

**Binbin Lai and Tong Li**

CMPE226 Project#1 Problem Statement  
Title: Travel Information System

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## Description

The objective of our project is to find the information of restaurants, shopping centers, gas stations, hotels, cities near the highway for the convenience of travelers.

We provide a map of roads I-101, I-280, I-680, I-880 and locations of exits, cities, restaurants, shopping centers, hotels, gas stations on the road.

Suppose that we are currently driving north on I-880, and we know about the current location of our car from GPS (Global Point System).

We have the following entities defined:

Current\_Pos(road, x, y)

This table is used to store the current location of the traveler.

The attribute "road" represents the current highway we are driving on.

The current location on the map is indicated by the values of the attributes "x", "y".

Route(road, x, y)

This table is used to store the map of road I-101, I-280, I-680, I-880. The map of each road is represented by tuples of constraints.

The value of the attribute "road" is one of the following: 101, 280, 680, 880.

The attributes "x", "y" are used to represent the location of any points on the road on the map.

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Exit(road, id, x, y )

This table is used to store the location of exits on the roads.

The attribute "road" could be used to refer to the Route table.

The value of the attribute "road" is one of the following: 101, 280, 680, 880.

The attribute "id" means the exit number, whose value is unique for each road.

The attributes "x", "y" are used to represent the location of the exit on the map.

*Note: Since the MLPQ system wouldn't accept such design, we used four relations instead, which include*

*Exit\_101(ex, x, y)*

*Exit\_280(ex, x, y)*

*Exit\_680(ex, x, y)*

*Exit\_880(ex, x, y)*

*The attribute "ex" means the exit number, whose value is unique for each road.*

*The attributes "x", "y" are used to represent the location of the exit on the map.*

Restaurant(code, x, y, rating, price\_from)

This table is used to store the information of restaurants including location, rating and lowest price.

The value of "code" is unique for each Restaurant.

The location of the restaurant is represented by the attributes "x", "y".

The value range of the "rating" attribute is from 1 to 5, of which 5 is the best rating.

The attribute "price\_from" is used to describe the lowest price of a lunch for two in the restaurant.

*Note: Since the MLPQ system wouldn't accept such design, we used two relations instead, which include:*

*Restaurant(code, x, y)*

*This table is used to store the key information of restaurants including location.*

*The value of "code" is unique for each Restaurant.*

*The location of the restaurant is represented by the attributes "x", "y".*

*Rate\_Rst(code, rating , price\_from)*

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*This table is used to store the detailed information of the restaurant including the rating and the lowest price of a lunch for two.*

*The value of "code" is the foreign key referring to the Restaurant table.*

*The value range of the "rating" attribute is from 1 to 5, of which 5 is the best rating.*

*The attribute "price\_from" is used to describe the lowest price of a lunch for two in the restaurant.*

*Shoppingcenter(center, x, y, rating, size )*

*This table is used to store the information of shopping centers including location, rating, and size of the center.*

*The value of attribute "center" is unique for each Shoppingcenter.*

*The value range of the "size" attribute is from 1 to 10. And 10 is the largest.*

*The location of the shopping center is represented by the attributes "x", "y" .*

*The value range of the "rating" attribute is from 1 to 5, of which 5 is the best rating.*

*The value range of the "size" attribute is from 1 to 10. And 10 is the largest.*

*Note: Since the MLPQ system wouldn't accept such design, we used two relations instead, which include:*

*Shoppingcenter(center, x, y)*

*This table is used to store the information of shopping centers including the location .*

*The value of attribute "center" is unique for each Shoppingcenter.*

*The value range of the "size" attribute is from 1 to 10. And 10 is the largest.*

*The location of the shopping center is represented by the attributes "x", "y" .*

*Size\_Shop(center, rating, size )*

*This table is used to store the information of shopping centers including the rating and size .*

*The value range of the "rating" attribute is from 1 to 5, of which 5 is the best rating.*

*The value range of the "size" attribute is from 1 to 10. And 10 is the largest.*

*Gasstation(station, x, y, service, price\_from)*

*This table is used to store the information of gas stations including the location, service, and lowest price.*

*The value of attribute "station" is unique for each Gasstation.*

*The location of the gas station is represented by the attributes "x", "y".*

*The value range of the "service" attribute is from 1 to 3. And 3 is the best.*