Requirement Analysis

System Features:

- Process the textual data and store them in the database
- User can perform query on hotels
- User can rate the hotel according to predefined features
- Calculate the overall rating of the hotel
- Advanced search on hotels which has specific ratings
- Add new features
- Add new seed words for an existing feature
- Add new review for an existing hotel
- Add new hotel and its review

Entities:

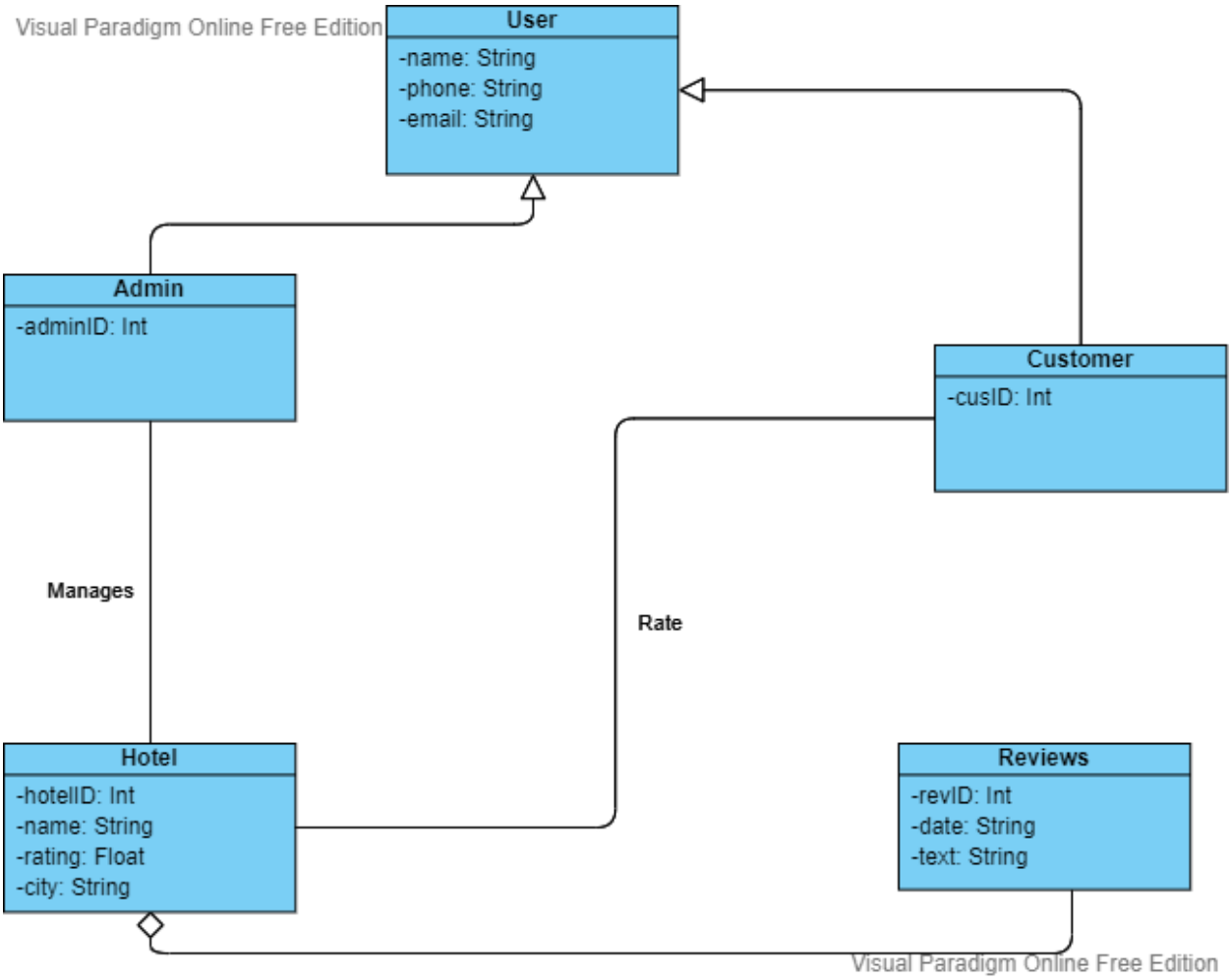
1. Hotel
2. User
3. Customer
4. Admin
5. Reviews

Design and Architectural Definition

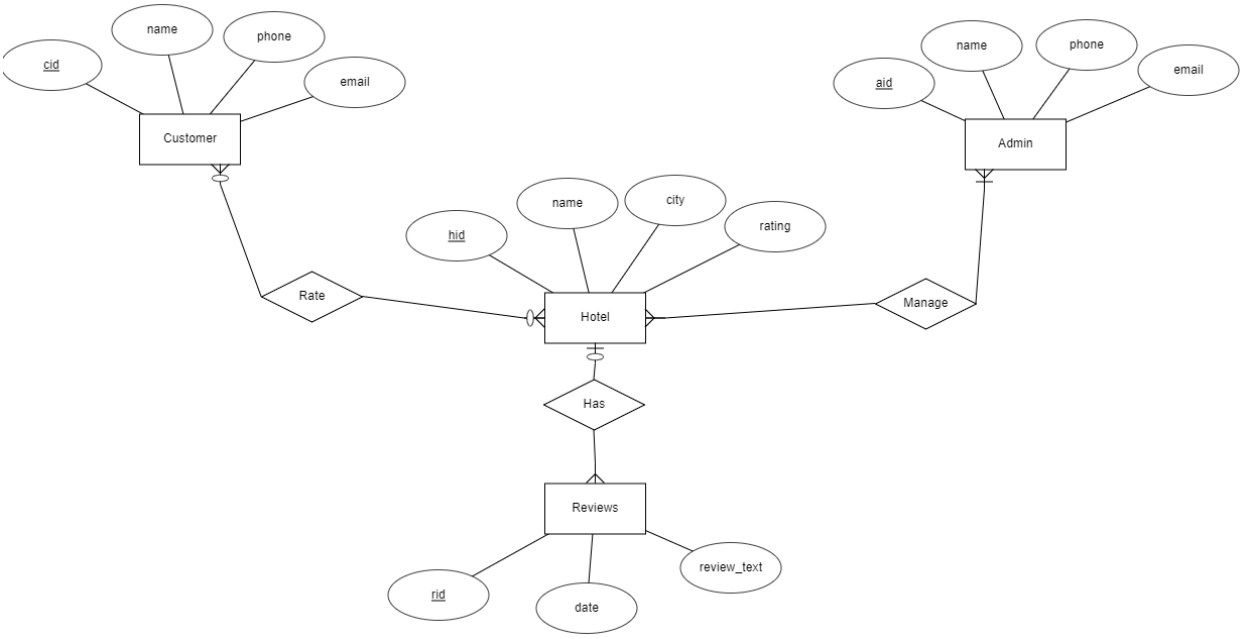
UI for the system application

We are going to create a simple, user-friendly interface using the scene builder where the user could interact and use the application easily.

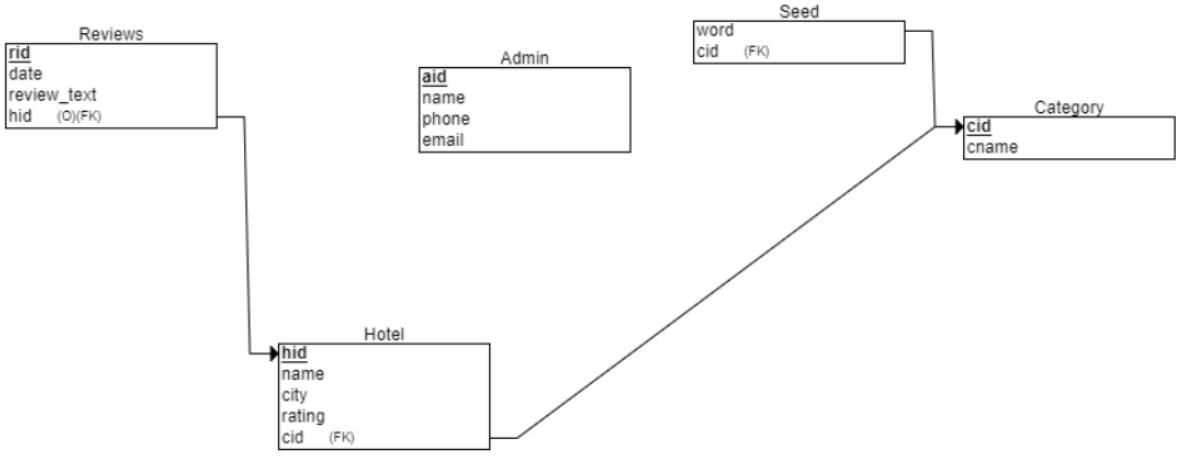
Class Diagram



ER Diagram



Relational Schema



Summary

This is the logical design and architectural definition of the system that I am going to implement in the next phase of the project. However, I might do some changes in the implementation phase.

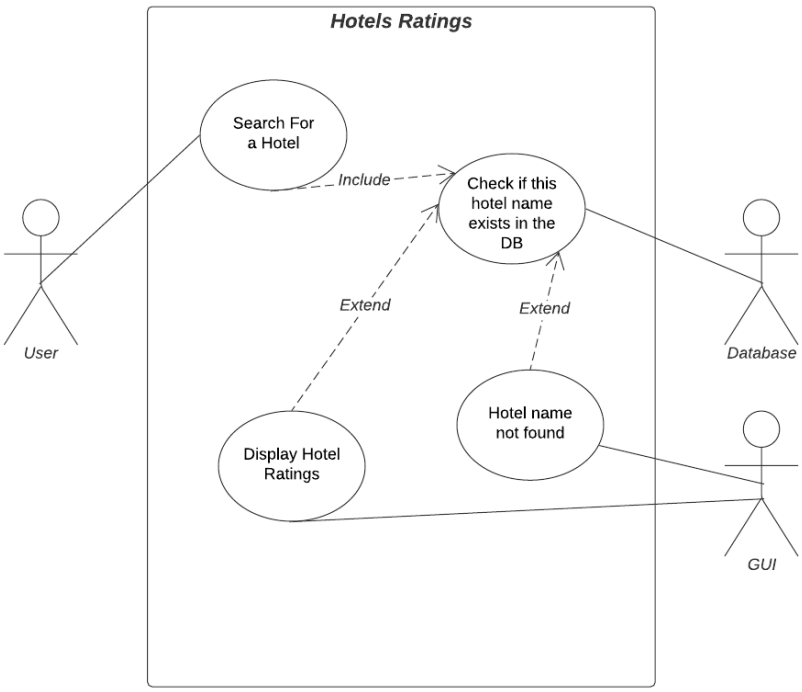
Tools used to draw my diagrams:

- ERD Plus
- Lucid Chart
- Visual Paradigm

Tools that I am going to use in the implementation phase:

- Java Language
- Scene Builder (GUI)
- MySQL
- JDBC library for the Database Connection

Use case Diagram



SEED Words from the .SEED file

value cheap, good value, reasonable price, great for the price, very cheap, not pricey, affordable

cleanliness clean place, clean, very clean, good hygiene, good cleanliness, clean surroundings

room spacious room, comfortable room, nice room, comfy room, great room, cozy rooms, bright room

location great location, nice location, great view, nice view, safe, very safe location

service helpful staff, polite staff, nice staff, excellent staff, good service, good staff, great service

negative_value bad value, very expensive, expensive

negative_cleanliness dirty, dirty room, bad hygiene

negative_room narrow, uncomfortable, bad room, bad view, dim rooms

negative_location bad location, dangerous

negative_service bad staff, bad service

We add 1 if it is positive rating or minus 1 if it is negative rating

Java Program To Process hotel names from the raw data and save it into CSV file and also calculate the features rating

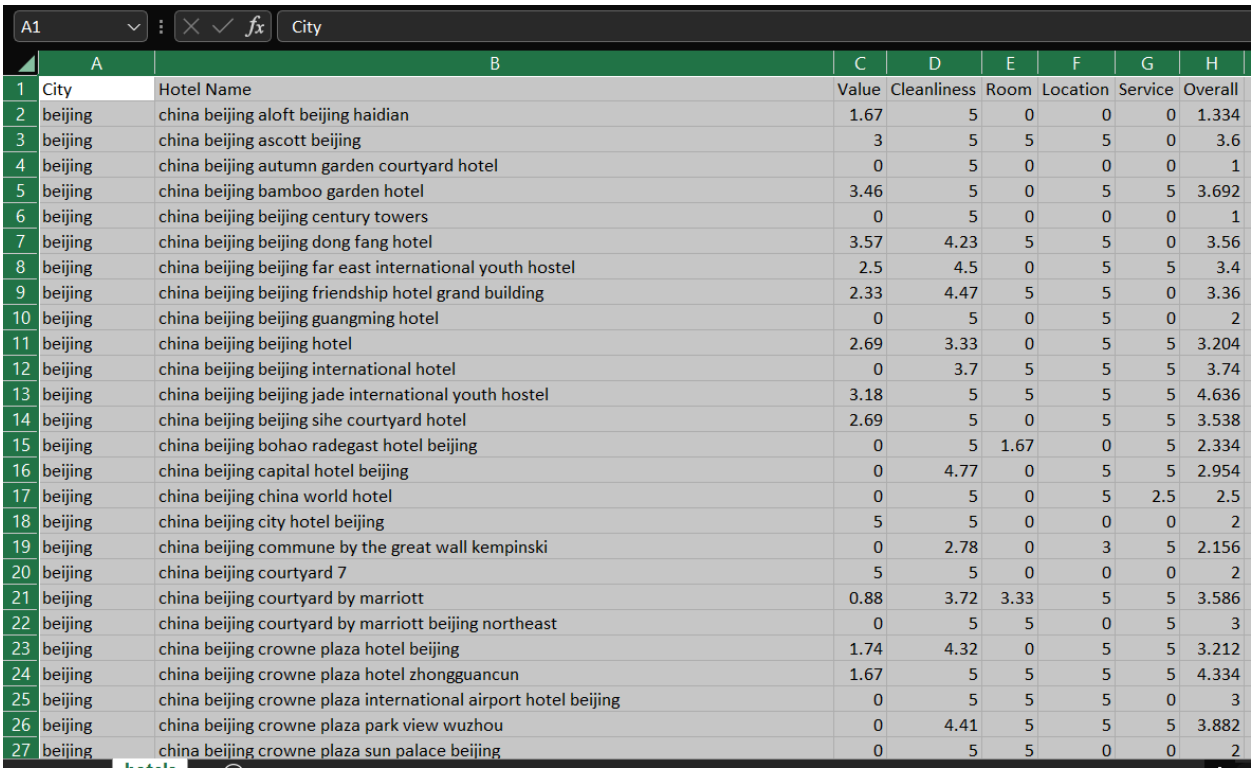
```
public class Main {
   public static ArrayList<String> fileLines=new ArrayList<String>();
   public static void main(String[] args) {
      File dataFolder = new File("data");
      File seeds = new File("tripadvisor.seed");
      String seedWords[][][]=readSeeds(seeds);
      fileLines.add("City,Hotel
Name,Value,Cleanliness,Room,Location,Service,Overall");
      readFolderFiles(dataFolder,seedWords);
      try {
         createCSV(fileLines);
      } catch (FileNotFoundException e) {
         e.printStackTrace();
      }

       }


   public static void createCSV(ArrayList<String> fList) throws
FileNotFoundException {
      File csvOutputFile = new File("hotels.csv");
       try (PrintWriter pw = new PrintWriter(csvOutputFile)) {
           System.out.println("Writing the file.............");
          for(String str:fList) {
              pw.println(str);
           }
           pw.close();
           System.out.println("File written successfully");
       }
   }
```

```
  public static String[][][] readSeeds(File seedFile) {
     String seeds[][][]=new String[2][5][];
     int i=0,counter=0,flag=0;
     try {

           Scanner myReader = new Scanner(seedFile);
           while (myReader.hasNextLine()) {
              counter++;
              if(counter==6) {
                 flag=1;
              }
             String data[] = myReader.nextLine().split("\t");
             String s[]=data[1].split(",");
             seeds[flag][i]=new String[s.length];
             for(int j=0;j<s.length;j++) {
                seeds[flag][i][j]=s[j].trim();
             }
             i++;
             if(i%5==0) {
                i=0;
             }
           }
           myReader.close();
         } catch (FileNotFoundException e) {
           System.out.println("An error occurred.");
           e.printStackTrace();
         }
     return seeds;
  }

  public static String escapeSpecialCharacters(String data) {
      String escapedData = data.replaceAll("\\R", " ");
      if (data.contains(",") || data.contains("\"") || data.contains("'")) {
          data = data.replace("\"", "\"\"");
          escapedData = "\"" + data + "\"";
      }
      return escapedData;
  }

  public static String makeRow(String city,String name,double
ratings[],double overall) {
     return city+","+
           String.join(" ",name.split("_"))+","+
           ratings[0]+","+
           ratings[1]+","+
           ratings[2]+","+
           ratings[3]+","+
           ratings[4]+","+
           overall;
  }

  public static void readFolderFiles(File folder,String[][][] seedWords) {
     for(final File fileEntry: folder.listFiles()) {
        if(fileEntry.isDirectory()) {
           readFolderFiles(fileEntry,seedWords);
        }
```

```
         else {
            if (fileEntry.isFile()) {
               try {

                     Scanner myReader = new Scanner(fileEntry);
                     double ratings[]= {0,0,0,0,0};
                     double sum=0;
                     double counters[]= {0,0,0,0,0};
                     while (myReader.hasNextLine()) {
                       String data[] = myReader.nextLine().split("\t",2);
                      if(data.length>1) {
                         for(int i=0;i<2;i++) {
                             for(int j=0;j<seedWords[i].length;j++) {
//                              double counter=0;
                                for(int p=0;p<seedWords[i][j].length;p++) {
                                   int
occurence=data[1].indexOf(seedWords[i][j][p]);
                                   if(occurence!=-1) {
                                      counters[j]++;
                                      if(i==0) {
                                         ratings[j]+=1;
                                      }
                                      else {
                                         ratings[j]-=1;
                                      }
                                   }
                                }

                             }
                          }
                       }

                     }
                     for(int i=0;i<5;i++) {
                        if(ratings[i]!=0) {
                           double
new_rating=Math.round(((ratings[i]/counters[i])*5)*Math.pow(10,
2))/Math.pow(10, 2);
                           if(new_rating<0) {
                              ratings[i]=0;
                           }
                           else {
                              ratings[i]=new_rating;
                           }
                        }
                        sum+=ratings[i];
                     }

                     myReader.close();

fileLines.add(makeRow(fileEntry.getParentFile().getName(),fileEntry.getName()
,ratings,sum/5.0));
                   } catch (FileNotFoundException e) {
                     System.out.println("An error occurred.");
                     e.printStackTrace();
                   }
                  }
```

```
            }
        }
    }

}
```

CSV file Created Successfully



A1 | City

	A	B	C	D	E	F	G	H
1	City	Hotel Name	Value	Cleanliness	Room	Location	Service	Overall
2	beijing	china beijing aloft beijing haidian	1.67	5	0	0	0	1.334
3	beijing	china beijing ascott beijing	3	5	5	5	0	3.6
4	beijing	china beijing autumn garden courtyard hotel	0	5	0	0	0	1
5	beijing	china beijing bamboo garden hotel	3.46	5	0	5	5	3.692
6	beijing	china beijing beijing century towers	0	5	0	0	0	1
7	beijing	china beijing beijing dong fang hotel	3.57	4.23	5	5	0	3.56
8	beijing	china beijing beijing far east international youth hostel	2.5	4.5	0	5	5	3.4
9	beijing	china beijing beijing friendship hotel grand building	2.33	4.47	5	5	0	3.36
10	beijing	china beijing beijing guangming hotel	0	5	0	5	0	2
11	beijing	china beijing beijing hotel	2.69	3.33	0	5	5	3.204
12	beijing	china beijing beijing international hotel	0	3.7	5	5	5	3.74
13	beijing	china beijing beijing jade international youth hostel	3.18	5	5	5	5	4.636
14	beijing	china beijing beijing sihe courtyard hotel	2.69	5	0	5	5	3.538
15	beijing	china beijing bohao radegast hotel beijing	0	5	1.67	0	5	2.334
16	beijing	china beijing capital hotel beijing	0	4.77	0	5	5	2.954
17	beijing	china beijing china world hotel	0	5	0	5	2.5	2.5
18	beijing	china beijing city hotel beijing	5	5	0	0	0	2
19	beijing	china beijing commune by the great wall kempinski	0	2.78	0	3	5	2.156
20	beijing	china beijing courtyard 7	5	5	0	0	0	2
21	beijing	china beijing courtyard by marriott	0.88	3.72	3.33	5	5	3.586
22	beijing	china beijing courtyard by marriott beijing northeast	0	5	5	0	5	3
23	beijing	china beijing crowne plaza hotel beijing	1.74	4.32	0	5	5	3.212
24	beijing	china beijing crowne plaza hotel zhongguancun	1.67	5	5	5	5	4.334
25	beijing	china beijing crowne plaza international airport hotel beijing	0	5	5	5	0	3
26	beijing	china beijing crowne plaza park view wuzhou	0	4.41	5	5	5	3.882
27	beijing	china beijing crowne plaza sun palace beijing	0	5	5	0	0	2

Database script to import data into MySQL

create table hotels(

city varchar(30) NOT NULL,

hotel_name varchar(50) NOT NULL,

value_rating decimal NOT NULL,

cleanliness_rating decimal NOT NULL,

room_rating decimal NOT NULL,

location_rating decimal NOT NULL,

service_rating decimal NOT NULL,

overall_rating decimal NOT NULL

);

LOAD DATA LOCAL INFILE 'd:/hotels.csv'

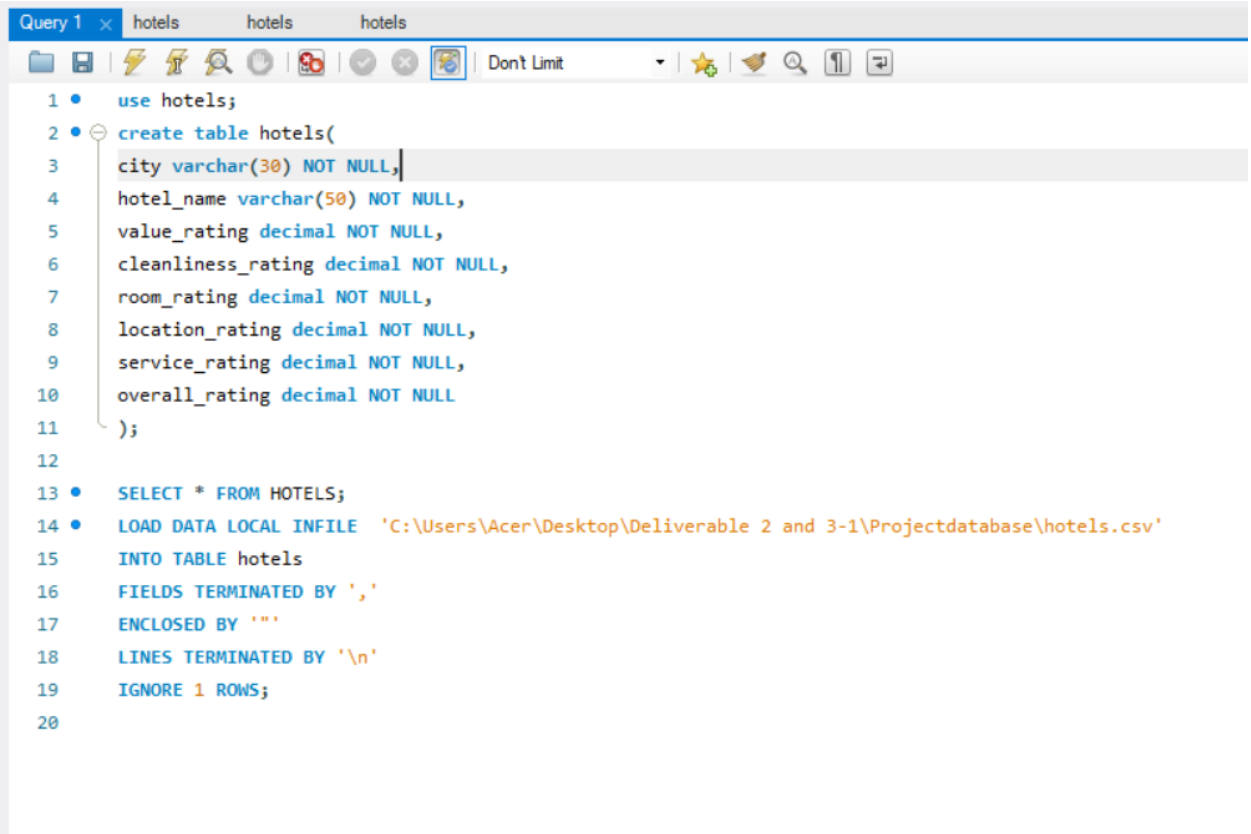
INTO TABLE hotels

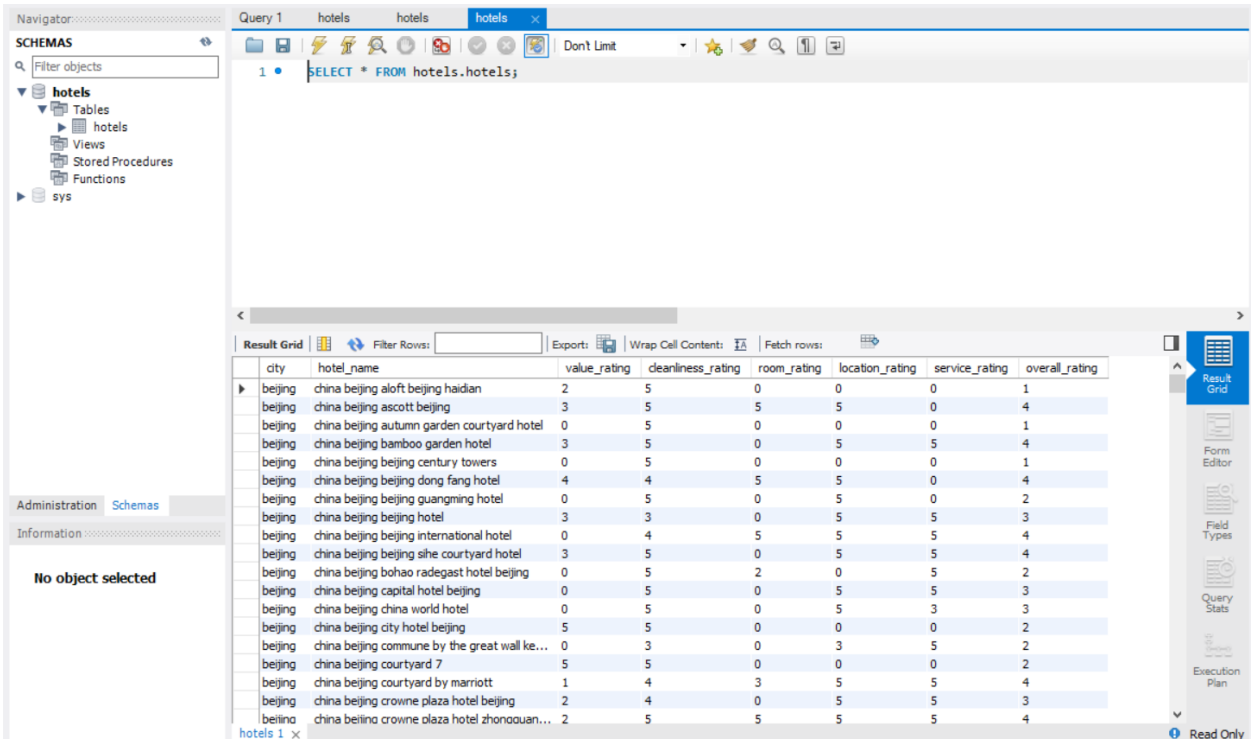
FIELDS TERMINATED BY ','

ENCLOSED BY '"'

LINES TERMINATED BY '\n'

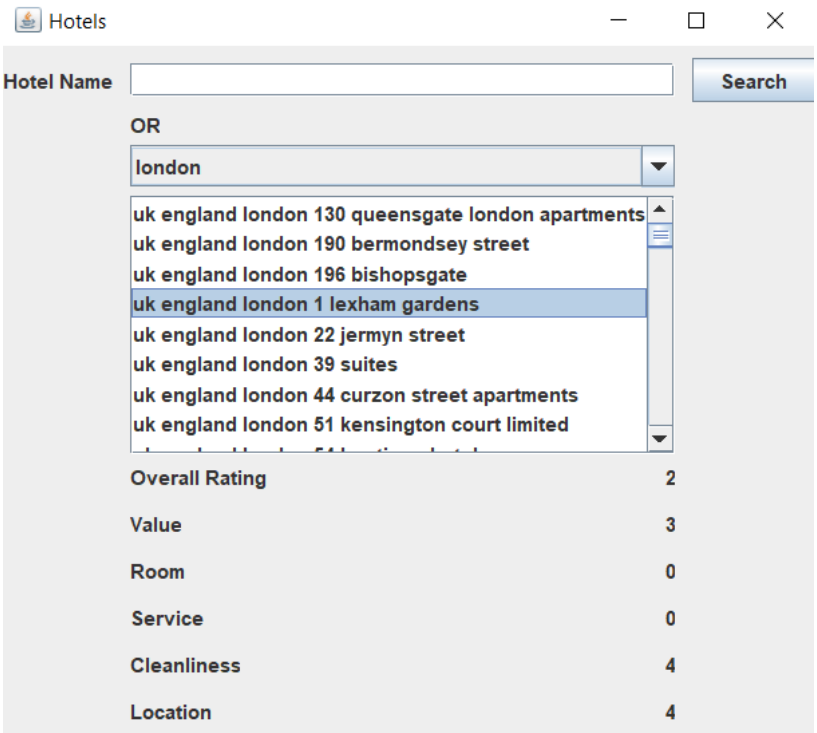
IGNORE 1 ROWS;





Basic Search User Guide

- Choose city from drop down menu
- Click on the hotel you wish to review its ratings
- You can see the ratings of the selected hotel below



Advanced Search

- Choose city from drop down menu
- Filter your search results according to ratings you wish
- Click on search button to view search results
- Hotel names results will appear in the text area below