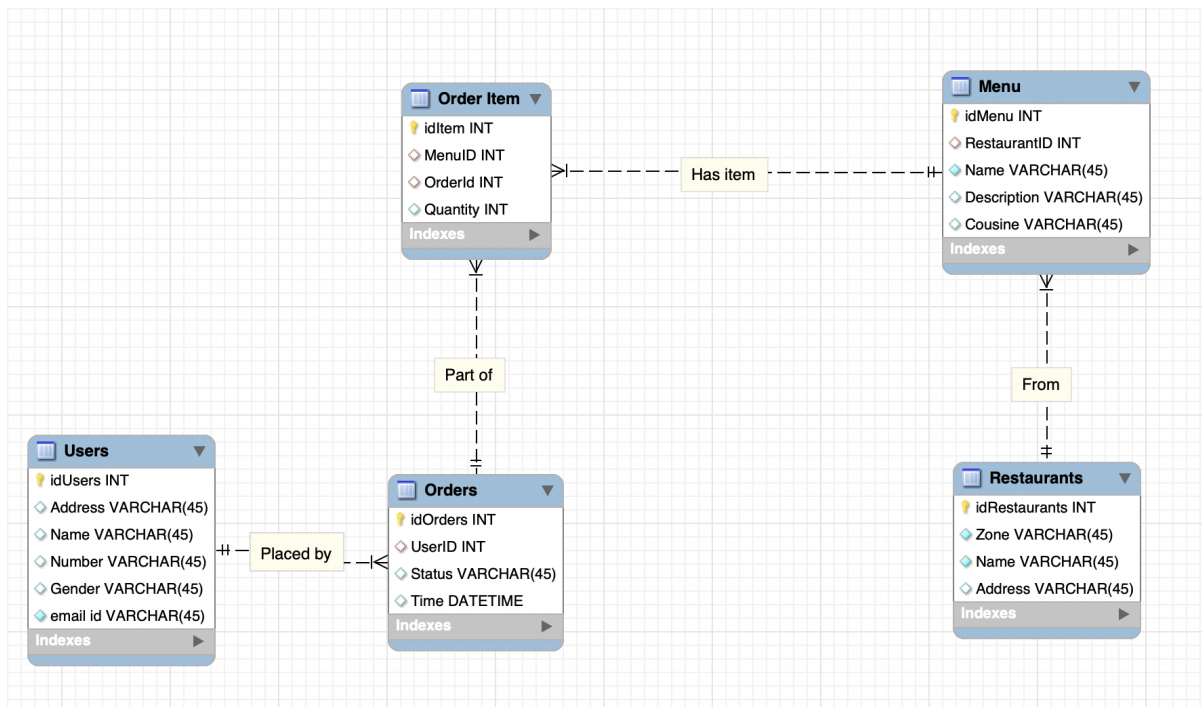
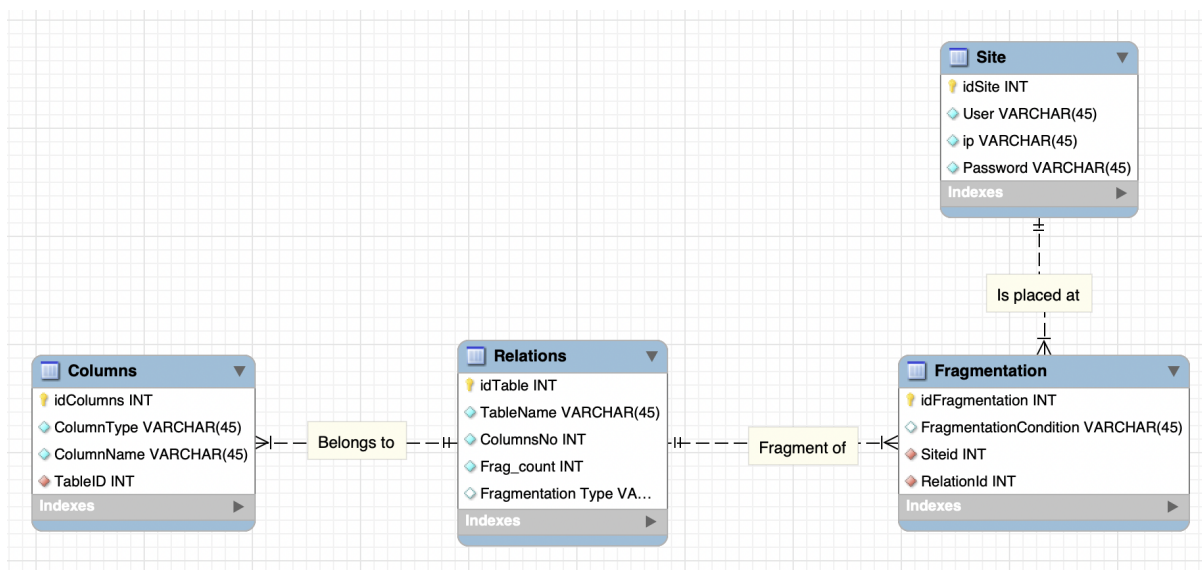


Phase 2 Project PreQL

Application ER Diagram



System Catalogue ER Diagram



Approach

Moz_sql_parser is used for parsing the query.

- Building the Query Tree

Table names are extracted from "FROM" and "INNER JOIN" clause. The select and join conditions are extracted from WHERE and INNER JOIN clause respectively. WHERE clause can also contain join condition. Naive query tree is built following the Relation, Join, Select, and Project order.

- Rewriting the Query Tree

Initial Query Tree

- All SELECT statements are pushed down.
- All JOIN statements are moved up.
- All PROJECT statements are moved till wherever they can go down.

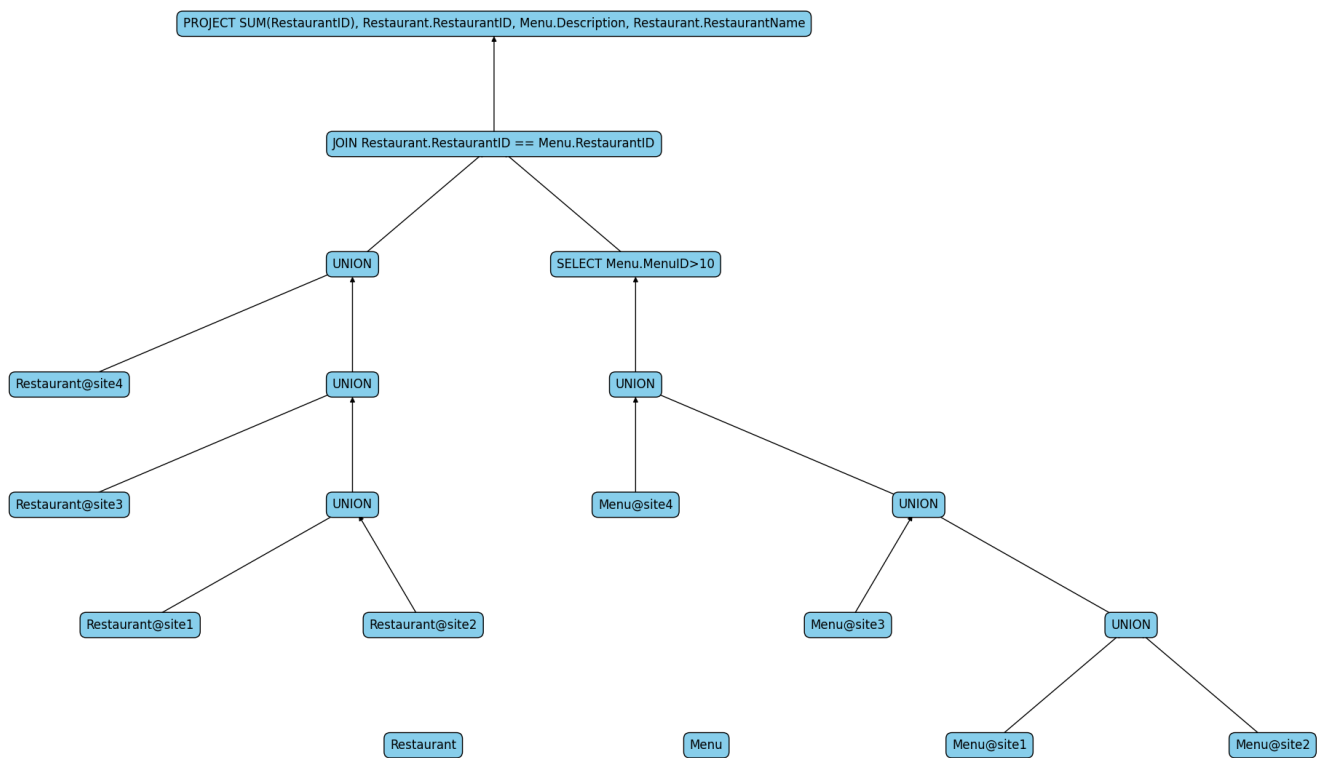
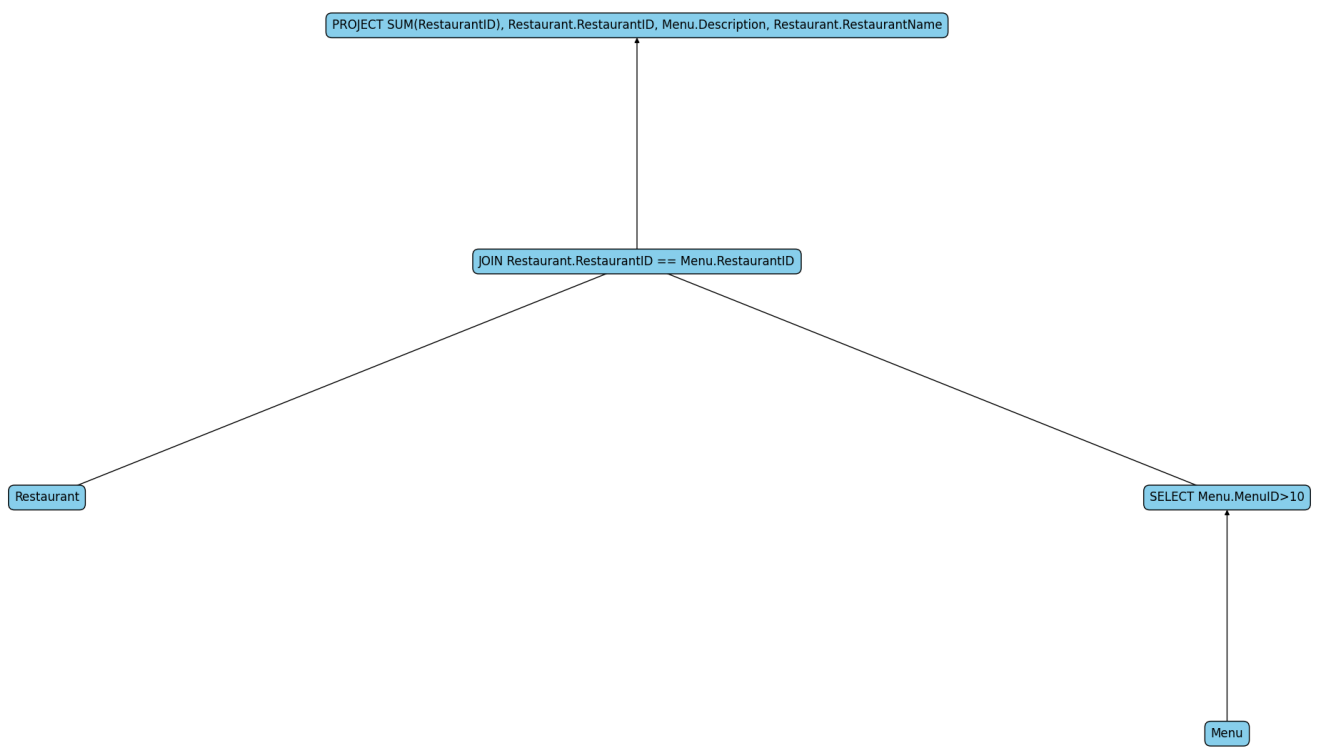
- Data Localization

Localization

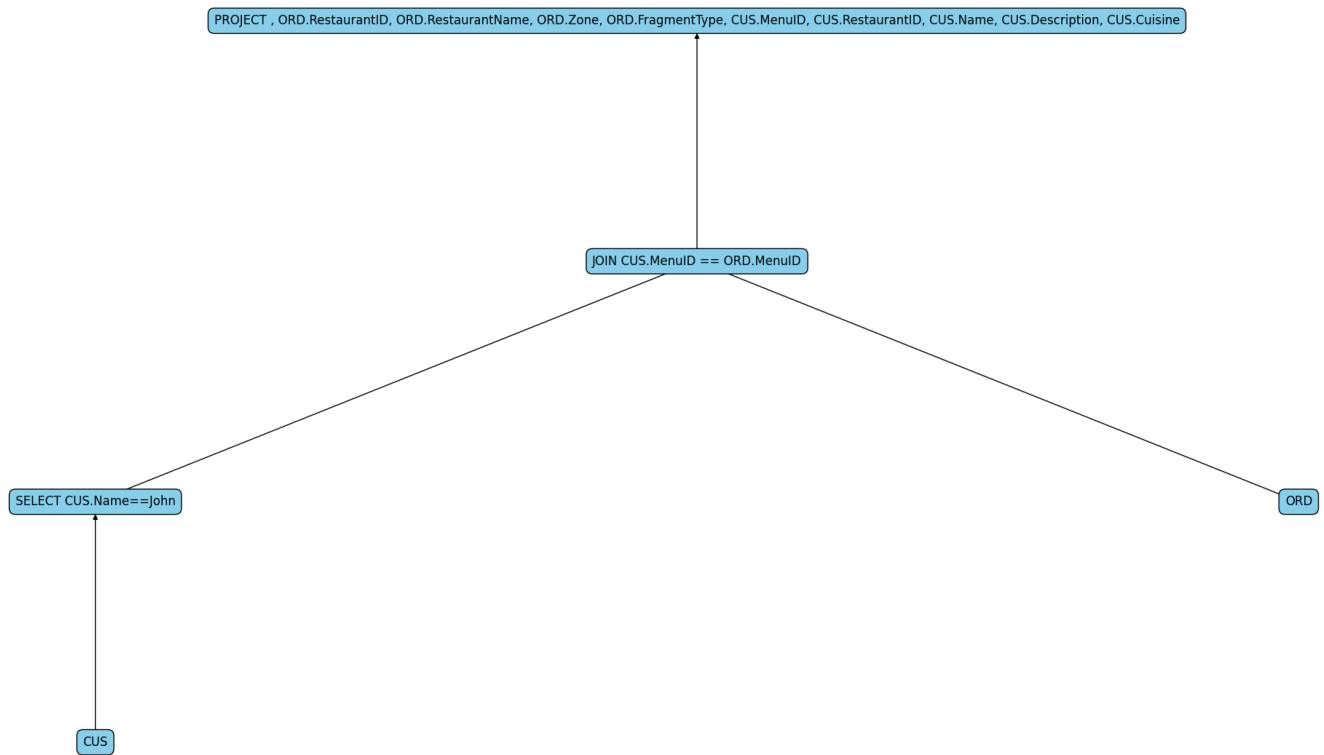
- For case of Horizontal and Derived Horizontal fragmentation, each node is split into N, where N is the number of sites, and joined by Union (U).
- For the case of Vertical Fragmentation, each node is split into N, where N is the number of sites, and joined by JOIN (\bowtie) on primary key.

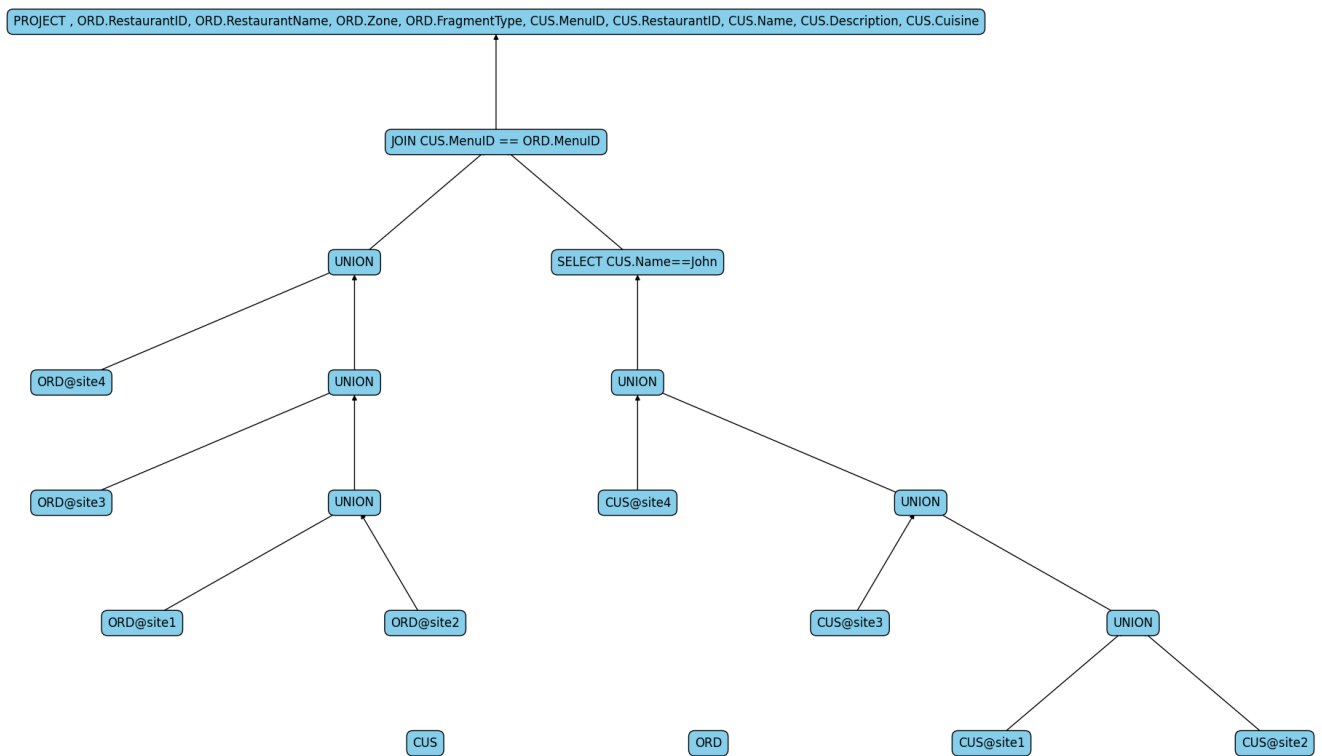
Examples

```
SELECT SUM(Restaurant.RestaurantID), Restaurant.RestaurantID, Menu.Description,  
Restaurant.RestaurantName  
FROM Restaurant  
INNER JOIN Menu  
ON Restaurant.RestaurantID=Menu.RestaurantID  
WHERE Menu.MenuID > 10;
```



```
SELECT *  
FROM Menu AS CUS  
INNER JOIN Restaurant AS ORD ON CUS.MenuID = ORD.MenuID AND CUS.Name = 'John'
```

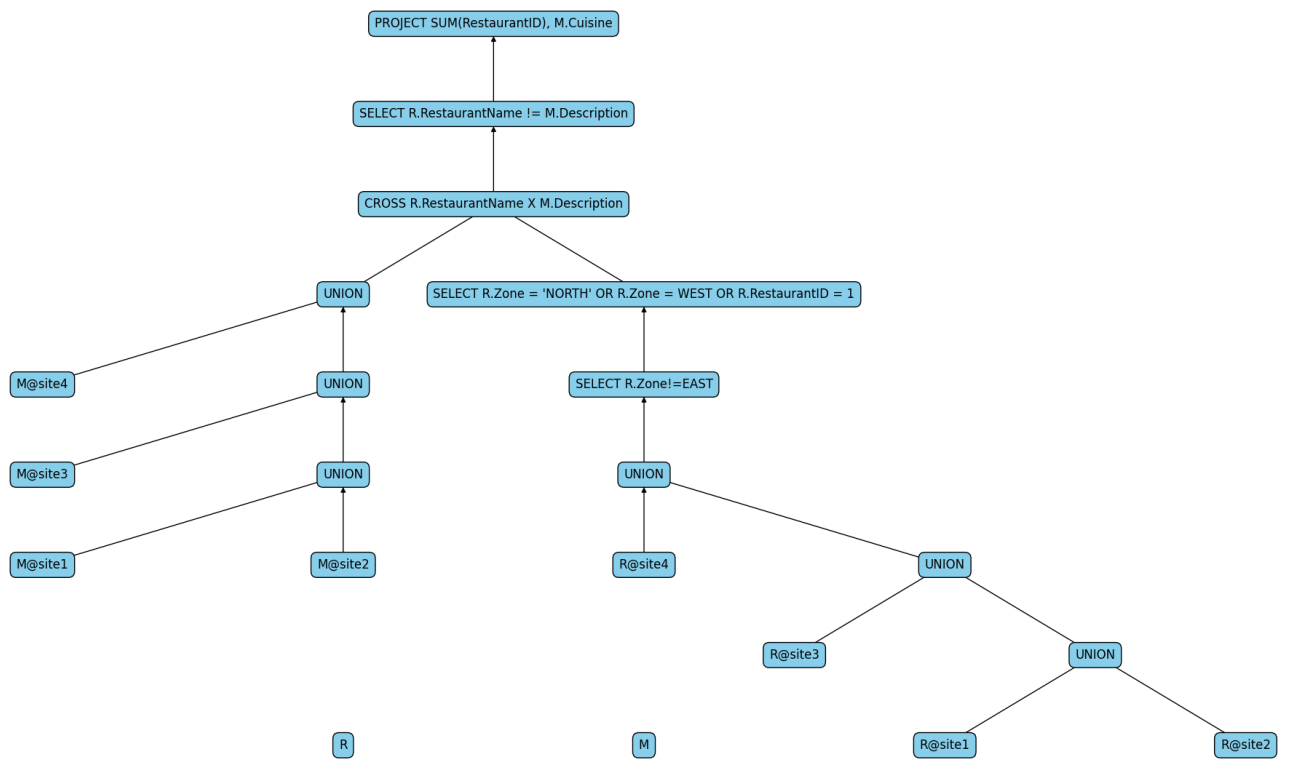
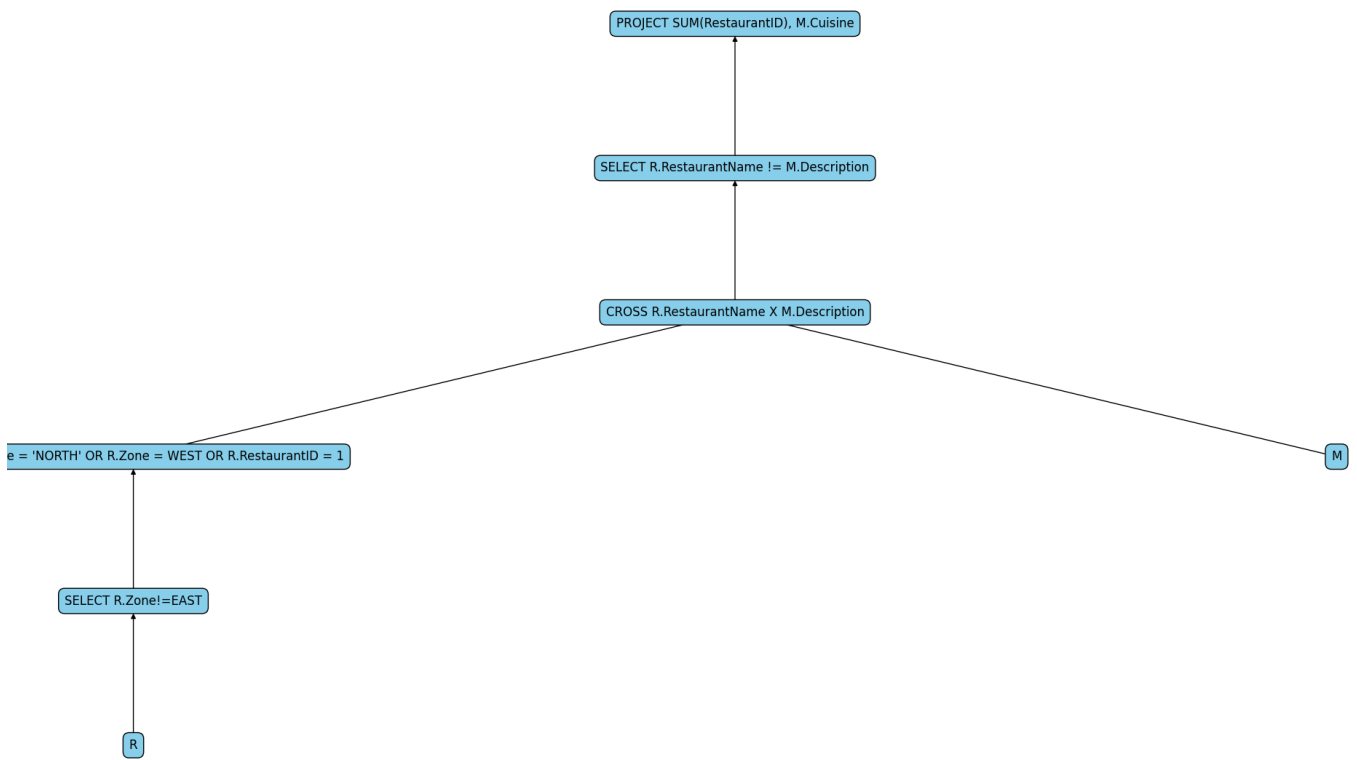




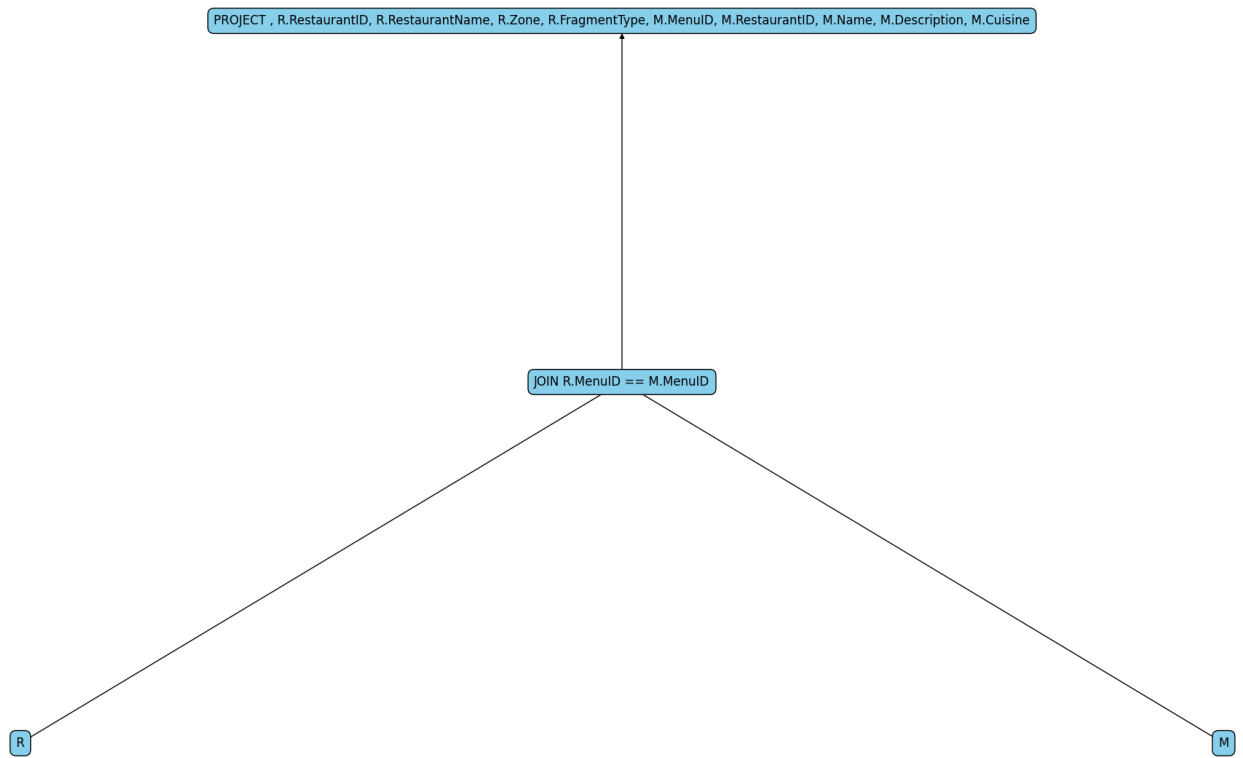
```

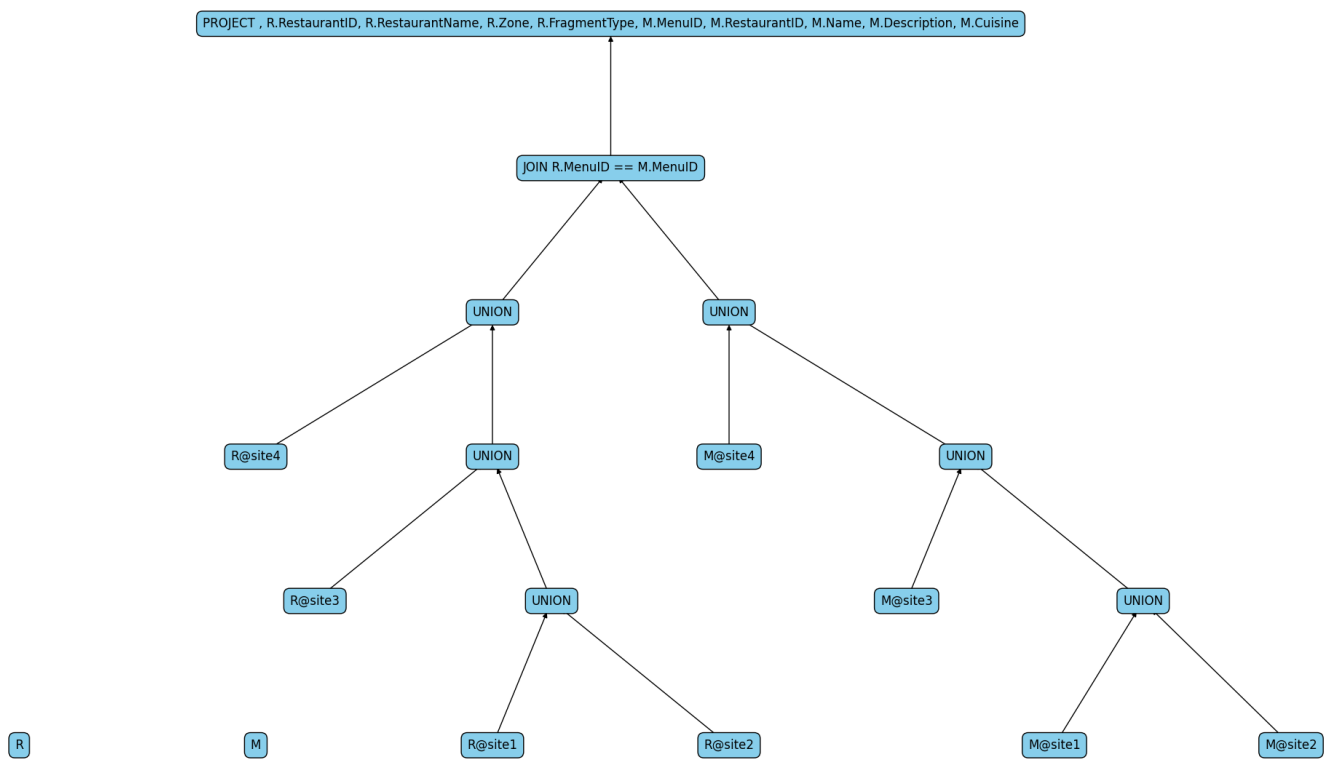
SELECT M.Cuisine, SUM(R.RestaurantID)
FROM Restaurant R, Menu M
WHERE ((R.Zone=='NORTH' OR R.Zone==WEST) OR (R.RestaurantID==1)) and (R.RestaurantName !=
M.Description) and (R.Zone!='EAST')

```

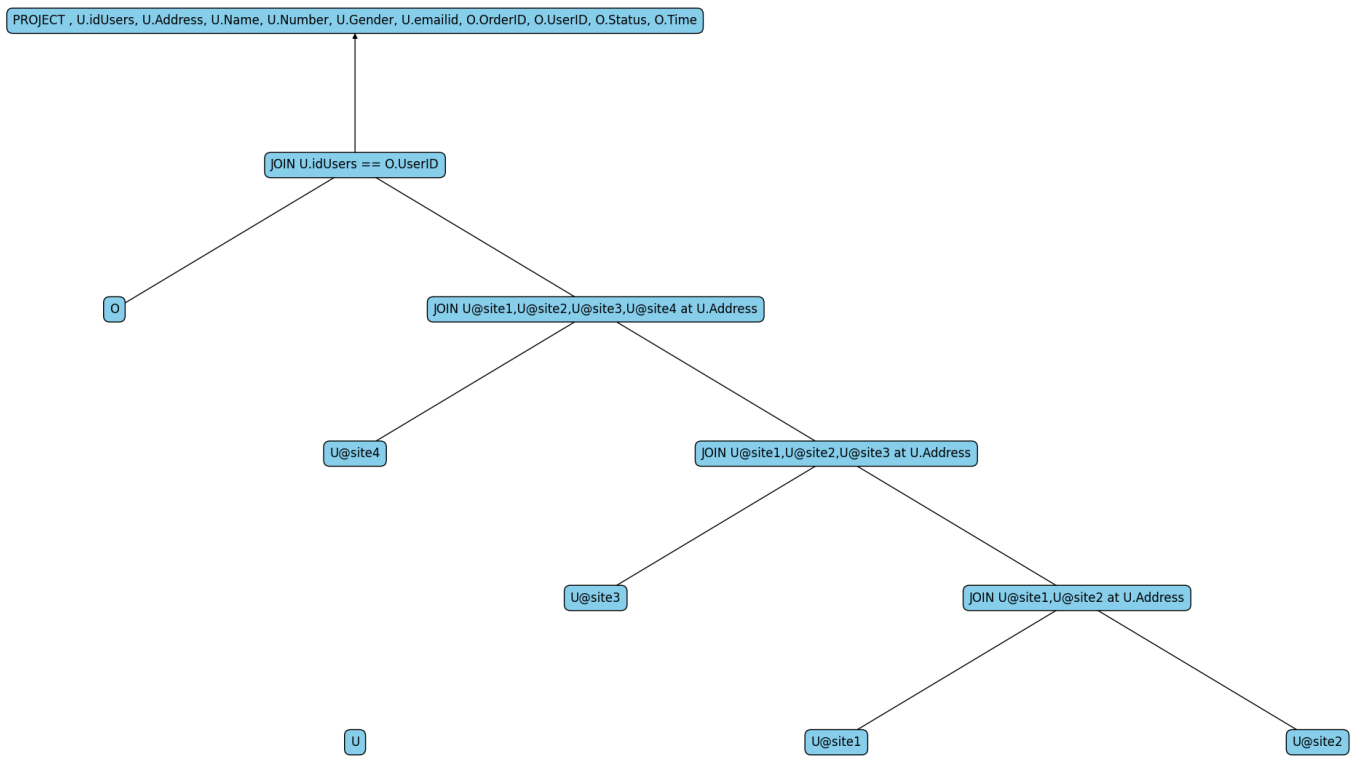
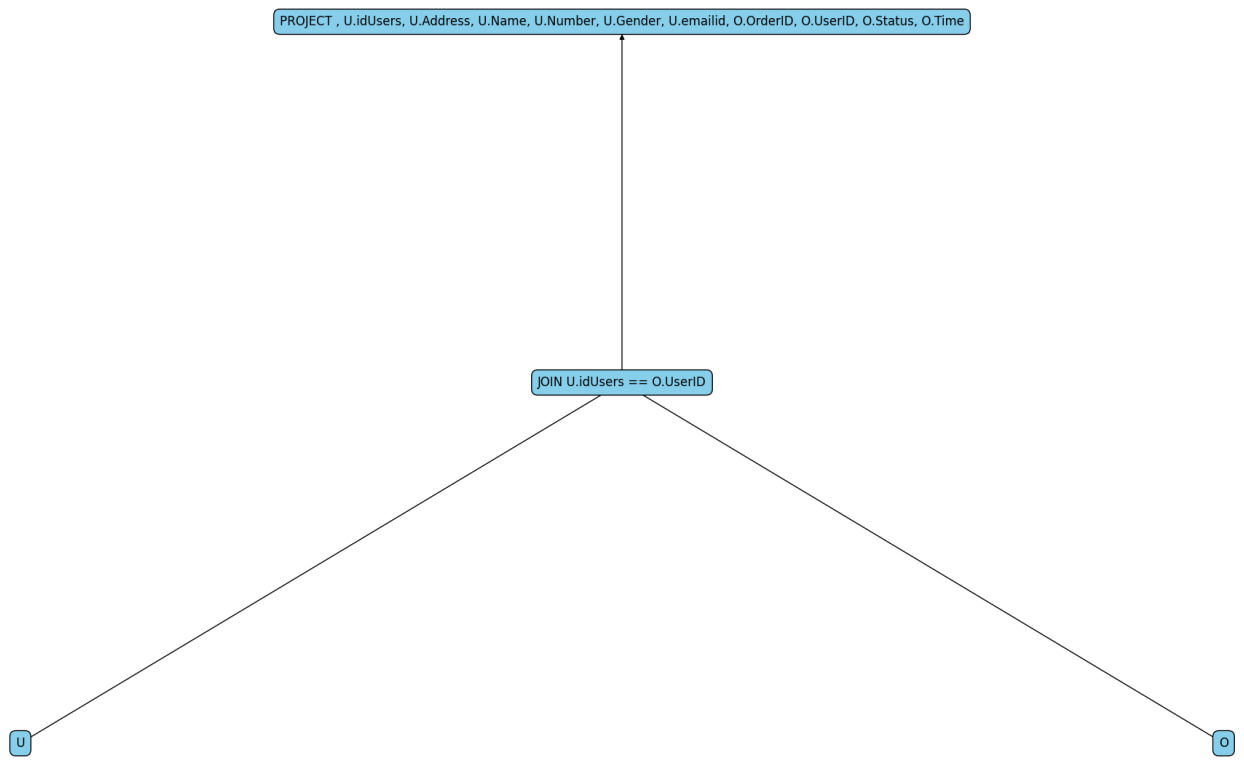


SELECT * FROM Restaurant R, Menu M WHERE R.MenuID=M.MenuID





SELECT * FROM Users U INNER JOIN Orderr 0 ON U.idUsers=0.UserID



File Structure

- 2/
 - main.py -> query parsing and localization
 - node.py -> a node
 - tree.py -> for building query tree
 - populate.py -> testing
 - insert.py -> for inserting rows
 - utils.py ->
 - fragment_schema.py
 - system_catalogue.py