**Robustness diagrams**

1. Register Car (Car Owner)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Update Car Info (Car Owner)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Approve Booking (Car Owner)

Εικόνα που περιέχει κείμενο, γραμματοσειρά, στιγμιότυπο οθόνης, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Leave Review (Car Owner ή Renter)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Book Car (Renter, “Pay for Car”)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Resolve Dispute (Car Owner / Renter / Admin)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, διάγραμμα, γραμματοσειρά

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Cancel Booking (Car Owner ή Renter

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, αριθμός

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Reject Booking (Car Owner / Admin)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμμή, γραμματοσειρά

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Search Car (Renter)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, γραμματοσειρά, γραμμή

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. Manage Users & Cars (Admin)

Εικόνα που περιέχει κείμενο, αριθμός, διάγραμμα, παράλληλα

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

1. View Reports (Admin)

Εικόνα που περιέχει κείμενο, στιγμιότυπο οθόνης, αριθμός, γραμματοσειρά

Το περιεχόμενο που δημιουργείται από τεχνολογία AI ενδέχεται να είναι εσφαλμένο.

ΚΩΔΙΚΑΣ

**1. Register Car (Car Owner)**

@startuml RegisterCarRobustness

actor CarOwner

boundary "Register Car Form" as RegisterForm

control "Car Registration Controller" as RegController

entity "Car" as Car

entity "Car Repository" as CarRepo

' Βασική Ροή

CarOwner --> RegisterForm : Open Register Car

RegisterForm --> RegController : Submit car data\n(μάρκα, μοντέλο,\nπινακίδα, φωτογραφίες, τιμή)

RegController --> Car : Create Car object

RegController --> CarRepo : Save Car

RegController --> RegisterForm : Show success message

' Εναλλακτική Ροή 1: Cancel

CarOwner --> RegisterForm : Click Cancel

RegisterForm --> RegController : Cancel registration

RegController --> RegisterForm : Return to home screen

' Εναλλακτική Ροή 2: Invalid Input

RegisterForm --> RegController : Submit invalid/missing data

RegController --> RegisterForm : Show error message\n(π.χ. λείπει μάρκα)

@enduml

**2. Update Car Info (Car Owner)**

@startuml UpdateCarInfoRobustness

actor CarOwner

boundary "Update Car Info Form" as UpdateForm

control "Car Update Controller" as UpdateController

entity "Car" as Car

entity "Car Repository" as CarRepo

' Βασική Ροή

CarOwner --> UpdateForm : Select existing car

CarOwner --> UpdateForm : Click Update Car Info

UpdateForm --> UpdateController : Request current data

UpdateController --> Car : Fetch current car data

Car --> UpdateController : Return current data

UpdateController --> UpdateForm : Display current data

CarOwner --> UpdateForm : Modify data & Confirm

UpdateForm --> UpdateController : Submit updated data

UpdateController --> Car : Update Car entity

UpdateController --> CarRepo : Save updated Car

UpdateController --> UpdateForm : Show success message

' Εναλλακτική Ροή 1: Cancel

CarOwner --> UpdateForm : Click Cancel

UpdateForm --> UpdateController : Cancel changes

UpdateController --> UpdateForm : Return to previous screen

' Εναλλακτική Ροή 2: Invalid Data

UpdateForm --> UpdateController : Submit invalid data

UpdateController --> UpdateForm : Show validation error\n(π.χ. τιμή εκτός εύρους)

@enduml

**3. Approve Booking (Car Owner)**

@startuml ApproveBookingRobustness

actor CarOwner

boundary "Booking Request Form" as BookingForm

control "Booking Controller" as BookingController

entity "Booking" as Booking

entity "Renter Notification" as RenterNotif

' Βασική Ροή

CarOwner --> BookingForm : Receive booking notification

CarOwner --> BookingForm : Select booking request

BookingForm --> BookingController : Display booking details\n(ημερομηνίες, τιμή)

CarOwner --> BookingForm : Click Approve

BookingForm --> BookingController : Approve booking

BookingController --> Booking : Update status to Approved

BookingController --> RenterNotif : Notify Renter (success)

' Εναλλακτική Ροή 1: Reject

CarOwner --> BookingForm : Click Reject

BookingForm --> BookingController : Reject booking

BookingController --> Booking : Update status to Rejected

BookingController --> RenterNotif : Notify Renter (rejection)

' Εναλλακτική Ροή 2: Timeout

BookingController --> Booking : Auto-cancel request (deadline passed)

BookingController --> RenterNotif : Notify Renter (timeout)

@enduml

**4. Leave Review (Car Owner ή Renter)**

@startuml LeaveReviewRobustness

actor User

boundary "Review Form" as ReviewForm

control "Review Controller" as ReviewController

entity "Review" as Review

entity "Filter/Approval Service" as Filter

' Βασική Ροή

User --> ReviewForm : Open review form after rental

ReviewForm --> ReviewController : Display rating & comments form

User --> ReviewForm : Enter rating (1–5) and comments\nand click Submit

ReviewForm --> ReviewController : Submit review data

ReviewController --> Filter : Validate content

Filter --> ReviewController : Approved

ReviewController --> Review : Save review

ReviewController --> ReviewForm : Show success (review published)

' Εναλλακτική Ροή 1: Cancel or Incomplete

User --> ReviewForm : Click Cancel or close form

ReviewForm --> ReviewController : Abort review

ReviewController --> ReviewForm : No review saved

' Εναλλακτική Ροή 2: Offensive or Inappropriate Comment

User --> ReviewForm : Submit offensive/inappropriate comment

ReviewForm --> ReviewController : Trigger content filter

ReviewController --> Filter : Evaluate comment

Filter --> ReviewController : Flag comment

ReviewController --> ReviewForm : Show error message and request correction

@enduml

**5. Book Car (Renter + Pay for Car)**

@startuml BookCarRobustness

actor Renter

boundary "Book Car Form" as BookForm

boundary "Payment Form" as PaymentForm

control "Booking Controller" as BookingController

control "Payment Controller" as PaymentController

entity "Booking" as Booking

entity "Payment" as Payment

entity "Payment Gateway" as PaymentGateway

entity "Car" as Car

' Βασική Ροή

Renter --> BookForm : Select car from list

BookForm --> BookingController : Request booking details\n(ημερομηνίες, τιμή)

BookingController --> BookForm : Display booking details

Renter --> BookForm : Confirm booking

BookForm --> PaymentForm : Proceed to Pay for Car

' Pay for Car - Βασική Ροή

Renter --> PaymentForm : Select payment method\n(credit, PayPal, κλπ.)

PaymentForm --> PaymentController : Submit payment details

PaymentController --> PaymentGateway : Charge card/PayPal

PaymentGateway --> PaymentController : Payment approved

PaymentController --> BookingController : Payment success

BookingController --> Booking : Create booking request (Pending)

BookingController --> BookForm : Show success/pending message

' Εναλλακτική Ροή 1: Cancel before booking

Renter --> BookForm : Click Cancel

BookForm --> BookingController : Cancel booking

BookingController --> BookForm : Return to home screen

' Εναλλακτική Ροή 2: Payment error

PaymentForm --> PaymentController : Invalid/expired card details

PaymentController --> PaymentForm : Show payment error\n(request new method or cancel)

@enduml

**6. Resolve Dispute (Car Owner / Renter / Admin)**

@startuml ResolveDisputeRobustness

actor CarOwner

actor Renter

actor Admin

boundary "Resolve Dispute Form" as DisputeForm

control "Dispute Controller" as DisputeController

entity "Dispute" as Dispute

entity "Notification Service" as Notification

' Βασική Ροή

CarOwner --> DisputeForm : Open Resolve Dispute

Renter --> DisputeForm : Open Resolve Dispute

DisputeForm --> DisputeController : Submit issue description\n(+ photos)

DisputeController --> Dispute : Create Dispute record

DisputeController --> Notification : Notify Admin

Admin --> DisputeController : Review dispute details

DisputeController --> Dispute : Fetch dispute info

Admin --> DisputeController : Decide outcome (e.g. compensation)

DisputeController --> Dispute : Update dispute status (Closed)

DisputeController --> Notification : Notify parties (Owner/Renter)

' Εναλλακτική Ροή 1: No response / insufficient data

DisputeController --> DisputeForm : Insufficient data or no response

DisputeForm --> Admin : Remain pending or close unresolved

' Εναλλακτική Ροή 2: Issue resolved by Owner/Renter

CarOwner --> DisputeForm : Resolve issue offline

Renter --> DisputeForm : Resolve issue offline

DisputeForm --> DisputeController : Close dispute manually

DisputeController --> DisputeForm : No further action

@enduml

**7. Cancel Booking (Car Owner ή Renter)**

@startuml CancelBookingRobustness

actor User

boundary "Cancel Booking Form" as CancelForm

control "Booking Controller" as BookingController

entity "Booking" as Booking

entity "Notification Service" as Notification

' Βασική Ροή

User --> CancelForm : Open Cancel Booking

CancelForm --> BookingController : Request cancel details

BookingController --> CancelForm : Show warning (late fee?)

User --> CancelForm : Confirm cancellation

CancelForm --> BookingController : Cancel booking

BookingController --> Booking : Update status = Cancelled

BookingController --> Notification : Notify other party

' Εναλλακτική Ροή 1: Decline confirmation

User --> CancelForm : Choose "No" on confirmation

CancelForm --> BookingController : Do not cancel

BookingController --> CancelForm : Return to previous screen

' Εναλλακτική Ροή 2: Time window expired

CancelForm --> BookingController : Request cancellation after deadline

BookingController --> CancelForm : Deny cancellation or impose penalty

CancelForm --> User : Show penalty message or denial

@enduml

**8. Reject Booking (Car Owner / Admin)**

@startuml RejectBookingRobustness

actor CarOwner

actor Admin

boundary "Reject Booking Form" as RejectForm

control "Booking Controller" as BookingController

entity "Booking" as Booking

entity "Notification Service" as Notification

' Βασική Ροή

CarOwner --> RejectForm : Select booking request

Admin --> RejectForm : Select booking request (terms violation)

RejectForm --> BookingController : Submit rejection (with reason)

BookingController --> Booking : Update status = Rejected

BookingController --> Notification : Notify Renter

' Εναλλακτική Ροή 1: Switch to Approve

CarOwner --> RejectForm : Click Approve instead

RejectForm --> BookingController : Approve booking (redirect to approve flow)

' Εναλλακτική Ροή 2: Admin enforces rejection

Admin --> RejectForm : Reject due to terms violation

RejectForm --> BookingController : Mark violation reason

BookingController --> Booking : Update status = Rejected (violation)

BookingController --> Notification : Notify Renter (violation)

@enduml

**9. Search Car (Renter)**

@startuml SearchCarRobustness

actor Renter

boundary "Search Car Form" as SearchForm

control "Search Controller" as SearchController

entity "Car" as Car

' Βασική Ροή

Renter --> SearchForm : Open Search Car

SearchForm --> SearchController : Submit criteria\n(τοποθεσία, ημερομηνίες, εύρος τιμής)

SearchController --> Car : Query available cars

Car --> SearchController : Return car list

SearchController --> SearchForm : Display available cars

Renter --> SearchForm : Filter or select car

' Εναλλακτική Ροή 1: No cars found

SearchController --> SearchForm : No cars found

SearchForm --> Renter : Show "No cars found"\nSuggest criteria change

' Εναλλακτική Ροή 2: Invalid criteria

SearchForm --> SearchController : Submit invalid criteria\n(ημερομηνίες στο παρελθόν)

SearchController --> SearchForm : Show validation warning\n(Request correction)

@enduml

**10. Manage Users & Cars (Admin)**

@startuml ManageUsersCarsRobustness

actor Admin

boundary "Manage Users & Cars Form" as ManageForm

control "Admin Controller" as AdminController

entity "User" as User

entity "Car" as Car

' Βασική Ροή

Admin --> ManageForm : Open Manage Users & Cars

ManageForm --> AdminController : Request lists (users, cars, status)

AdminController --> User : Fetch user list

AdminController --> Car : Fetch car list

User --> AdminController : Return users

Car --> AdminController : Return cars

AdminController --> ManageForm : Display lists

Admin --> ManageForm : Approve/block user or modify car entry

ManageForm --> AdminController : Submit changes

AdminController --> User : Update user status or hide user

AdminController --> Car : Update car entry or hide car

AdminController --> ManageForm : Show confirmation

' Εναλλακτική Ροή 1: View only / Exit

Admin --> ManageForm : Exit without changes

ManageForm --> AdminController : No action

AdminController --> ManageForm : Return to dashboard

' Εναλλακτική Ροή 2: Fake data detected

Admin --> ManageForm : Flag invalid user/car data

ManageForm --> AdminController : Block user or hide car entry

AdminController --> User : Update status = Blocked

AdminController --> Car : Update status = Hidden

AdminController --> ManageForm : Show blocked/hidden confirmation

@enduml

**11. View Reports (Admin)**

@startuml ViewReportsRobustness

actor Admin

boundary "View Reports Form" as ReportsForm

control "Report Controller" as ReportController

entity "Report" as Report

' Βασική Ροή

Admin --> ReportsForm : Open View Reports

ReportsForm --> ReportController : Generate reports\n(έσοδα, κρατήσεις, δημοφιλή οχήματα)

ReportController --> Report : Fetch/generate data

Report --> ReportController : Return reports

ReportController --> ReportsForm : Display charts & tables

' Εναλλακτική Ροή 1: No data available

ReportController --> ReportsForm : No data to display

ReportsForm --> Admin : Show "No data" message

' Εναλλακτική Ροή 2: Apply additional filters

Admin --> ReportsForm : Apply time range or specific car filter

ReportsForm --> ReportController : Regenerate with filters

ReportController --> Report : Fetch filtered data

Report --> ReportController : Return filtered reports

ReportController --> ReportsForm : Display updated reports

@enduml