

CS5800 – Advanced Software Engineering

Cal Poly Pomona

Homework 2

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Description:

CPP Maps

(OOA and OOD)

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1. Use Case (OOA)

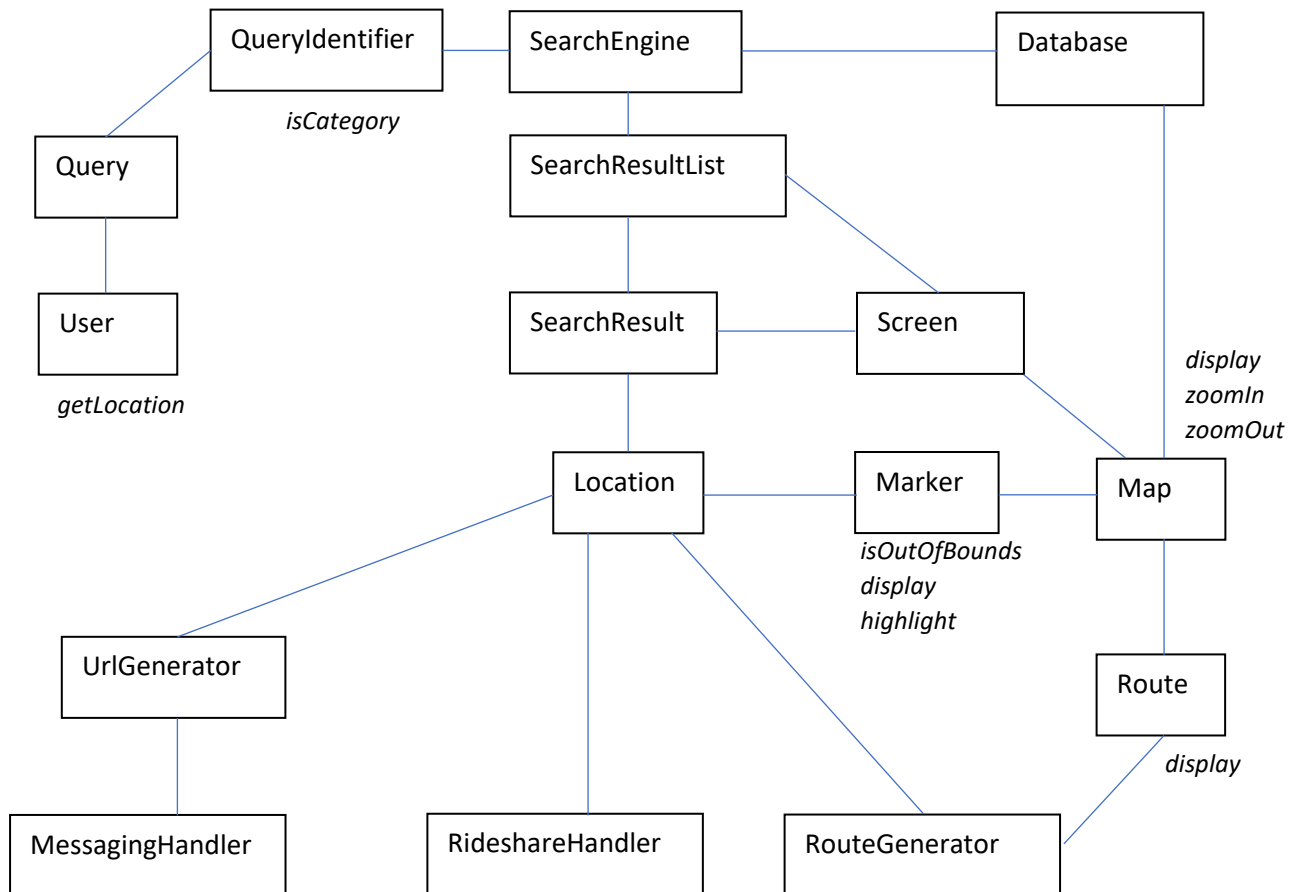
- Navigation: The system loads the map from the database to the screen. If the user clicks on the navigate button on the screen, the system gets the starting location and destination location that the user entered. The search engine searches those locations from the database. Markers of those locations are placed on the map according to their coordinates. If the markers are not visible on the screen, zoom in/ out the map until the markers are at the center of the screen. A route generator calculates the shortest route from the starting location to destination location. From the calculated route, the system generates a list of directions from the starting location to destination location. As the navigation runs, the system will get and update the user's current location periodically to update the directions as the user moves. The user will also be visible as a marker on the map, which will move along the map according to their location.
- Search: If the user clicks on the search button on the screen, the system gets the input query of the location that the user entered. A query identifier identifies the query whether it's a name of location or not. If it is the name of a location, the search engine searches through the database and returns a search result which is the most relevant location to that input query. The search result consists of the location, name of the location, address information, phone number, and web address. The marker of that location is placed on the map, if the marker is not visible on the screen, zoom in/ out the map until the marker is at the center of the screen.
- Explore: If the user clicks on the search button on the screen, the system gets the input query of the location that the user entered. A query identifier identifies the query whether it's a category or not. If it is a category, the search engine searches through the database and returns a list of search results that belong to that category. The markers of those locations are placed on the map, if the markers are not visible on the screen, zoom in/ out the map until all markers are visible.
- Share location: When the user clicks the share button, a share window will pop up on the screen to choose the desired share method. If a messaging app button is chosen, a url generator will generate a url based on the current selected location, then a messaging service will pass the url to the messaging app.
- Share rideshare: When the user clicks the share button, a share window will pop up on the screen to choose the desired share method. If a rideshare app button is chosen, a rideshare service will send the user's current location and the selected location to the rideshare app (to calculate the ride cost).

2. Use Case (OOA)

- Potential classes:
 - Map
 - Database
 - Screen
 - Location

- Route
- User
- SearchEngine
- SearchResult
- Marker
- Query
- QueryIdentifier
- SearchResultList
- UrlGenerator
- MessagingHandler
- RouteGenerator
- RideshareHandler

• Rough graph:



3. OOD

- CRC cards

Map	
Display graphical map data	Marker
Display marker of the location(s)	Route
Display the calculated route between locations	
Highlight a marker	
Zoom in/ out when marker(s) is/ are out of bounds	

Location	
Provide geographical position data	SearchEngine
Store location information (address, etc)	Marker
Translate user's current/ selected position into location data	User
	Route

Route	
Calculate the route between 2 locations	Location
Display the route on the map	Map

User	
Get current/ selected location	Location
Input search query	Query
Choose desired actions	MessagingHandler
	RideshareHandler

SearchEngine	
Handle search queries	Query
Return the search result as location	Location
Return the search results as a list of location	

Query	
Store search parameters from user	User
Identify the search query (by name/ category)	SearchEngine

Marker	
Mark certain points on the map	Map
Get the position of the marker according to location	Location

MessagingHandler	
Receive user's selected location	User
Generate a url from the selected location	
Handle communication with messaging app	

RideshareHandler	
Receive user's current and destination locations	User
Handle communication with rideshare app	

- Final Graph

