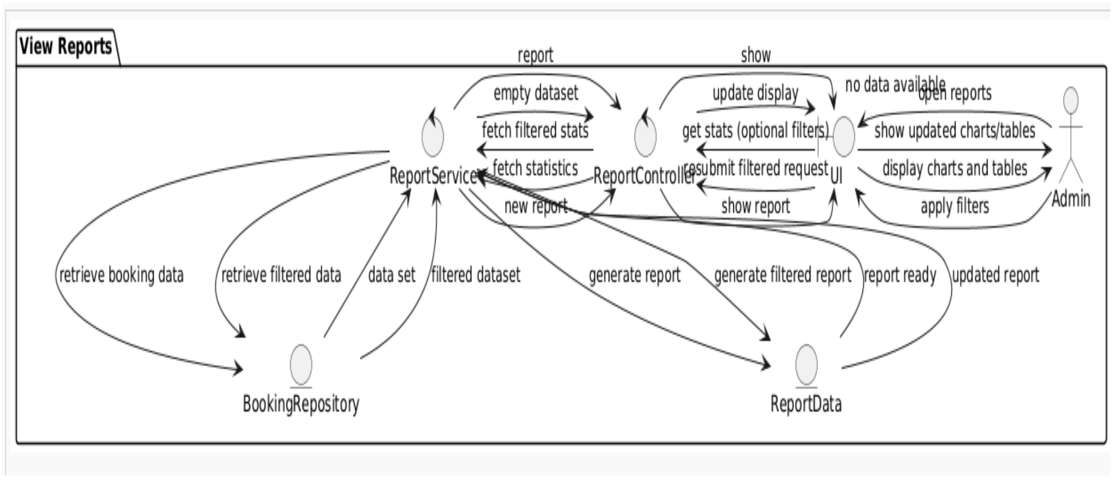
```
@startuml
```

```
package "Manage Users & Cars" {
  actor Admin

  boundary UI
  control AdminController as Controller
  control UserService
  control CarService
  entity UserRepository as UserRepo
  entity CarRepository as CarRepo
  entity User
  entity Car

  Admin -> UI : open management panel
  UI -> Controller : request all users and cars
  Controller -> UserService : get users
  UserService -> UserRepo : find all users
  UserRepo --> UserService : user list
  Controller -> CarService : get cars
  CarService -> CarRepo : find all cars
  CarRepo --> CarService : car list
  Controller -> UI : return combined data
  UI -> Admin : show dashboard

  Admin -> UI : select user or car to manage
  UI -> Controller : submit management action
  Controller -> UserService : block user / update status
  Controller -> CarService : hide car / update status
  UserService -> UserRepo : update user
  CarService -> CarRepo : update car
  UserRepo --> UserService : updated
  CarRepo --> CarService : updated
  UserService –> Controller : user update success
  CarService --> Controller : car update success
  Controller -> UI : show update confirmation
  UI -> Admin : display success message
}
@enduml
```



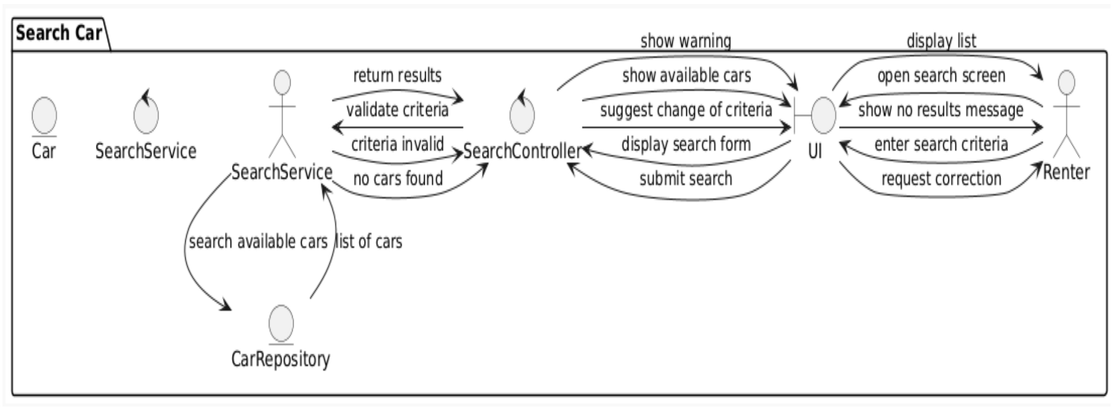
View Reports

```
@startuml
package "View Reports" {
  actor Admin

  boundary UI
  control ReportController as Controller
  control ReportService as Service
  entity BookingRepository as Repo
  entity ReportData

  Admin -> UI : open reports
  UI -> Controller : get stats (optional filters)

  Controller -> Service : fetch statistics

  Service -> Repo : retrieve booking data

  Repo --> Service : data set

  Service -> ReportData : generate report

  ReportData –> Service : report ready

  Service -> Controller : report

  Controller -> UI : show report

  UI -> Admin : display charts and tables


  Admin -> UI : apply filters

  UI -> Controller : resubmit filtered request

  Controller -> Service : fetch filtered stats

  Service -> Repo : retrieve filtered data

  Repo --> Service : filtered dataset

  Service -> ReportData : generate filtered report

  ReportData –> Service : updated report

  Service -> Controller : new report

  Controller -> UI : update display

  UI -> Admin : show updated charts/tables


  Service -> Controller : empty dataset

  Controller -> UI : show "no data available"

}

@enduml
```



Search Car

```
@startuml
package "Search Car" {
  actor Renter

  boundary UI
  control SearchController as Controller
  control SearchService as Service
  entity CarRepository as Repo
  entity Car

  Renter -> UI : open search screen
  UI -> Controller : display search form
  Renter -> UI : enter search criteria
  UI -> Controller : submit search
  Controller -> SearchService : validate criteria
  SearchService -> Repo : search available cars
  Repo --> SearchService : list of cars
  SearchService -> Controller : return results
  Controller -> UI : show available cars
  UI -> Renter : display list


  SearchService -> Controller : criteria invalid

  Controller -> UI : show warning

  UI -> Renter : request correction


  SearchService -> Controller : no cars found

  Controller -> UI : suggest change of criteria

  UI -> Renter : show no results message

}

@enduml
```



Search Car
Car
SearchService
SearchService
return results
validate criteria
criteria invalid
no cars found
SearchController
show warning
show available cars
suggest change of criteria
display search form
submit search
UI
display list
open search screen
show no results message
enter search criteria
request correction
Renter
search available cars
list of cars
CarRepository