Slovenská technická univerzita v Bratislave

Fakulta informatiky a informačných technológií

Ilkovičova 2, 842 16 Bratislava 4

Subject

– Software modeling –

- Documentation -

Pause4Explore

Academic term: 2022/2023, winter semester

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Bratislava, 2022.

Content:

1 Project intent

Pause4Explore

During long car journeys, you need to stop and rest for a while, refuel or have refreshments. If you have a business journey in Slovakia, after 4.5 hours of driving, you must take a 45-minute break and after another 4.5 hours of driving an 11 hours break.

But what if you combine the stop with an experience such as a view, a visit to a monument, etc. This app will recommend places great for a break according to your type of break. This is what Pause4explore will offer you.

You can set the intensity, number, types, duration of breaks, start time or arrival time. And then you can choose from the available options. Or you can choose a travel plan from other people who have a similar driving direction (you can also share your own car trips, rate other people's car trips). Once you have chosen one car journey that you like the most, you can also modify it or view alternatives with modifications of your interest.

Of course, it is possible to synchronize the journey by car with your friends who set out from another place and let them join. App also displays a reminder that your break is ending, alerting you in time to get to your car.

You will be able to create your user profile so that you do not have to always enter your interests, you can also follow other users' profiles. You will also be able to create groups based on interests and thus easily and quickly get a group of interests because you can travel alone, with family, children, etc.

2 Use cases (Cockburn)

UC001 – Create car journey

Goal in Context: User want to set journey to the destination, expects suggested route. Suggested route may depend on the set preferences and profile.
Scope: Application.
Level: Function.
Preconditions: No active journey.
Success End Condition: User started journey.
Failed End Condition: User has not started journey.
Primary Actor: User
Secondary Actor: Application
Trigger: User wants to create a journey.
MAIN SUCCESS SCENARIO (User has app profile)

1. User enters a destination.
2. User select prepared group interest filter.
3. The application will display a journeys to the destination with basic informations.
4. User select favorite journey.
5. User start journey.

EXTENSIONS

2a. User selected option „application generated interest journeys”
2b. User fill interest filter.
2b1. User save filled interest filter
4a. User modify selected journey.
5a. User set start date.
5b. User invites to journey.

SUB-VARIATIONS

1. User has no profile.

UC002 – Modify car journey

Goal in Context: User want to modify journey. For example, add intermediate stop, with/without highways, etc.
Scope: Application.
Level: Function.
Preconditions: Prepared car journey.
Success End Condition: User finish modifications and start/unpause journey.
Failed End Condition: User cancel/close journey.
Primary Actor: User.
Secondary Actor: Application.
Trigger: User wants to modify a journey.
MAIN SUCCESS SCENARIO

1. User set all modifications that he wanted.
2. The application display a journey to the destination with basic information.
3. User start journey.

UC003 – Search car journeys

Scope: Application.
Level: Function.
Preconditions: No active journey.
Success End Condition: User find car journey that he wants.
Failed End Condition: User didn't find car journey that he wants.
Primary Actor: User.
Secondary Actor: Application.
Trigger: User want to find interesting car journeys.
MAIN SUCCESS SCENARIO (User has app profile)
1. User set destination.
2. Application show various car journeys to destination with basic information.
3. User add car journey to his favorite car journeys library.

EXTENSIONS
3a. User have option to see similar car journeys from chosen.
3b. User can share chosen car journey.
3c. User can rate car journey.

SUB-VARIATIONS
1. User has no profile.

UC007 – Invite to join car journey

Goal in Context: User want to invite friend/s to car journey to see him/their on map.
Scope: Application.
Level: Function.
Preconditions: Prepared car journey.
Success End Condition: Friend/s join car journey.
Failed End Condition: No one joins car journey.
Primary Actor: User.
Secondary Actor: Application.
Trigger: User want to invite friend/s to car journey.
MAIN SUCCESS SCENARIO (User and friend/s has app profile)
1. User choose invite option on prepared car journey.
2. User sent link to friend/s.
3. Friend/s click on link and accept invite to car journey.
4. Everyone who's ready to go start car journey.

EXTENSIONS
4a. Friend can also modify his route to the destination.

SUB-VARIATIONS
2a. Someone don't have app profile.
2a1. User can share link multiple ways.

UC009 – Follow another user

Goal in Context: Easy invitation to the car journey and user shared car journeys through app.
Scope: Application.
Level: Function.
Preconditions: User app profile
Success End Condition: Accepted follow
Failed End Condition: Denied follow
Primary Actor: User
Secondary Actor: Another user, Application
Trigger: User want easy invite another user or see his content.
MAIN SUCCESS SCENARIO (User has app profile)
1. User choose follow request option on another user profile.
2. Another user, who gets follow request accept request.
3. User now can see another user profile and can sent car journey invitations.

SUB-VARIATIONS
2a. Another user denied request.

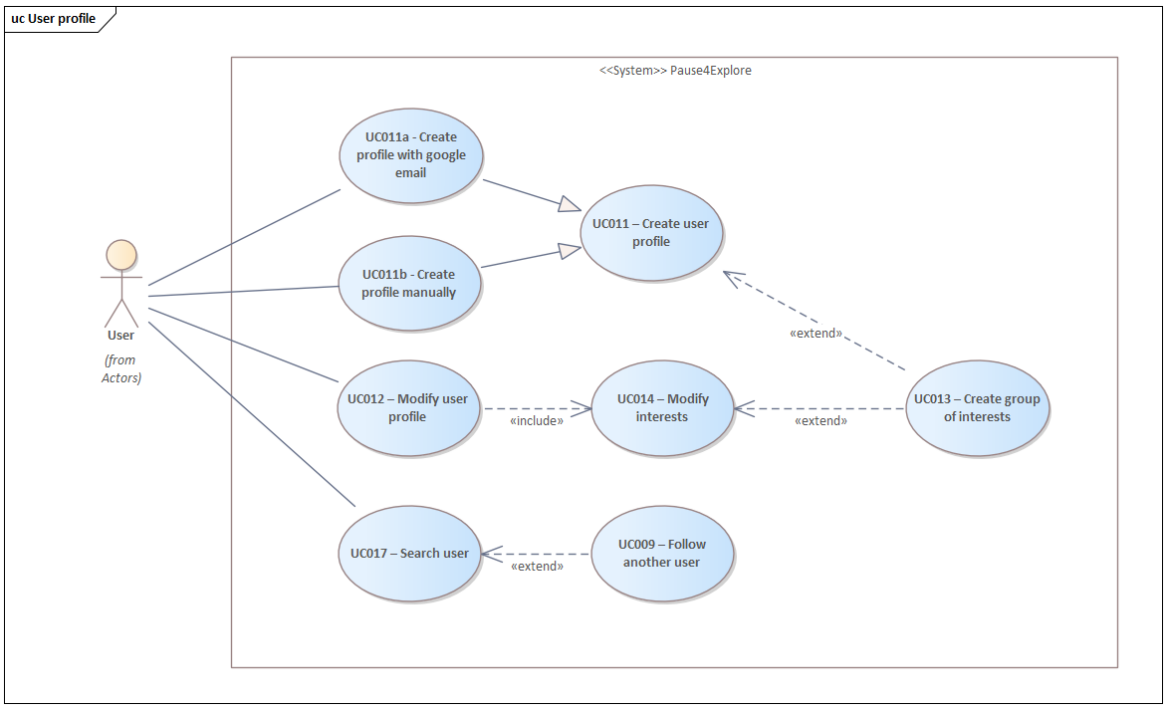
UC017 – Search user

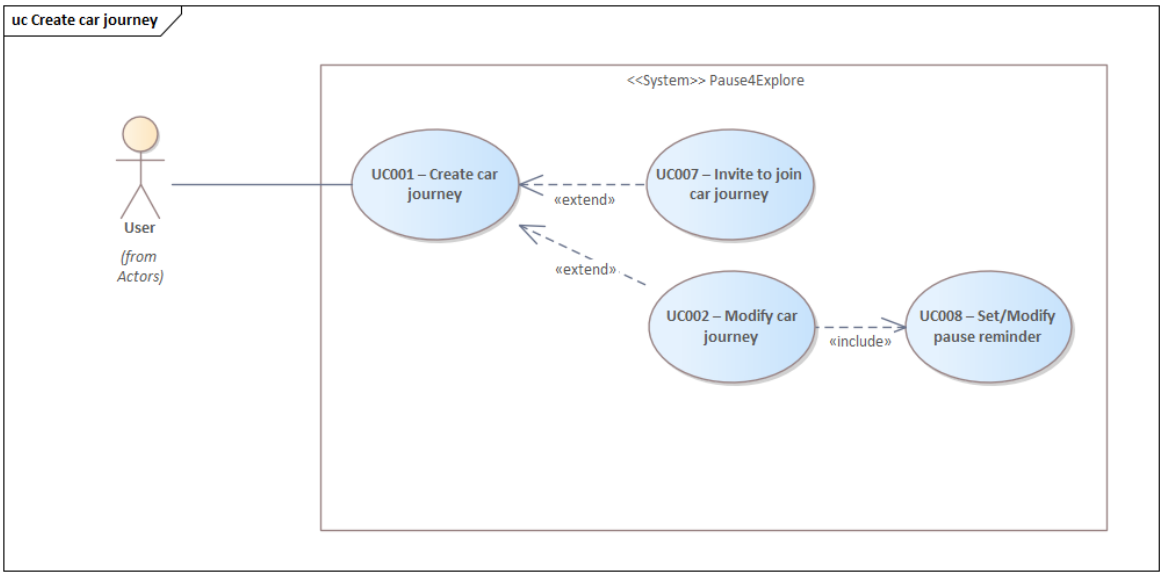
Goal in Context: Found user.
Scope: Application.
Level: Function.
Success End Condition: Founded user.
Failed End Condition: User not existing.
Primary Actor: User.
Secondary Actor: Application.
Trigger: User wants to find another user.
MAIN SUCCESS SCENARIO (User has app profile)
1. User set nick or name of user.
2. Application show search results.
3. User found another user.

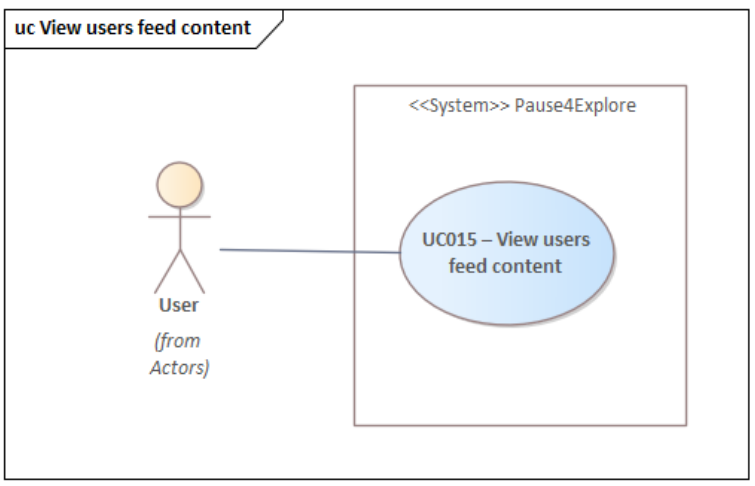
EXTENSIONS
3a. User can follow another user.

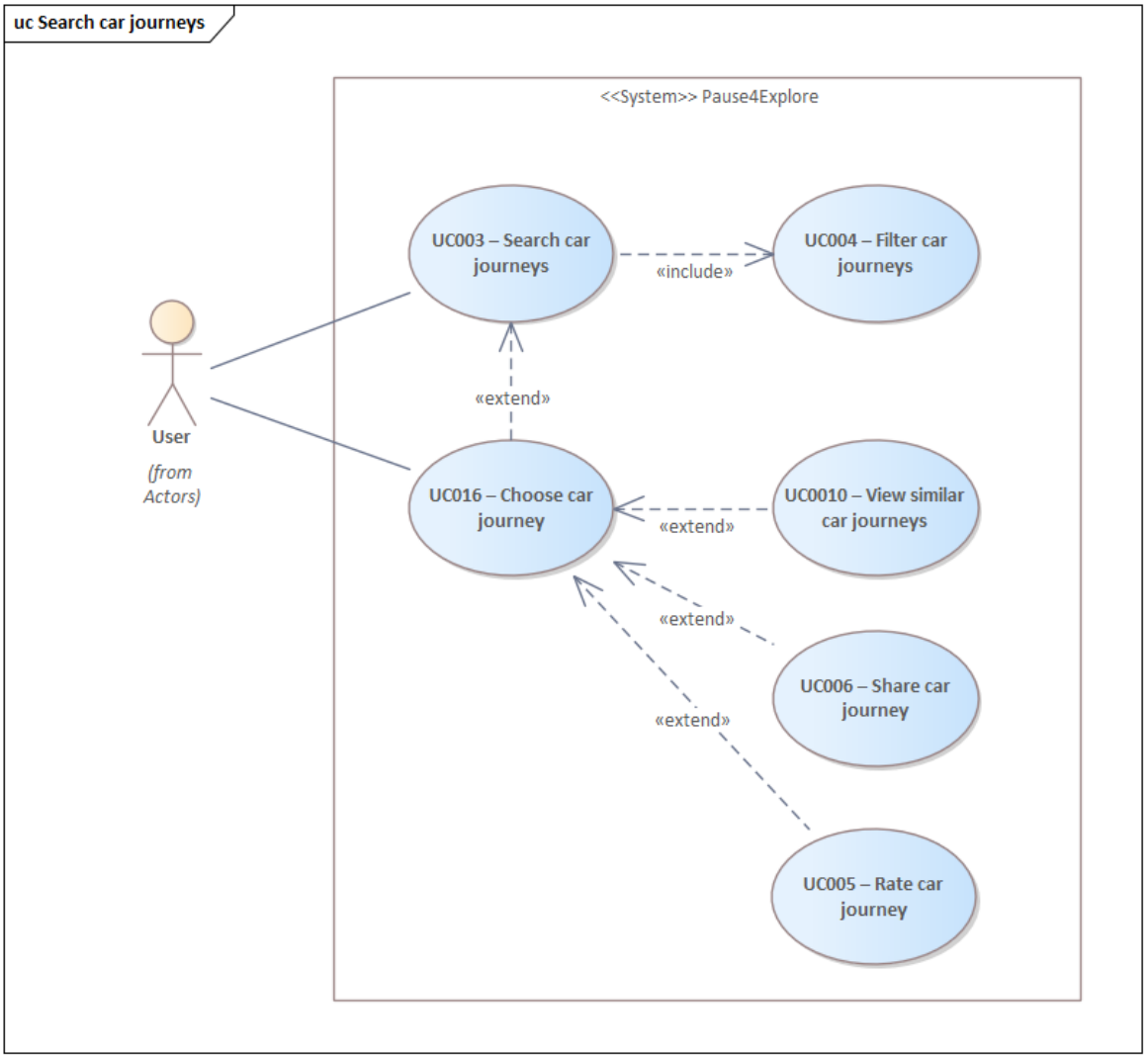
SUB-VARIATIONS
1. User has no profile.

3 Initial behavior model in UML

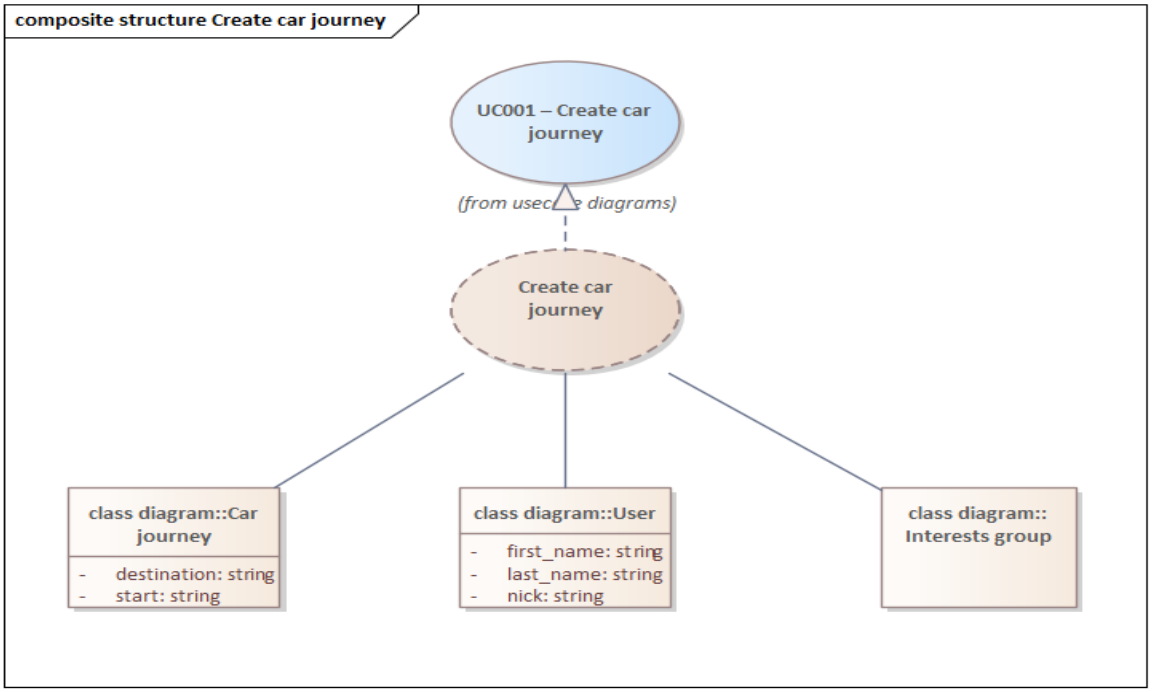


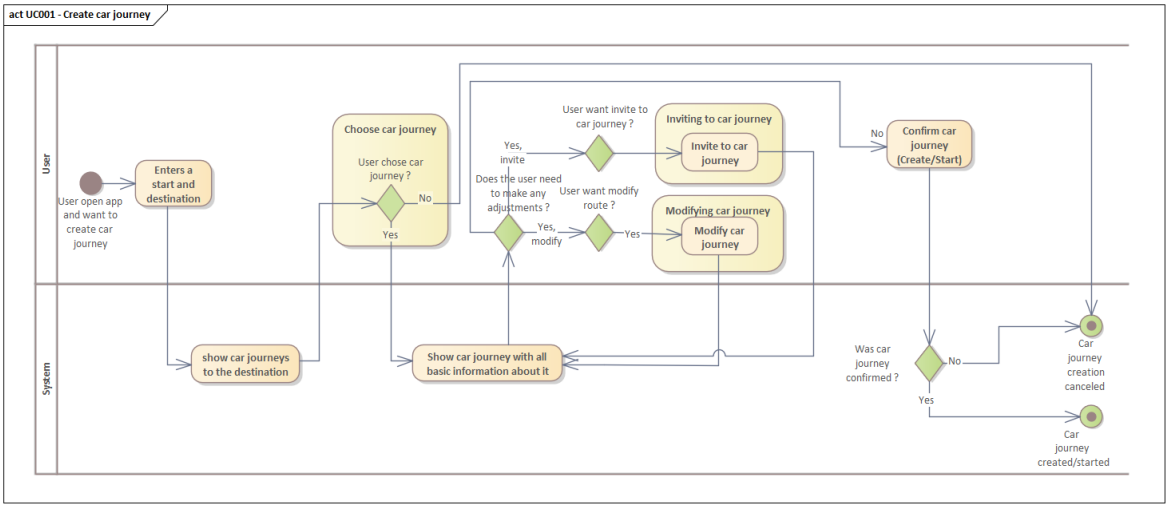


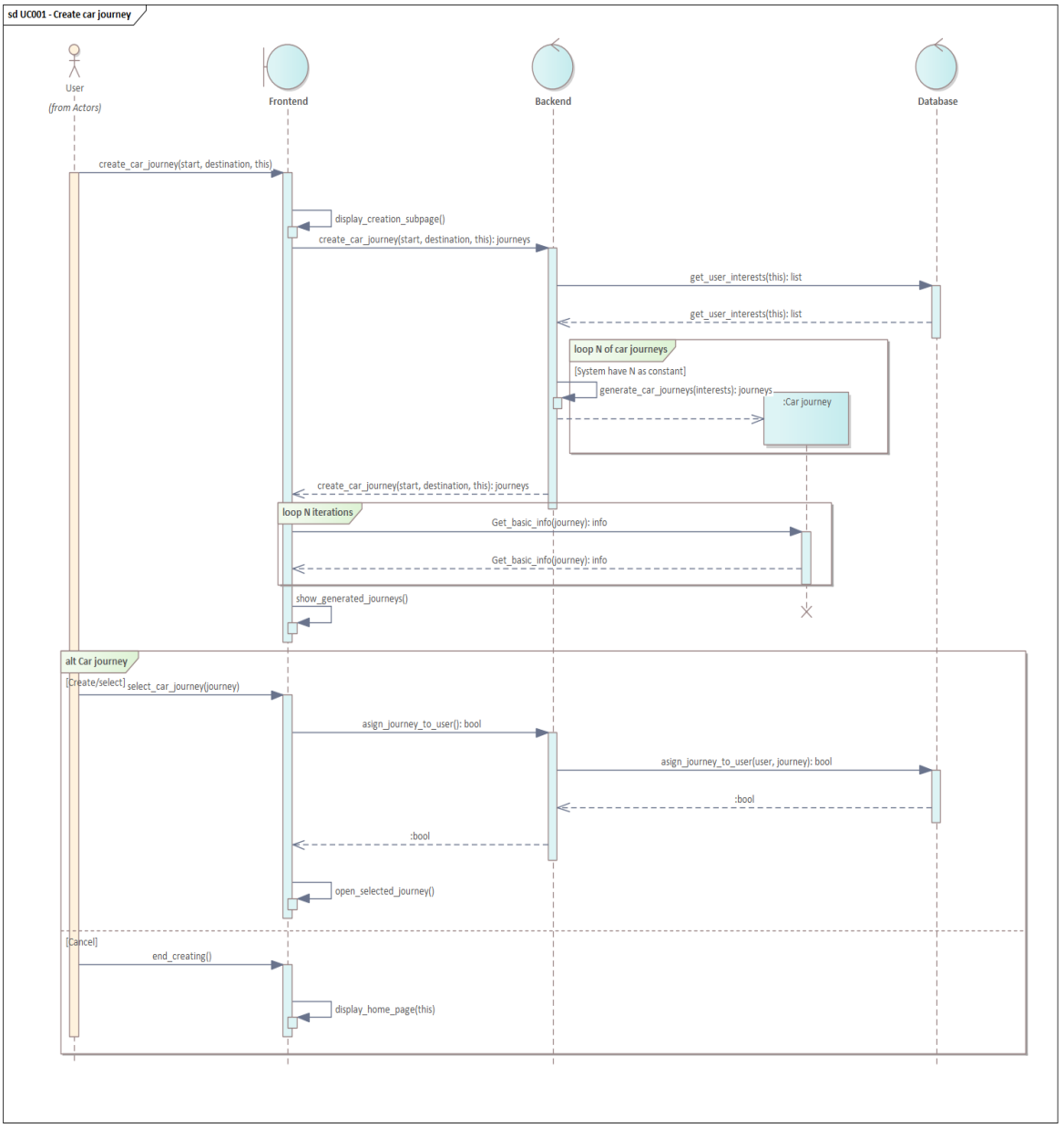



uc Search car journeys
<<System>> Pause4Explore
UC003 – Search car journeys
«include»
UC004 – Filter car journeys
«extend»
User
(from Actors)
UC016 – Choose car journey
«extend»
UC0010 – View similar car journeys
«extend»
UC006 – Share car journey
«extend»
UC005 – Rate car journey

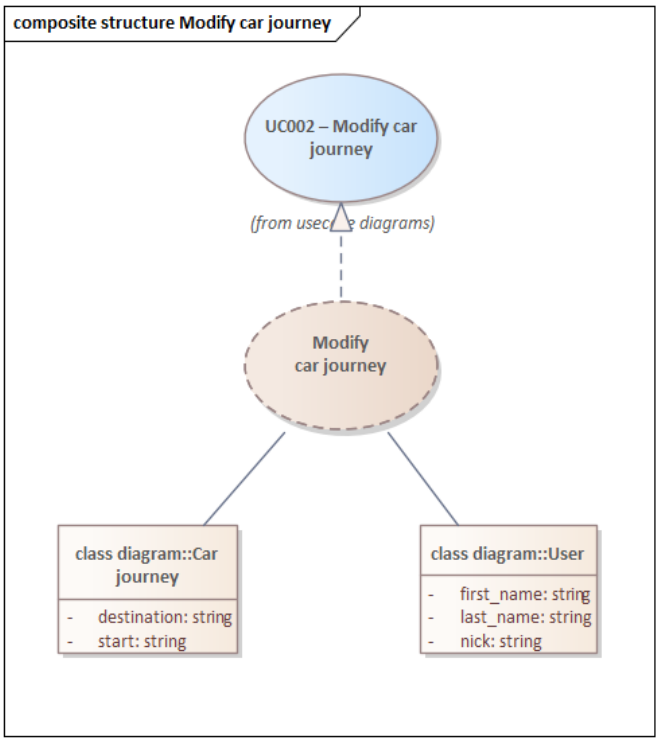
UC001

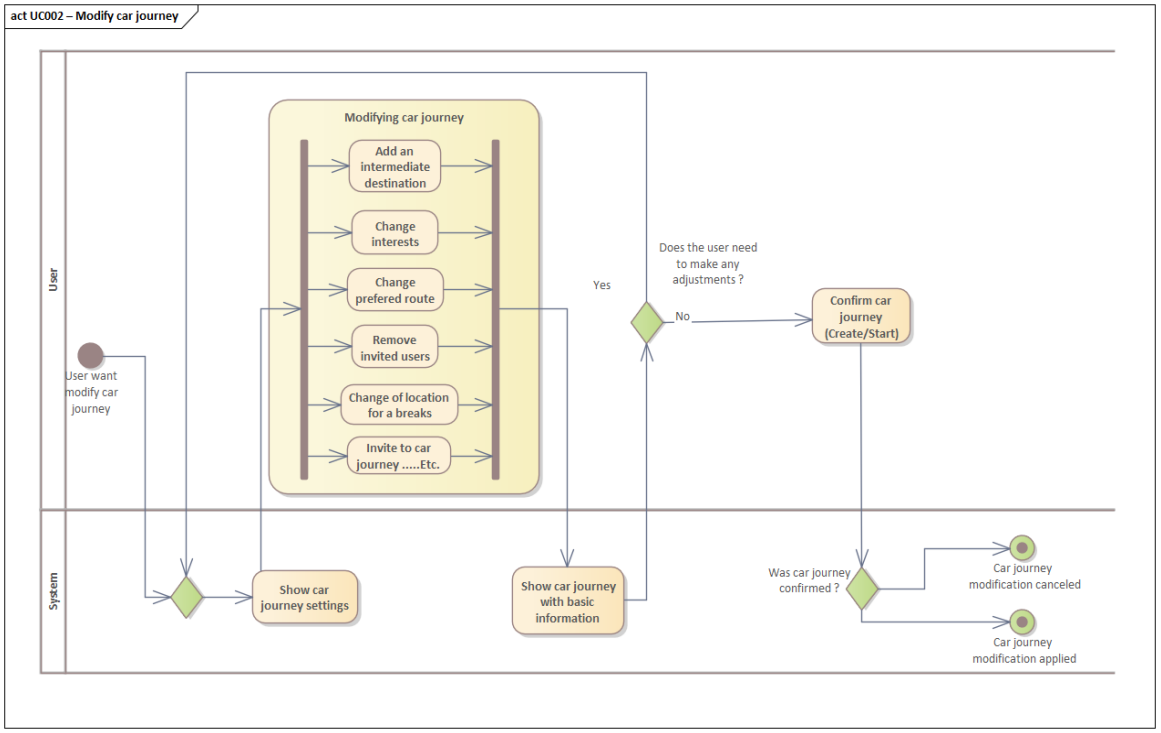

composite structure Create car journey
UC001 – Create car journey
(from use case diagrams)
Create car journey
class diagram::Car journey
- destination: string
- start: string
class diagram::User
- first_name: string
- last_name: string
- nick: string
class diagram:: Interests group

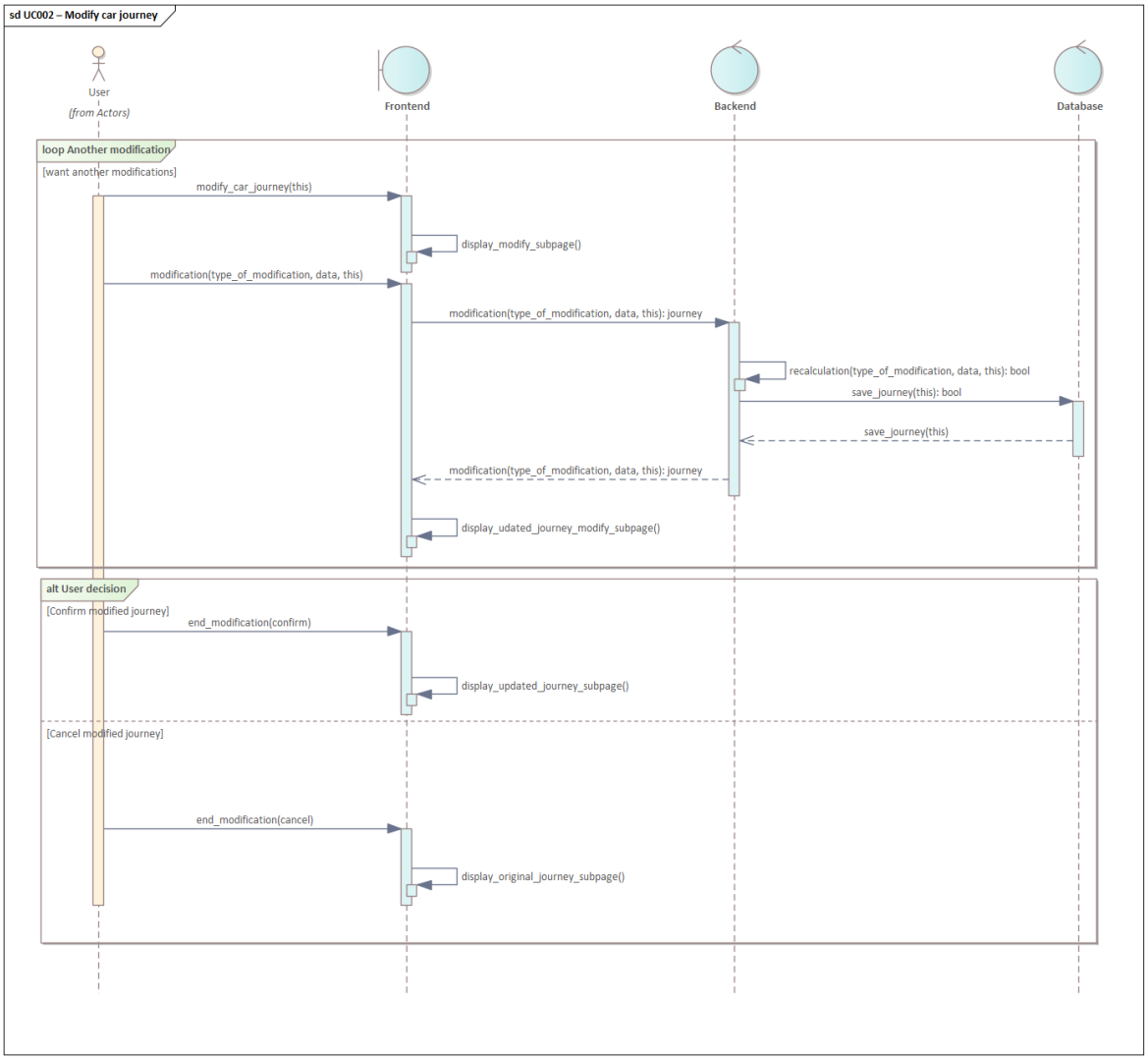

act UC001 - Create car journey
User
System
User open app and want to create car journey
Enters a start and destination
show car journeys to the destination
Choose car journey
User chose car journey ?
No
Yes
Show car journey with all basic information about it
Does the user need to make any adjustments ?
Yes, invite
User want invite to car journey ?
Inviting to car journey
Invite to car journey
Yes, modify
User want modify route ?
Yes
Modifying car journey
Modify car journey
No
Confirm car journey (Create/Start)
Was car journey confirmed ?
No
Yes
Car journey creation canceled
Car journey created/started


sd UC001 - Create car journey
User
(from Actors)
Frontend
Backend
Database
create_car_journey(start, destination, this)
display_creation_subpage()
create_car_journey(start, destination, this): journeys
get_user_interests(this): list
get_user_interests(this): list
loop N of car journeys
[System have N as constant]
generate_car_journeys(interests): journeys
:Car journey
create_car_journey(start, destination, this): journeys
loop N iterations
Get_basic_info(journey): info
Get_basic_info(journey): info
show_generated_journeys()
alt Car journey
[Create/select] select_car_journey(journey)
asign_journey_to_user(): bool
asign_journey_to_user(user, journey): bool
:bool
:bool
open_selected_journey()
[Cancel]
end_creating()
display_home_page(this)

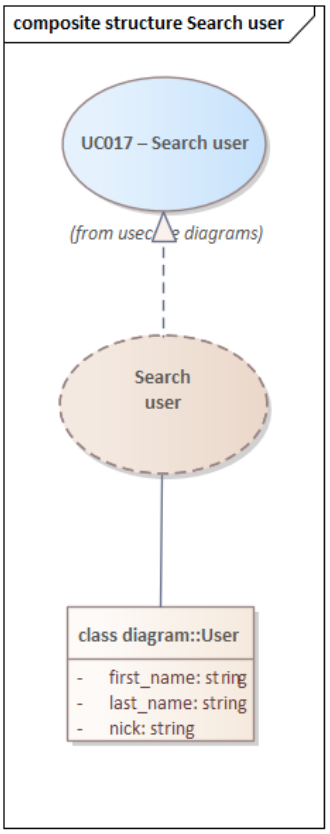
UC002

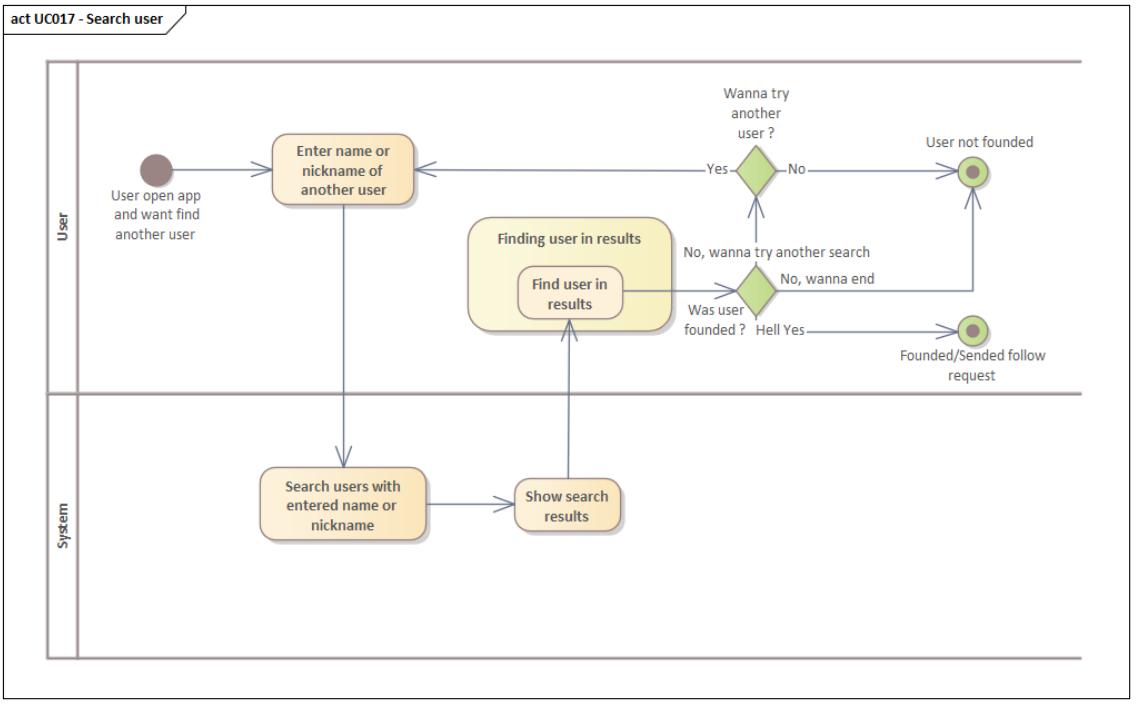

composite structure Modify car journey
UC002 – Modify car journey
(from use case diagrams)
Modify car journey
class diagram::Car journey
- destination: string
- start: string
class diagram::User
- first_name: string
- last_name: string
- nick: string

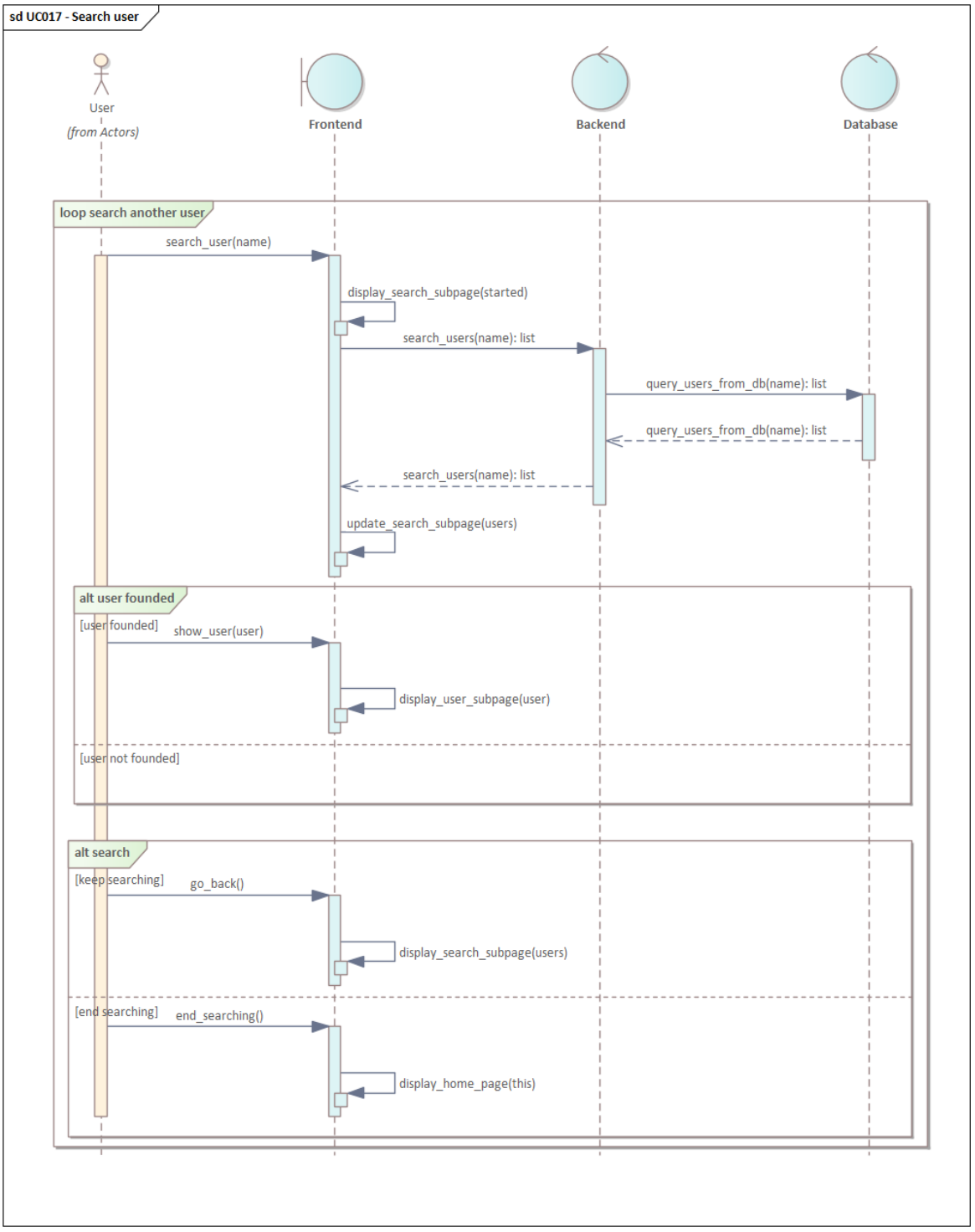

act UC002 – Modify car journey
User
System
User want modify car journey
Modifying car journey
Add an intermediate destination
Change interests
Change prefered route
Remove invited users
Change of location for a breaks
Invite to car journey .....Etc.
Does the user need to make any adjustments ?
Yes
No
Confirm car journey (Create/Start)
Show car journey settings
Show car journey with basic information
Was car journey confirmed ?
Car journey modification canceled
Car journey modification applied


sd UC002 – Modify car journey
User
(from Actors)
Frontend
Backend
Database
loop Another modification
[want another modifications]
modify_car_journey(this)
display_modify_subpage()
modification(type_of_modification, data, this)
modification(type_of_modification, data, this): journey
recalculation(type_of_modification, data, this): bool
save_journey(this): bool
save_journey(this)
modification(type_of_modification, data, this): journey
display_udated_journey_modify_subpage()
alt User decision
[Confirm modified journey]
end_modification(confirm)
display_updated_journey_subpage()
[Cancel modified journey]
end_modification(cancel)
display_original_journey_subpage()

UC0017

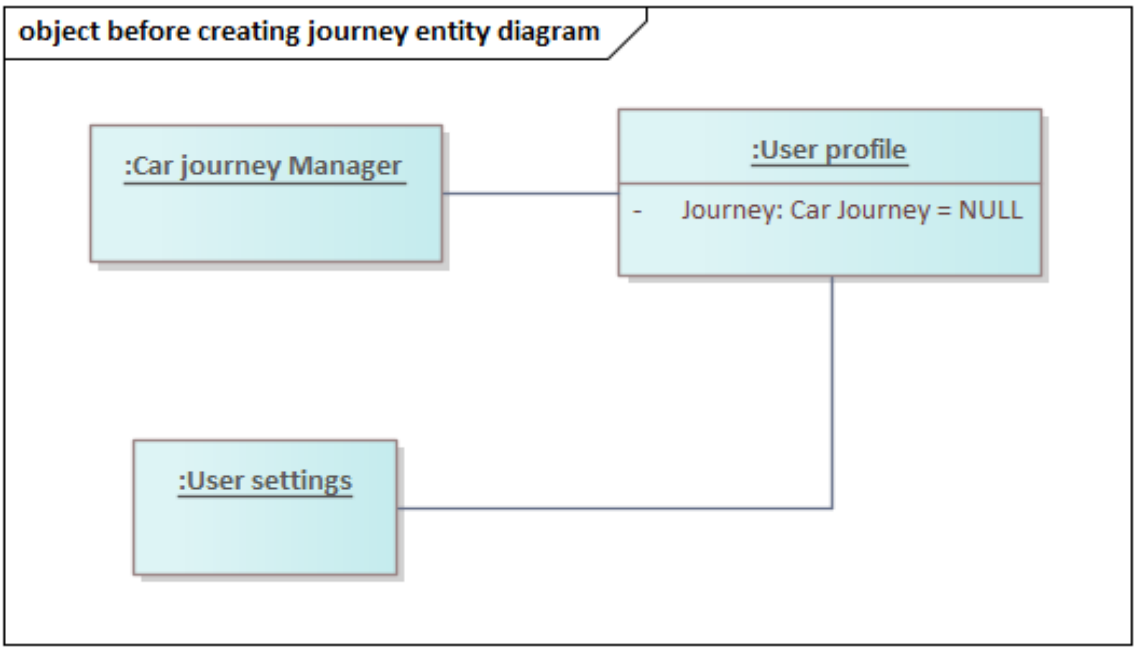

composite structure Search user
UC017 – Search user
(from use case diagrams)
Search user
class diagram::User
- first_name: string
- last_name: string
- nick: string

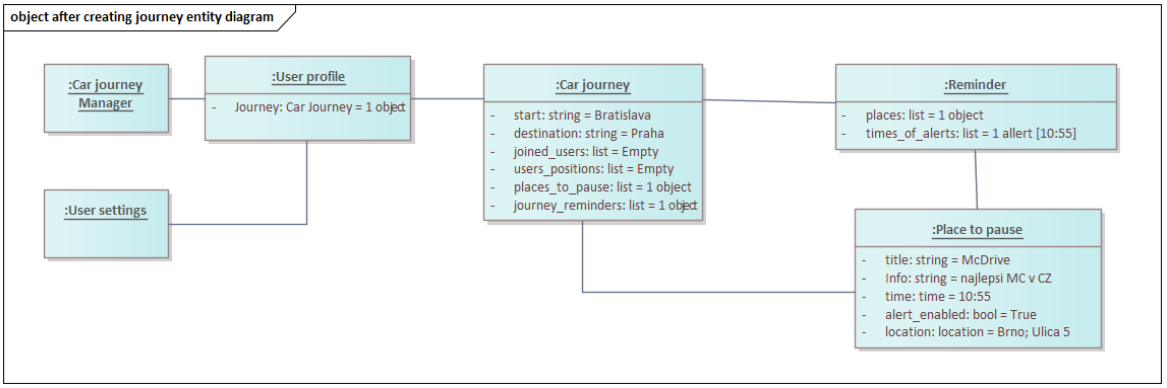

act UC017 - Search user
User
System
User open app and want find another user
Enter name or nickname of another user
Wanna try another user ?
Yes
No
User not founded
Finding user in results
Find user in results
No, wanna try another search
No, wanna end
Was user founded ?
Hell Yes
Founded/Sended follow request
Search users with entered name or nickname
Show search results


sd UC017 - Search user
User
(from Actors)
Frontend
Backend
Database
loop search another user
search_user(name)
display_search_subpage(started)
search_users(name): list
query_users_from_db(name): list
query_users_from_db(name): list
search_users(name): list
update_search_subpage(users)
alt user founded
[user founded]
show_user(user)
display_user_subpage(user)
[user not founded]
alt search
[keep searching]
go_back()
display_search_subpage(users)
[end searching]
end_searching()
display_home_page(this)

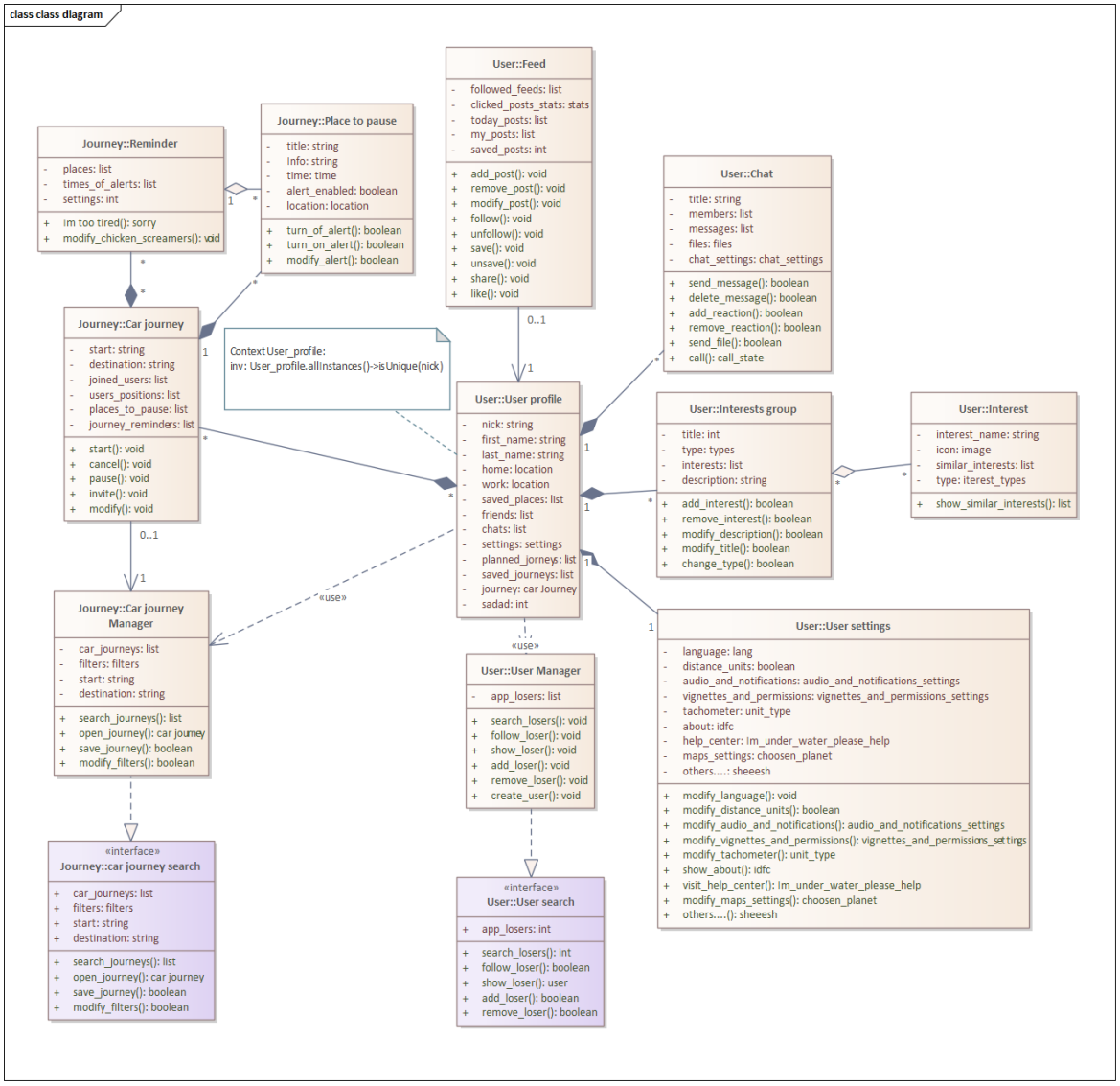
4 Objects, classes and interactions

Objects

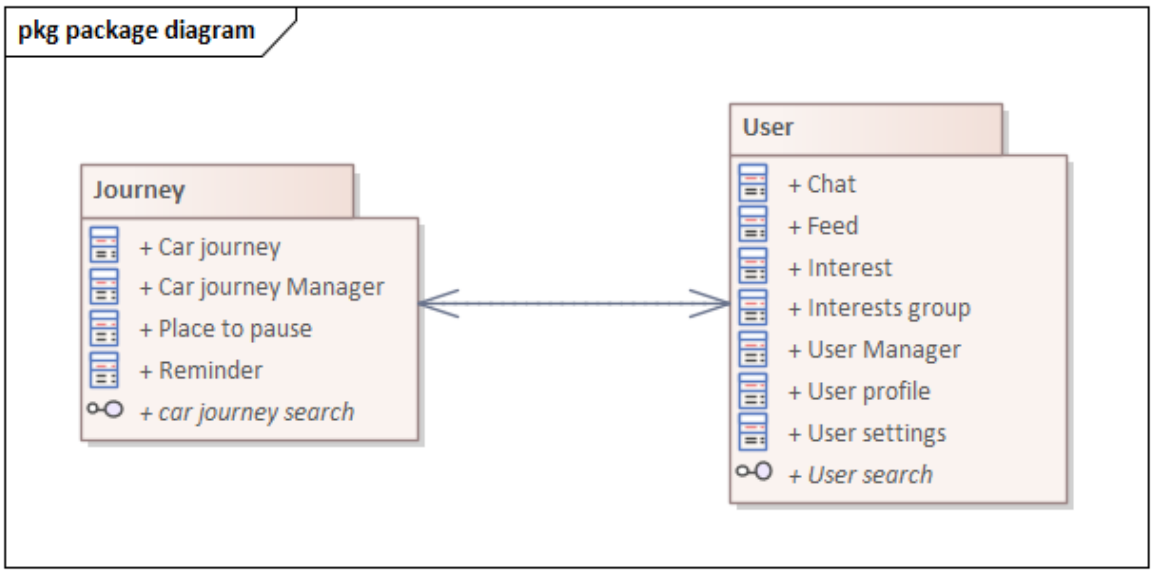




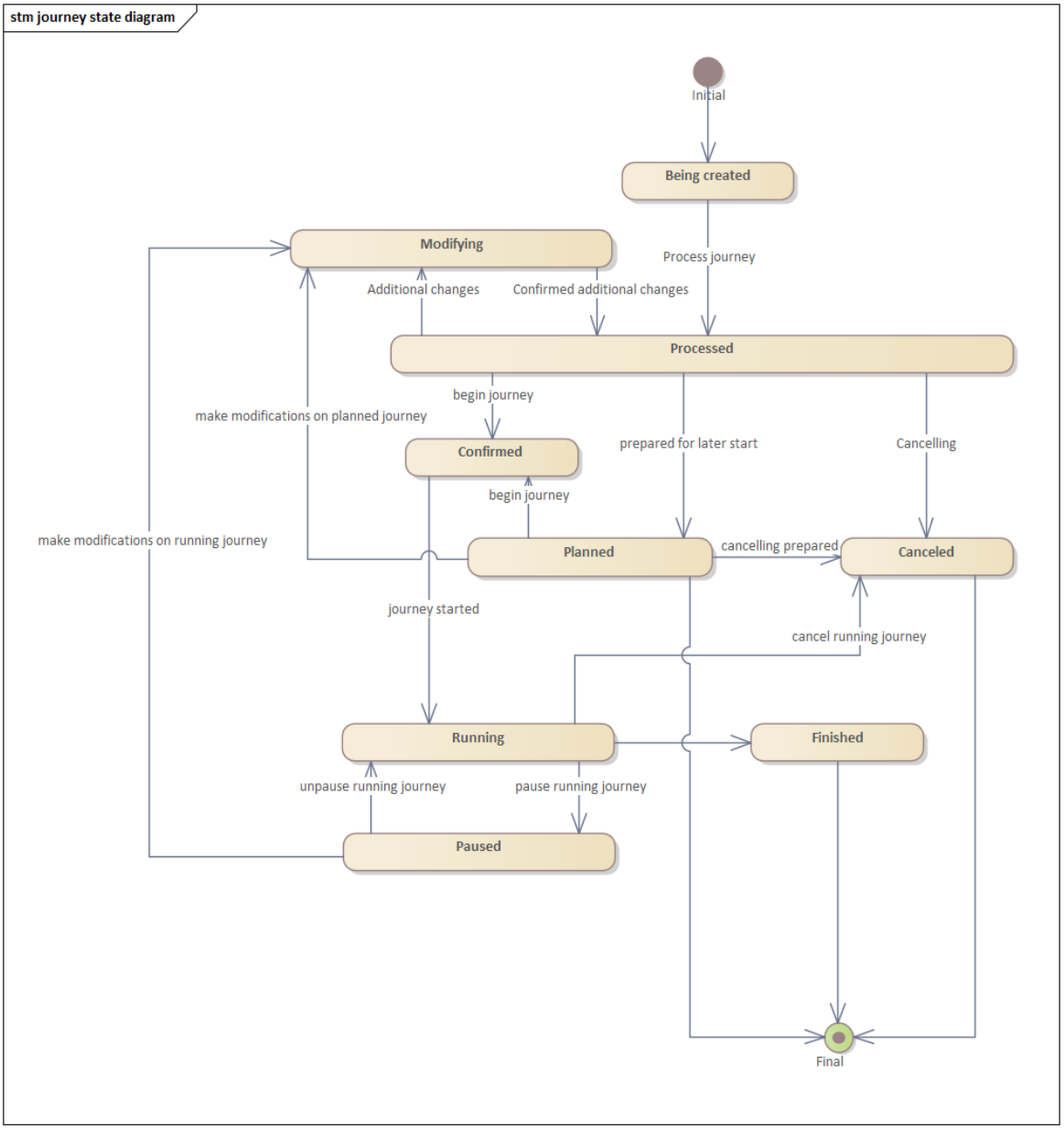
Classes



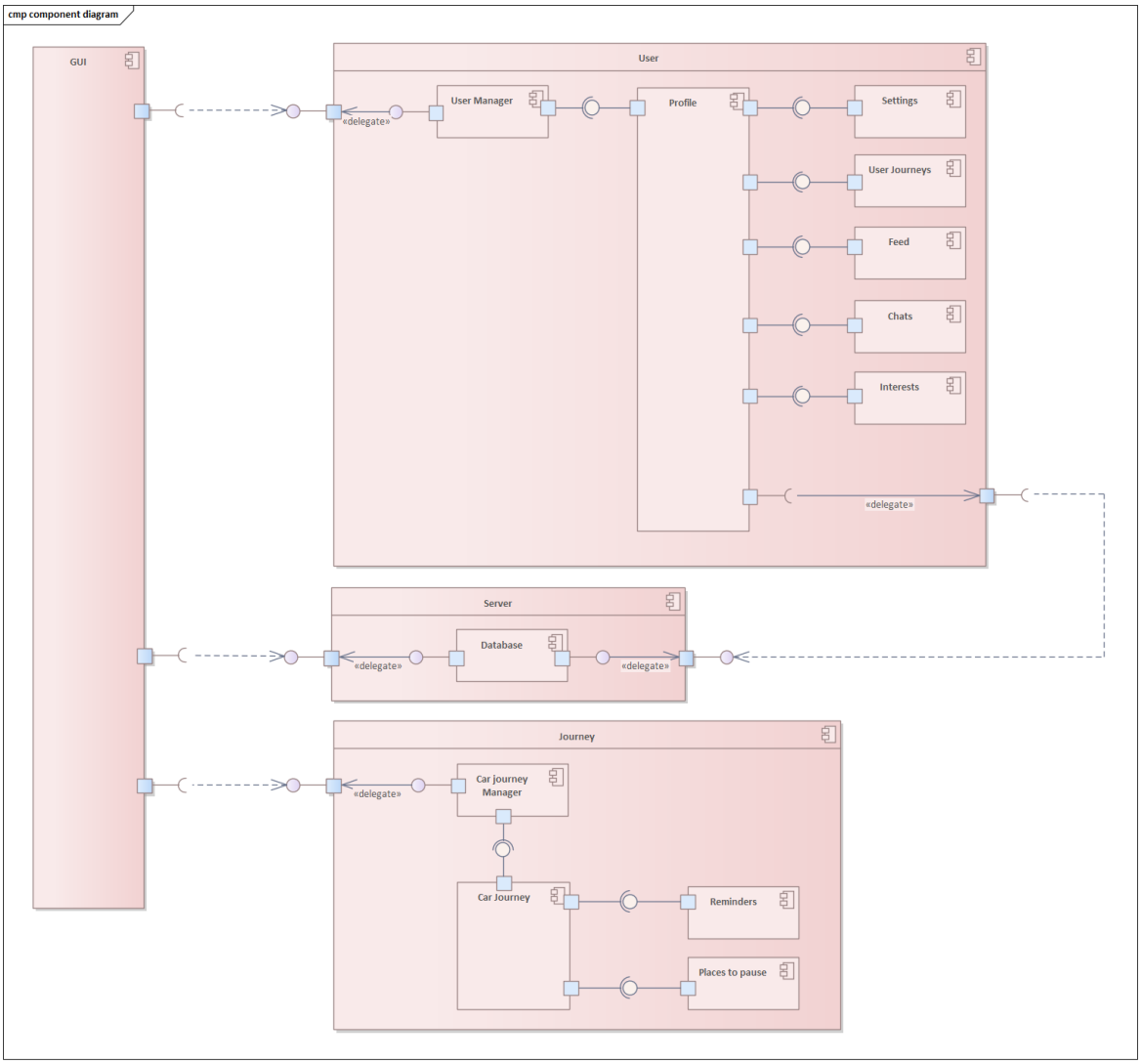
Packages



State diagram



5 Components



6 Code

Python console code in zip file code_MSOFT. Just unzip and run main.py

```
# user fero
fero = UserProfile.UserProfile()
# creating car journey from Bratislava to Praha
fero.carJourneyManager.createJourney(fero,"Bratislava","Praha")
# adding place to pause McDrive with enabled reminder setted to 10:55
fero.carJourneyManager.addPlaceToPause(fero,"McDrive", "Najlepsi MC v CZ", "10:55", True, "Brno; Ulica 5")

# prints for show start and destination points of created route
print(fero.carJourney.start)
print(fero.carJourney.destination)
```

7 Algebraic specification

Types:

CarJourney[P]

Functions:

new: CarJourney[P]
running: CarJourney[P] → Boolean
cancel: CarJourney[P] → Empty
addPlaceToPause: CarJourney[P] × PlaceToPause → CarJourney[P]
removePlaceToPause: CarJourney[P] × PlaceToPause → CarJourney[P]
getPlace: CarJourney[P] → PlaceToPause

Axioms:

∀ P: PlaceToPause, c: CarJourney[P]
A1: cancel(running(new))
A2: removePlaceToPause(addPlaceToPause(c,P)) = c
A3: getPlace(addPlaceToPause(c,P)) = P

Preconditions:

removePlaceToPause: (c: CarJourney[P]) require not empty (c)

Explanation:

- User can cancel only running existing car journey,
- removing place must exist in car journey,
- getting place must be in car journey.

8 Property model (optional part)