

Milestone 4

A short description of the final project, and what it accomplished

- This project is intended for hotel employees. Using this system, employees can choose to view various information in the database (branches, employees, guests, etc). Users are able to add, delete, and update database entries for select entities. Further, they will be able to order and specify various queries, as elaborated below, then view their results.

A description of how your final schema differed from the schema you turned in

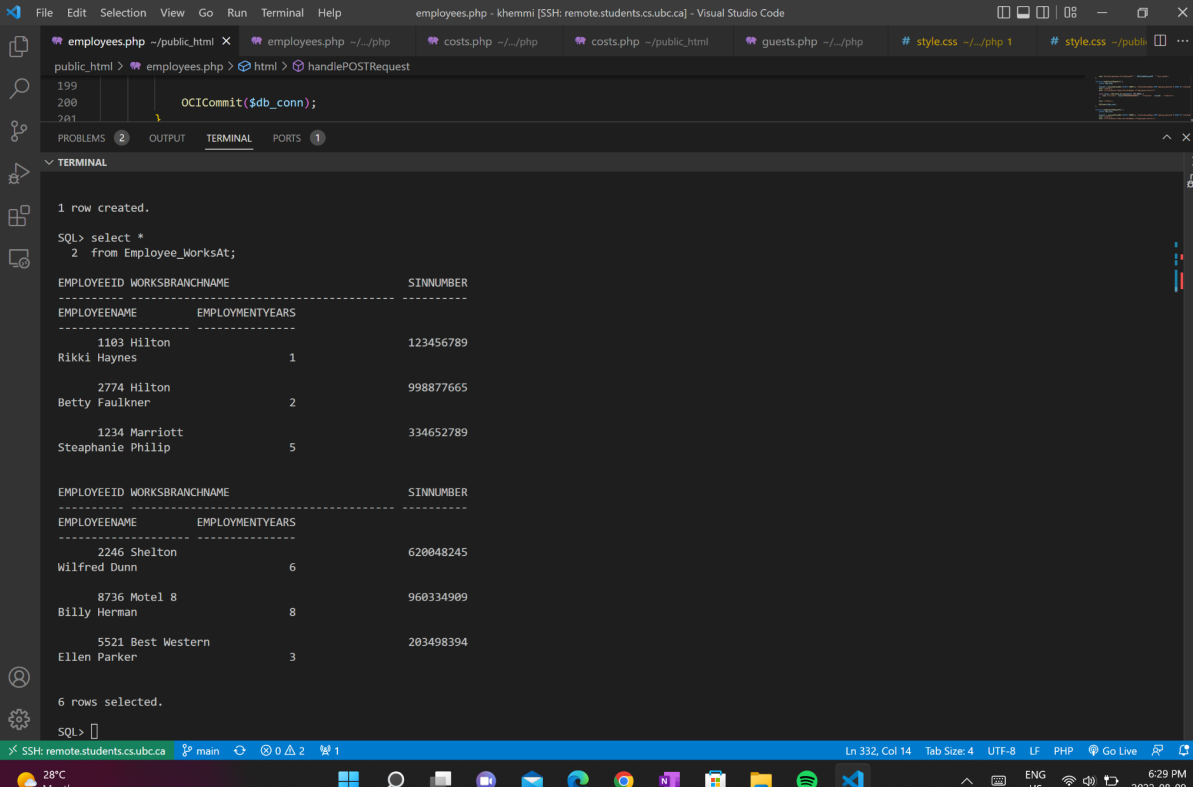
- After submitting the ER diagram in milestone 2 and 3, we changed the attributes of Parking Spot. We removed the location attribute and added the status of the parking spot (occupied or unoccupied). This status attribute allowed us to perform more queries with the Parking Spot entity, while removing location let us simplify our design. Furthermore, we added the employmentYears attribute to employees, to allow us to perform more interesting queries.

A list of all SQL queries used

- **Insert** (eg. Employee - Add employee with handleInsertRequest())
- **Delete** (eg. Employee - Delete employee with handleDeleteRequest)
- **Update** (eg. Parking - Update parking spot data with handleUpdateRequest())
- **Selection** (Costs - View facilities, room service, or rooms with cost equal to input selectionQueryRequest())
- **Projection** (Guest - Choose what guest info to view with handleViewRequest())
- **Join** (eg. Parking - View guest information from parking number with handleViewGuestRequest())
- **Aggregation with Group By** (Rooms - view rooms with highest cost from each branch handleViewAllRequest())
- **Aggregation with Having** (Employees -View the total number of employees with employment years > 5 for each branch handleCountRequest2())
- **Nested Aggregation with Group By** (Employees - count the # of employees whos average employment years is greater than the average of all branches with handleCountRequest())
- **Division** (Facilities - View all customers who have used all facilities with handleViewGuestRequest())

Screenshots of the sample output of the queries using the GUI

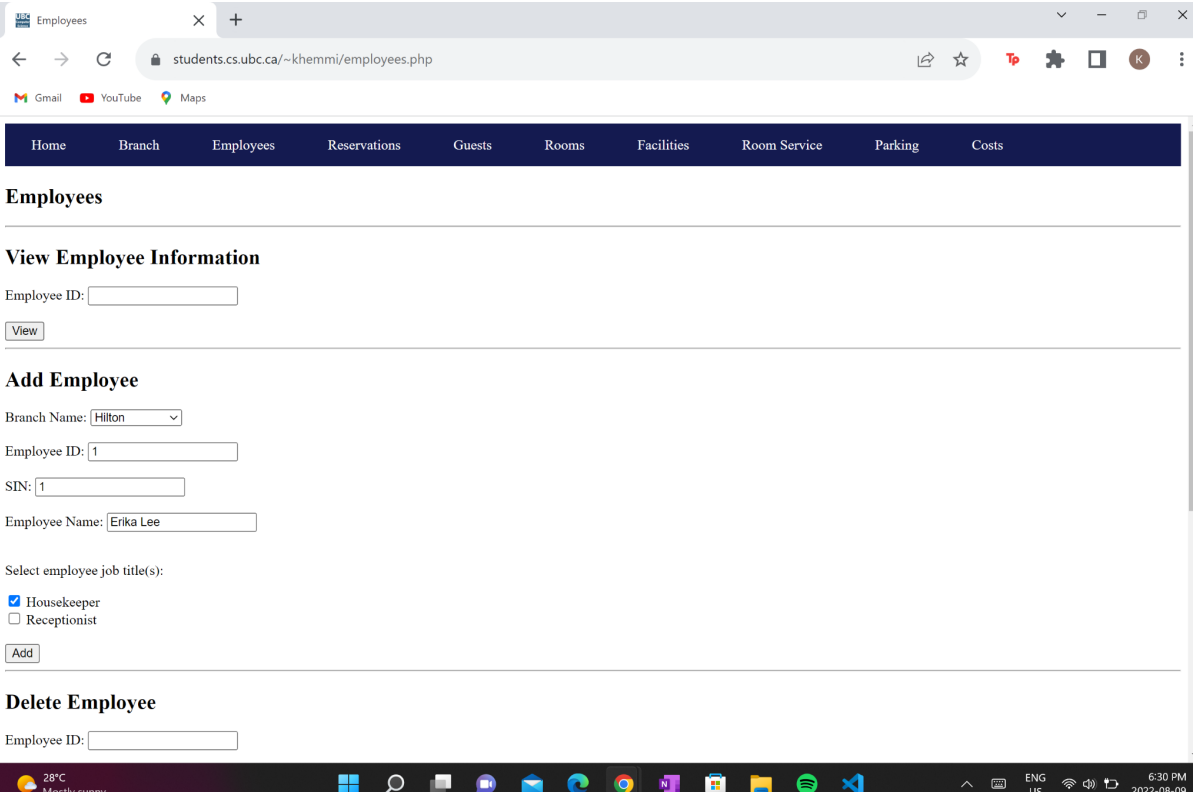
Initial table



The screenshot shows a Visual Studio Code window with a terminal connected to a remote server via SSH. The terminal displays the output of an SQL query. The query is: `SQL> select * from Employee_WorksAt;`. The output shows 6 rows selected. The data is presented in two tables, each with columns: EMPLOYEEID, WORKSBRANCHNAME, EMPLOYMENTYEARS, and SINNUMBER.

EMPLOYEEID	WORKSBRANCHNAME	EMPLOYMENTYEARS	SINNUMBER
1103	Hilton	1	123456789
2774	Hilton	2	998877665
1234	Marriott	5	334652789
2246	Shelton	6	620048245
8736	Motel 8	8	960334909
5521	Best Western	3	203498394

After insert



The screenshot shows a web application interface with a navigation bar containing links: Home, Branch, Employees, Reservations, Guests, Rooms, Facilities, Room Service, Parking, and Costs. The 'Employees' section is active, displaying three forms: 'View Employee Information', 'Add Employee', and 'Delete Employee'.

View Employee Information

Employee ID:

Add Employee

Branch Name:

Employee ID:

SIN:

Employee Name:

Select employee job title(s):

☒ Housekeeper

☐ Receptionist

Delete Employee

Employee ID:

```
public_html > employees.php > html > handlePOSTRequest
199
200
201
OCICommit($db_conn);

PROBLEMS 2 OUTPUT TERMINAL PORTS 1

TERMINAL
EMPLOYEEID EMPLOYMENTYEARS
-----
1 Hilton 1
Erika Lee 0
1103 Hilton 123456789
Rikki Haynes 1
2774 Hilton 998877665
Betty Faulkner 2

EMPLOYEEID WORKSBRANCHNAME SINNUMBER
-----
1234 Marriott 334652789
Stephanie Phillip 5
2246 Shelton 620048245
Wilfred Dunn 6
8736 Motel 8 960334909
Billy Herman 8

EMPLOYEEID WORKSBRANCHNAME SINNUMBER
-----
5521 Best Western 203498394
Ellen Parker 3

7 rows selected.

SQL>
```

After delete

Employees

students.cs.ubc.ca/~khemmi/employees.php

Home Branch Employees Reservations Guests Rooms Facilities Room Service Parking Costs

Employee Name:

Select employee job title(s):

☐ Housekeeper

☐ Receptionist

Delete Employee

Employee ID:

Count Employees 1

View the total number of employees with employment years > 5 for each branch

Count Employees 2

View the total number of employees at each branch where each employee has employment years greater than the average employment years across all branches

Results

The screenshot shows a Visual Studio Code editor with a terminal window open. The terminal is connected to an Oracle Database 19c Enterprise Edition. The user has executed the following SQL query:

```
SQL> select *
2 from Employee_WorksAt;
```

The query results are displayed in a table format:

EMPLOYEEID	WORKSBRANCHNAME	SINNUMBER
1103	Hilton	123456789
2774	Hilton	998877665
1234	Marriott	334652789
2246	Shelton	620048245
8736	Motel 8	960334909
5521	Best Western	203498394

The terminal also shows the following output:

```
6 rows selected.
SQL>
```

Aggregation by having (based on table above after deletion)

The screenshot shows a web application interface for employee management. The interface includes a navigation bar with the following links: Home, Branch, Employees, Reservations, Guests, Rooms, Facilities, Room Service, Parking, and Costs. The main content area is titled "Employees" and contains the following sections:

- Select employee job title(s):** A form with two checkboxes: "Housekeeper" and "Receptionist". An "Add" button is located below the checkboxes.
- Delete Employee:** A form with an "Employee ID:" input field and a "Delete" button.
- Count Employees 1:** A section with the text "View the total number of employees with employment years > 5 for each branch" and a "view" button.
- Count Employees 2:** A section with the text "View the total number of employees at each branch where each employee has employment years greater than the average employment years across all branches" and a "view" button.
- Results:** A section titled "Branch Name Number of Employees" with a table showing the results of the aggregation queries.

Branch Name	Number of Employees
Motel 8	1
Shelton	1

Nested aggregation with group by (based on table above after deletion)

Employees

students.cs.ubc.ca/~khemmi/employees.php

GmailYouTubeMaps

HomeBranchEmployeesReservationsGuestsRoomsFacilitiesRoom ServiceParkingCosts

Select employee job title(s):
☐ Housekeeper
☐ Receptionist
Add

Delete Employee

Employee ID:

Delete

Count Employees 1

View the total number of employees with employment years > 5 for each branch

view

Count Employees 2

View the total number of employees at each branch where each employee has employment years greater than the average employment years across all branches

view

Results

Branch Name	Number of Employees
Motel 8	1
Shelton	1

28°C Mostly sunny6:37 PM 2022-08-09

Projection

Guests

students.cs.ubc.ca/~khemmi/guests.php

GmailYouTubeMaps

HomeBranchEmployeesReservationsGuestsRoomsFacilitiesRoom ServiceParkingCosts

Guests

Use this page to add guests to the database or view their information.

View All Guest Information

Select to view lists of:

- ☒ Guest Addresses
- ☒ Guest First Names
- ☐ Guest Last Names
- ☒ Guest Emails

view

Add Guest

Enter the guest's information.

Customer ID:

First Name:

Last Name:

Address:

Email:

Insert

Delete Guest

Enter the guest's identification information.

Customer ID:

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Guests

students.cs.ubc.ca/~khemmi/guests.php

GmailYouTubeMaps

HomeBranchEmployeesReservationsGuestsRoomsFacilitiesRoom ServiceParkingCosts

delete

Count Guests

Count total number of Guests

view

Results

Guest Addresses

7800 Manor Station, Greenville, NC 27834
5 Smith Avenue Providence, RI 02904
12 Court Circle Ridgecrest, CA 93555
731 Holly Str Ossining, NY 10562
9439 Rock Maple St Anchorage, AK 99504

First Names

Theia
Chase
Marcus
Rubie
Kaitlin

Emails

Theia.Brown@gmail.com
Chase.Johnson@gmail.com
Marcus.Oneal@gmail.com
Rubie.Blackmore@gmail.com
Kaitlin.Shaw@gmail.com

28°C
Mostly sunny

ENG
US6:41 PM
2022-08-09

In Parking - Join Guest and ParksAt_ParkingSpot

View Guest Information From Parking Number

Parking Number: 111234 ▾

View

Results

Retrieved data from table ParksAt_ParkingSpot:

First Name	Last Name	Email
Theia	Brown	Theia.Brown@gmail.com

Rooms - Aggregation with Group By

View Highest Priced Room by Branch

Returns the rooms with the highest cost from each branch

View

Viewing highest priced rooms:

Branch	Cost
Motel 8	1000
Hilton	400
Marriott	800
Shelton	400
Best Western	3000

In Parking - Update

Before Update

Parking

View Parking Spot Status

Parking Number: 111234

View

Update Parking Spot Data

Parking Number: 111234

Cost (per day):

Customer ID:

☐ Occupied ☐ Unoccupied

Update

View Guest Information From Parking Number

Parking Number: 111234

View

Results

Retrieved data from table ParksAt_ParkingSpot:

ParkingNumber	Occupied	Cost	CustomerID
323556	1	15	34

Update Query

Update Parking Spot Data

Parking Number: 323556

Cost (per day): 20

Customer ID:

☐ Occupied ☒ Unoccupied

Update

After Update

Results

Retrieved data from table ParksAt_ParkingSpot:
ParkingNumber Occupied Cost CustomerID
323556 0 20

Selection - Costs
Selection

Selection

Select table you would like to query.

- ☒ Facilities
- ☐ Rooms

- ☒ Cost
- ☒ Name (or identification information)

Select the *lower* bound of cost range you would like to search.
The query will take the from lowerBound <= x <=upperBound.
Lower Bound:

Select the *upper* bound of cost range you would like to search.
Upper Bound:

Select

Results

Retrieved data from table Facilities:

Name	Cost
Swimming Pool	0
Spa	30
Gym	0
Sauna	0
Conference Room	0

Division - Facilities
Before Query

Facilities

View All Facilities

View

View Customers Who Have Used All Facilities

View

Results

After Query

Facilities

View All Facilities

[View](#)

View Customers Who Have Used All Facilities

[View](#)

Results

Retrieved data from User table:

CustomerID

12