CENG 3005 DATABASE MANAGEMENT SYSTEMS

PROJECT FINAL REPORT

Abdullah Akkoloğlu 190709067

**HOTEL BOOKING DATASET**

This dataset contains data for a City Hotel and Resort Hotel reservations made between 1 July 2015 and 31 August 2017. With this dataset we can compare the data of two different hotels.

1. **Describe any changes/additions if your project description or database design has changed since your Phase I submission.**

We added the agent table to our table containing reservation information. Because the Agent entity does not have a primary key, we could not do one-to-many relationship.

We determined an id for each of our reservation information and added it to an extra table. By establishing many-to-many relationships between our customer and property entities, we created 2 different "reservation\_varchar" and "reservation\_decimal" entities containing reservation information.

We wrote "NULL" in the blank lines in company and agent because we had a problem during the insert phase.

We set the type of phone\_number to BIGINT.

1. **Briefly describe how you loaded the database with values including the sources of your data (e g URL s) and pointers to any specialized code you developed for pre- processing, extracting or loading the data. Did you upload all your data? If not, why, state it here.**

We used “LOAD DATA INFILE” method for upload our data to mysql from csv files:

LOAD DATA INFILE 'C:/Users//.../files.csv'

INTO TABLE table\_name

COLUMNS TERMINATED BY ','

LINES TERMINATED BY "\r\n"

IGNORE 1 ROWS ;

In addition, we used this method to avoid errors in our rows containing null data:

(@vphone\_number, @vproperty\_ID, @vr\_value)

set phone\_number = @vphone\_number,

property\_ID = @vproperty\_ID,

r\_value = NULLIF(@vr\_value, "NULL\r");

1. **If you did not use MySql Workbench on Windows, describe the exact software/hardware platform you used.**

We used MySql Workbench 8.0 on Windows.

1. **Provide a brief users guide describing in sufficient detail what each View/Stored procedure does in English.**

*GetCustomersByCountry*: Shows the information of customers from the entered country.

*NumberOfInRooms*: It shows how many customers prefer the room whose code we have written.

*GetCustomersByRoom*: It shows the customer information remaining in the room whose code we have written.

*NumberOfCustomersFromCountries*: It shows how many customers come from which country.

*PRTcustomers*: Shows Portuguese customers.

*roomchanges*: Shows customers making room changes.

1. **Include the outputs of your favorite/interesting/challenging stored procedures(with IN, OUT and INOUT)/views**

call mydb.GetCustomersByCountry('PRT');

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1000091307 | Tara\_B@mail.com | 6774 | Tara Baker | PRT |
| 1000178608 | Kim.C@zoho.com | 7518 | Kim Casey | PRT |
| 1000408267 | Parsons.Jennifer@xfinity.com | 6241 | Jennifer Parsons | PRT |
| 1000438091 | Nathan\_Y@yandex.com | 4026 | Nathan Young | PRT |
| 1000602684 | George\_Jeffrey@protonmail.com | 2245 | Jeffrey George | PRT |
| 1000682898 | ADominguez@xfinity.com | 6409 | Adam Dominguez | PRT |
| 1000688264 | Tasha\_Matthews@protonmail.com | 8419 | Tasha Matthews | PRT |
| 1000697822 | JHaley@zoho.com | 5899 | Jill Haley | PRT |
| 1001000744 | Jeremy\_Wilcox@hotmail.com | 4150 | Jeremy Wilcox | PRT |
| 1001129007 | Richard\_H79@hotmail.com | 7860 | Richard Hester | PRT |
| 1001141633 | Terrance.W@verizon.com | 5332 | Terrance Wilson | PRT |
| 1001937040 | Andrew\_H@verizon.com | 1746 | Andrew Harrison | PRT |

select \* from roomchanges;

|  |  |  |
| --- | --- | --- |
| Richard Pierce | B | A |
| Eric Fisher | A | E |
| Jeffrey George | A | D |
| Adam Dominguez | A | D |
| Tasha Matthews | A | D |
| Jill Haley | A | D |
| Richard Hester | A | K |
| Terrance Wilson | A | D |
| Eric Anderson III | A | C |
| Zachary Padilla | D | A |
| Michelle Stark | A | D |
| Toni Young | A | E |

1. **Give an analysis of your system’s limitations and list suggested possibilities for improvement**

As the volume of data grows, the system may become slow and unwieldy, requiring significant hardware and software upgrades to maintain performance.

The system must be able to protect data from unauthorized access and prevent data loss due to hardware or software failures.

The system must be easy to use and navigate, with a user-friendly interface that allows users to quickly and easily access and manipulate data.

To address these limitations and improve the system, some possible suggestions include:

Implementing database partitioning or sharding to distribute data across multiple servers and improve scalability.

Implementing robust security measures, such as encryption, access controls, and regular backups, to protect data from unauthorized access and data loss.

Improving the user interface to make it more intuitive and easy to use, through the use of user testing and feedback.

1. **Submit a full relational table specification of your database in the SQL Database Definition Language (DDL) This specification should include both the data type of each attribute the not null constraint when appropriate and sample data values for each attribute represented as comments You should also specify the primary keys (e g primary key (ssn)) and referential constraints (e g foreign key (mgrssn) references employee(ssn)) Many groups included this specification in their project proposal.**

Database table customer-

Create a table customer(

phone\_number BIGINT(10),

email VARCHAR(105) NOT NULL,

credit\_card\_last\_4\_digit INT NOT NULL,

name VARCHAR(105) NOT NULL,

country VARCHAR(5) NOT NULL);

Constraint specification of table customer- Primary key(phone\_number)

Database table property-

Create a table property(property\_ID INT AUTO\_INCREMENT,

Property\_name VARCHAR(45) NOT NULL);

Constraint specification of table property - Primary key(property\_ID)

Database table room-

Create a table room(room\_id INT AUTO\_INCREMENT,

room\_type VARCHAR(10 ) NOT NULL);

Constrain specification of the table room-Primary key(room\_id),

Database table reservation\_has\_room-

Create a table reservation\_has\_room(

phone\_number BIGINT,

room\_id INT AUTO\_INCREMENT,

assigned\_room\_type VARCHAR(10) NOT NULL,

reserved\_room\_type VARCHAR(10) NOT NULL);

Constrain specification of the table reservation\_has\_room-

Constraint Foreign Key(room\_id) references room(room\_id);

Constraint Foreign Key(phone\_number) references customer(phone\_number);

Database table reservation\_decimal-

Create a table reservation\_decimal(phone\_number BIGINT(10),

property\_ID INT AUTO\_INCREMENT,

value DECIMAL(25) );

Constrain specification of the table reservation\_decimal-

Constraint Foreign Key(phone\_number) references customer(phone\_number);

Constraint Foreign Key(property\_id) references property(property\_id);

Database table reservation\_varchar-

Create table reservation\_varchar (phone\_number BIGINT(10),

property\_ID INT AUTO\_INCREMENT,

value VARCHAR(25) );

Constraint specification of the table reservation\_varchar-

Constraint Foreign Key(phone\_number) references customer(phone\_number);

Constraint Foreign Key(property\_id) references property(property\_id);

1. **Include all your SQL code used in your system as well as any additional Php/Perl/Python/Java/SQL-Loader programs you used for data acquisition and input to your presentation. If you have long sequences of input statements in excess of 2 pages provide a 2-3 page representative sample.**

We used SQL-Loader for data acquisition. Since it is more than 2 pages, I include some of it below as an example:

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\arrival\_date\_week\_number.csv"

into table reservation\_decimal

columns terminated by ","

LINES TERMINATED BY "\r\n"

ignore 1 rows;

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\stays\_in\_weekend\_nights.csv"

into table reservation\_decimal

columns terminated by ","

LINES TERMINATED BY "\r\n"

ignore 1 rows;

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\stays\_in\_week\_nights.csv"

into table reservation\_decimal

columns terminated by ","

LINES TERMINATED BY "\r\n"

ignore 1 rows;

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\lead\_time.csv"

into table reservation\_decimal

columns terminated by ","

LINES TERMINATED BY "\r\n"

ignore 1 rows;

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\days\_in\_waiting\_list.csv"

into table reservation\_decimal

columns terminated by ","

LINES TERMINATED BY "\r\n"

ignore 1 rows;

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\agent.csv"

into table reservation\_decimal

columns terminated by ","

ignore 1 rows

(@vphone\_number, @vproperty\_ID, @vr\_value)

set phone\_number = @vphone\_number,

property\_ID = @vproperty\_ID,

r\_value = NULLIF(@vr\_value, "NULL\r");

load data

infile "C:\\ProgramData\\MySQL\\MySQL Server 8.0\\Uploads\\company.csv"

into table reservation\_decimal

columns terminated by ","

ignore 1 rows

(@vphone\_number, @vproperty\_ID, @vr\_value)

set phone\_number = @vphone\_number,

property\_ID = @vproperty\_ID,

r\_value = NULLIF(@vr\_value, "NULL\r");