

Homework 2

CS 5800 Advanced Software Engineering

(OOA and OOD)

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Part 1 – Use Case(OOA)

1. Title: Navigation - Get Directions

Primary Actor: User

Success Story:

1. User enters their starting location.
2. User enters their destination location.
3. User chooses the vehicle type (car, walk, bike etc)
4. App calculates the efficient routes between the two locations.
5. User selects one of the suggested routes.
6. App displays the route on a map with turn-by-turn instructions.
7. App updates the route with real-time traffic data and offers alternatives if needed.

Preconditions:

- Starting and destination locations must be valid within the app's covered area.
- User must have internet access and GPS enabled.

Extensions:

- GPS signal is weak or unavailable.
- No internet connection.
- Unexpected road closures or events obstruct the route.
- User deviates from provided directions.

2. Title: Search by Place Name

Primary Actor: User

Success Story:

1. User enters the place name (e.g., "Universal Studios," "Disneyland").
2. App displays a list of matching places with relevant information (address, contact details, etc.).
3. User can select a specific place from the list for further details and directions.

Preconditions:

- User has internet access.
- User enters a valid and recognizable place name.

Extensions:

- Multiple places share the same name, leading to ambiguity.
- No exact match found for the entered place name.
- Spelling error in the search query.

3. Title: Search by Place Category

Primary Actor: User

Success Story:

1. User selects a category of interest (e.g., "Gas station," "Restaurant).
2. App displays a list of available places within the chosen category, showcasing their location, distance, and potential rating.

Preconditions:

- User GPS and Internet access.

Extensions:

- Limited or no places available within the chosen category in the current location.
- Search filters result in no matching places.

4. Title: Share Location

Primary Actor: User

Success Story:

1. User selects a location on the map (current location, address etc.).
2. User chooses one of the available messaging apps (e.g., WhatsApp, Messages), or opts to copy the location link.
3. App opens the selected messaging app with the chosen location as a link.
4. User selects contacts and send the location to those contacts.

Preconditions:

- User has an internet connection.
- User has the chosen messaging app installed.
- The chosen contact is reachable through the selected messaging app.

Extensions:

- Contact information is outdated or incorrect.

5. Title: Share Rideshare

Primary Actor: User

Success Story:

1. User enters their desired pickup point and drop location on the map.
2. App displays the estimated cost for all rideshare options.

3. User chooses a rideshare service (Uber, Lyft, etc.).
4. App opens the chosen rideshare app with the pickup location and drop location pre-filled.

Preconditions:

- User must have internet connection and location services enabled.
- User has the chosen rideshare app installed and configured on their device.

Extensions:

- Rideshare app is not available in the current location.
- High demand or limited availability of rideshare vehicles.

Part 2 – (OOA)

- a) **Highlight all the nouns** to determine possible potential classes.

Navigation: Location (Starting, Destination), Route (Directions, Distance), Map, Traffic

Search: Location, Search Result, Place Details (Images, contact, Location)

Explore: Category, Location (Current), Place Details, Search results

Share Location: Messaging App, Location (in Link)

Rideshare: Rideshare Service, Location (Pickup, Destination)

So the list of nouns/ possible potential classes are

Navigation

Search

Explore

Share Location

Rideshare

Location

Route

Map

PlaceDetails

Category

MessagingApp

RideshareService

User

- b) **Highlight all the verbs and verb phrases** to determine possible methods and relationships.

Navigation: computeRoute(start, destination), getDirections(), displayRoute(),
trafficUpdate(), showDirections()

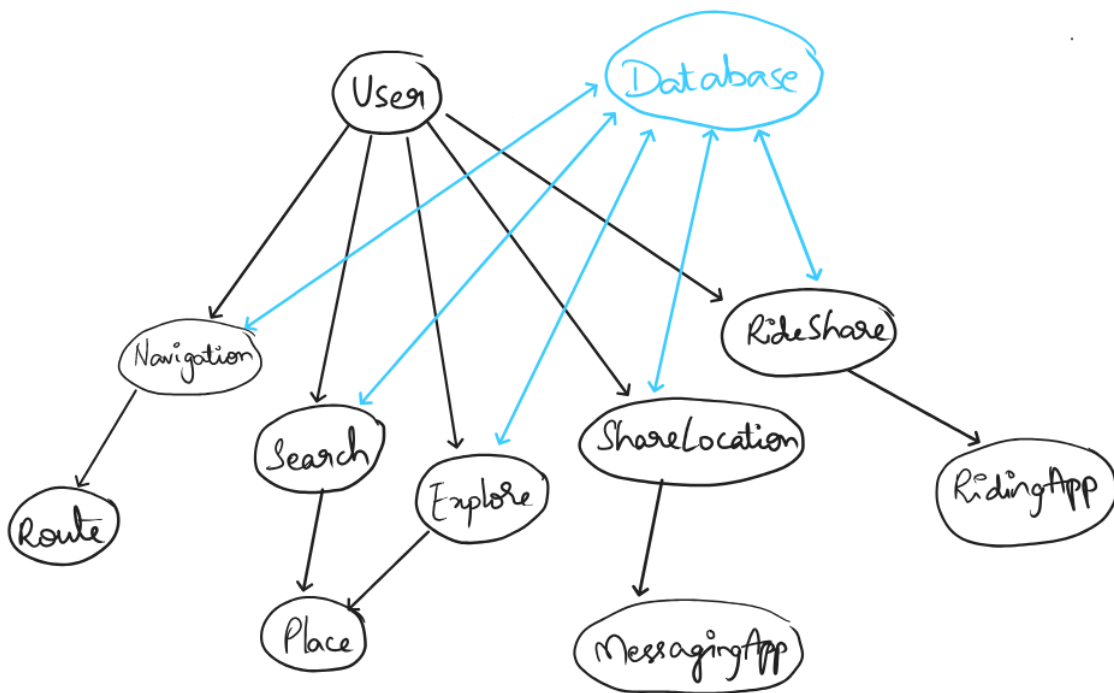
Search: searchPlaceByName(name), getPlaceDetails(place_id), filterResults(criteria),
displayResults()

Explore: searchPlacesByCategory(category), displayResults(), getPlaceDetails(place_id)

Share Location: openMessagingApp(app, location)

Share Rideshare: estimateCost(service, pickup, destination), openRideshareApp(service, pickup, destination), displayRideshareOptions()

- c) Create a rough graph showing how all the classes are connected.



Part 3 – (OOD)

- a) Create CRC cards of the classes you have selected from the potential list above.

User	
Chooses starting and ending locations for navigation.	Navigation
Searches for places by name.	Search
Explores nearby places of certain category.	Explore
Selects contacts and messaging apps for sharing location.	ShareLocation
Selects rideshare services and pickup locations.	RideShare

Navigation	
Calculates routes between start and destination points.	Routes
Retrieves directions for routes.	Routes
Displays routes on a map.	Map
Provides traffic updates for routes.	Traffic
Gives turn-by-turn instructions.	Routes

Search	
Finds places by name based on user query.	Map
Retrieves details of specific places.	Place
Filters search results based on user criteria.	Place
Displays search results to the user.	Place

Place	
Stores information about a place (name, address, category, etc.).	Map
Provides details of a specific place when requested.	Search, Explore, ShareLocation, RideShare

Explore	
Finds user selected category places near the user's location.	Map
Filters places by category.	Place
Displays places to the user.	Place
Retrieves details of specific places.	Place

ShareLocation	
Shares the user's location with a chosen contact.	User
Opens the chosen messaging app with the location embedded.	MessagingApp

MessagingApp	
Displays and facilitates messaging between users.	ShareLocation
Embeds shared locations and opens messaging App.	MessagingApp

RideShare	
Estimates the cost of a rideshare trip.	User
Opens the chosen rideshare app with pickup and destination locations pre-filled.	RideShare
Displays information about the rideshare options	RideShare

Map	
Stores information about multiple places	Places
Displays a visual representation of the geographical area.	Navigation
Finds user selected category places near the user's location.	Explore
Finds places by name based on user query.	Search
Shows user location.	User

b) Create a final graph connecting all the Class names with their Collaborators.

