



CS 353

Database Management Systems

Group 41, Hotel Database Management System

Final Report

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TABLE OF CONTENTS

1. Project Description	4
2. E/R Diagram	5
3. Relation Schemas (Tables)	6
3.1 User	6
3.2 Guest	6
3.3 Employee	6
3.4 Manager	6
3.5 Housekeeper	6
3.6 SecurityStaff	6
3.7 Building	7
3.8 Room	7
3.9 Event	7
3.10 leaveSecurity	7
3.11 leaveHousekeeper	7
3.12 securityTrain	7
3.13 housekeeperTrain	7
3.14 reservation	8
3.15 restaurant	8
3.16 food	8
3.17 foodOrder	8
3.18 eventTickets	8
3.19 comment	8
4. Implementation	9
5. User Manual	9
5.1 Login/Register Interface	9
5.2 Guest Interface	10
5.2.1 Make a new Reservation Page	10
5.2.2 My Reservations Page	11
5.2.3 New Food Order Page	11
5.3.4 My Food Orders	12
5.3 Housekeeper Interface	12
5.3.1 Training Programs	12
5.3.2 My Applications	13
5.3.3 Assigned Orders	13
5.4 Security Interface	14
5.4.1 Home	14
5.4.2 My Applications	15
5.5 Manager Interface	15
5.5.1 Informations Page	15

5.5.2 Add Employee Page	16
5.5.3 Housekeeper Order	17
5.5.4 Security Building	18
5.5.5 Event Location	19
5.5.6 Training App Page	19
5.5.7 Request Form Page	20
6. Contributions	20

1. Project Description

As it can be understood from its name, the hotel management database system is an application for managing hotels more easily compared to traditional methods. The users of this service will be guests and employees. Housekeepers, managers, and security staff are considered employees. Guests can reserve rooms from a desired location and building. They can also comment on their reservations. During their accommodation, guests can order food from the system by choosing their favorite restaurant and picking their food choices. To deliver orders, housekeepers need to be assigned by a manager. Clients can also buy tickets for activities and tours with help of the database application. managers can create new events by choosing a location for them. An event can be a group tour, guest activity, and training program. Training programs are specially created for the educational purposes of housekeepers and security staff. Housekeepers and security members can apply to a training program and fill out a leave request form to have permission for a short time to leave their job. After they apply for one of these two options, a manager can reject or accept their application.

2. E/R Diagram

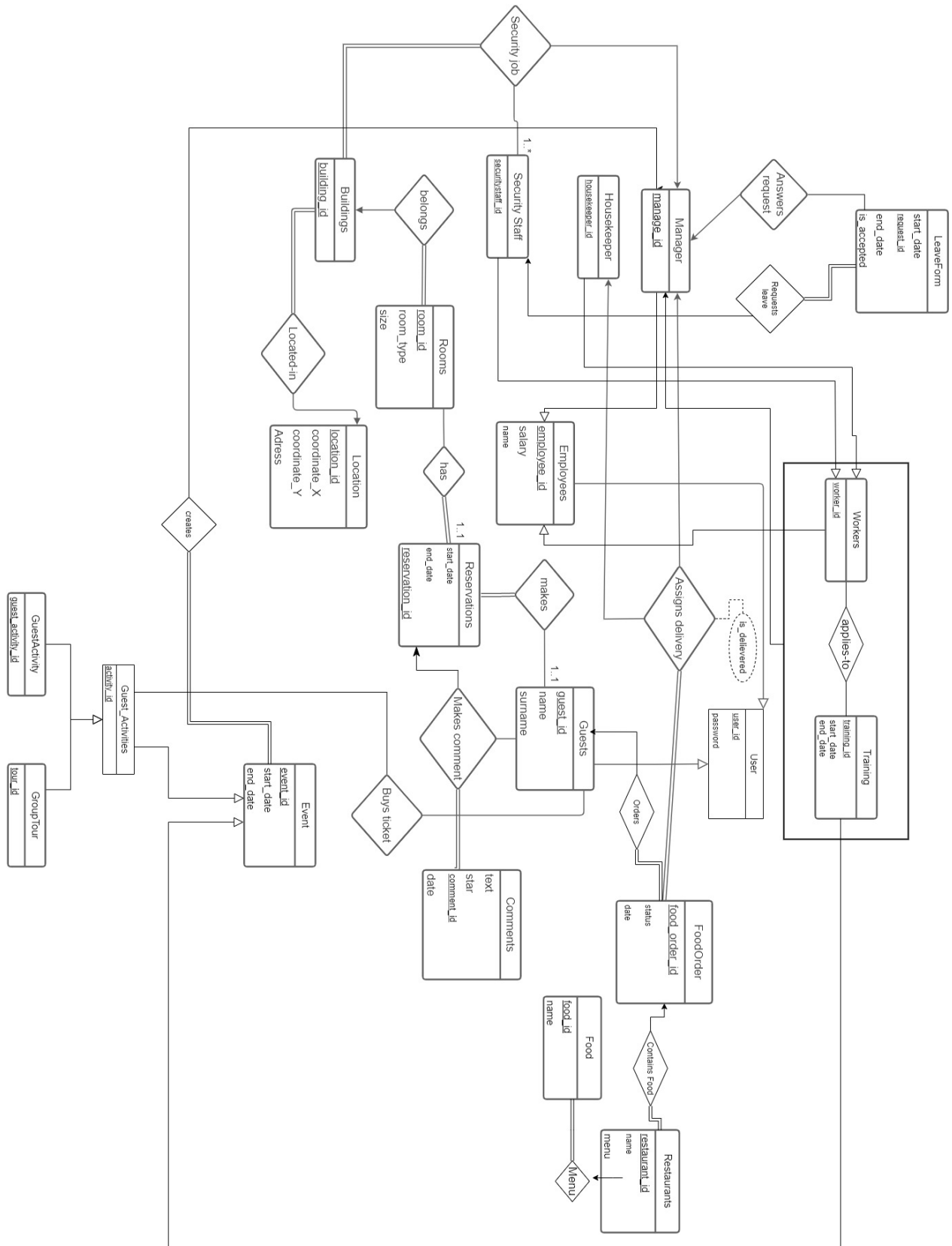


Figure 1. E/R diagram

3. Relation Schemas (Tables)

3.1 User

Relational Model:

User (username, password, type)

PRIMARY KEY username

3.2 Guest

Relational Model:

Guest (guest_id)

PRIMARY KEY guest_id

FOREIGN KEY guest_id REFERENCES User(username)

3.3 Employee

Relational Model:

Employee (employee_id, salary, name)

PRIMARY KEY employee_id

FOREIGN KEY employee_id REFERENCES User(username)

3.4 Manager

Relational Model:

Manager (manager_id)

PRIMARY KEY manager_id

FOREIGN KEY manager_id REFERENCES User(username)

3.5 Housekeeper

Relational Model:

Housekeeper (housekeeper_id)

PRIMARY KEY housekeeper_id

FOREIGN KEY housekeeper_id REFERENCES User(username)

3.6 SecurityStaff

Relational Model:

SecurityStaff (securitystaff_id, building_to_watch , last_leave)

PRIMARY KEY securitystaff_id

FOREIGN KEY securitystaff_id REFERENCES User(username)

3.7 Building

Relational Model:

Building (building_id, cor_x , cor_y , building_size)

PRIMARY KEY: building_id

3.8 Room

Relational Model:

Room (room_id , building_id , guest_id)

PRIMARY KEY (room_id, building_id)

FOREIGN KEY building_id REFERENCES Building(building_id)

3.9 Event

Relational Model:

Event (building_id , event_type , which_date , price , name)

PRIMARY KEY (name, event_type, which_date)

FOREIGN KEY building_id REFERENCES Building(building_id)

3.10 leaveSecurity

Relational Model:

leaveSecurity (security , start , end , isaccepted)

FOREIGN KEY security REFERENCES SecurityStaff(securitystaff_id)

3.11 leaveHousekeeper

Relational Model:

leaveHousekeeper (housekeeper , start , end , isaccepted)

FOREIGN KEY housekeeper REFERENCES Housekeeper(housekeeper_id)

FOREIGN KEY event REFERENCES Event(name)

3.12 securityTrain

Relational Model:

securityTrain (security , event , isaccepted)

FOREIGN KEY security REFERENCES SecurityStaff(securitystaff_id)

FOREIGN KEY event REFERENCES Event(name)

3.13 housekeeperTrain

Relational Model:

housekeeperTrain (housekeeper , event , isaccepted)

FOREIGN KEY housekeeper REFERENCES Housekeeper(housekeeper_id)

FOREIGN KEY event REFERENCES Event(name)

3.14 reservation

Relational Model:

reservation (user , building , room , start , end)

FOREIGN KEY user REFERENCES User(username)

FOREIGN KEY building REFERENCES Building(building_id)

FOREIGN KEY room REFERENCES Room(room_id)

3.15 restaurant

Relational Model:

restaurant (restaurant)

PRIMARY KEY restaurant

3.16 food

Relational Model:

food (food, restaurant , price)

PRIMARY KEY (food, restaurant)

FOREIGN KEY restaurant REFERENCES restaurant(restaurant)

3.17 foodOrder

Relational Model:

foodOrder (restaurant , food , user , housekeeper , status)

FOREIGN KEY (restaurant, food) REFERENCES food(restaurant, food)

FOREIGN KEY user REFERENCES user(username)

FOREIGN KEY housekeeper REFERENCES Housekeeper(housekeeper_id)

3.18 eventTickets

Relational Model:

eventTickets (event , user)

FOREIGN KEY event REFERENCES Event(name)

FOREIGN KEY user REFERENCES User(username)

3.19 comment

Relational Model

comment (user , building , room , comment)

FOREIGN KEY user REFERENCES User(username)

FOREIGN KEY (building, room) REFERENCES Room(building_id, room_id)

4. Implementation

Our application consists of two parts, client and server-side.

On the client-side, we used basic HTML alongside several CSS libraries like “bootstrap” and “pure javascript (ES6)”. The interaction that is needed for communicating with our server is done through making POST and GET requests to our server’s API.

The program that we run on the server-side is written in nodejs runtime environment. Our server program consists of two parts: an API (written with expressjs) for handling requests from clients and a MySQL database for storing data. When a request arrives at our API, our API connects to our MySQL database by using a nodejs library called “MySQL” and makes the relevant queries.

5. User Manual

5.1 Login/Register Interface

For Users

ID

Password

Login

Register

Figure 2. Login screen

Using this interface, users can quickly register an account by just clicking the “register” button after specifying the user id and password. Registered users can log in to the system by clicking the “login” button.

5.2 Guest Interface

5.2.1 Make a new Reservation Page

[Login Page](#) [My Reservations](#) [Make a New Reservation](#) [My Food Orders](#) [Give a New Food Order](#)

Reservation

Start:

08/19/2011



Finish:

08/22/2011



Building:

A



Room:

3



Reserve

Buy Ticket

Event name	Date	Type	Building	Price	Apply
Guest Activity	2011-08-18T21:00:00.000Z	Guest Activity	A	10	buy
GToir	2011-08-18T21:00:00.000Z	Group Tour	A	10	buy

Figure 3. User purchasing services making reservations

When a Guest logs in to our system, they see a screen for making a new reservation. From this page, they can make a reservation by specifying the relevant inputs. They can buy tickets for available events by clicking the “buy” button.

5.2.2 My Reservations Page

[Login Page](#) [My Reservations](#) [Make a New Reservation](#) [My Food Orders](#) [Give a New Food Order](#)

Reservations

Start Date	End Date	Building number	Room number	Submit Comment Button
2011-08-28T21:00:00.000Z	2011-08-30T21:00:00.000Z	A	5	Submit Comment
2011-09-18T21:00:00.000Z	2011-10-18T21:00:00.000Z	A	9	Submit Comment

Comment text:

Odada şu bu o olsa iyi olur.

Tickets

Ticketname
Guest Activity
Gtoir

Figure 4. My reservations

On the “My Reservations” page, users can see their reservations and tickets they bought for available events. They can also write a message to the comment text area and they can submit their comments by pressing the “Submit Comment” button. Comments are specific to the rooms.

5.2.3 New Food Order Page

[Login Page](#) [My Reservations](#) [Make a New Reservation](#) [My Food Orders](#) [Give a New Food Order](#)

New Food Order

kebabci

urfa

Order Food

Figure 5. New food order

On the “Give a New Food Order ” page, guests can give food orders from the restaurants registered in the system. First, they need to select the restaurant they want, then they select a food from their menu. then click on the “Order Food” button. They can see all their orders later on the “My Food Orders” menu.

5.3.4 My Food Orders

Login Page	My Reservations	Make a New Reservation	My Food Orders	Give a New Food Order
Food Orders				
Restaurant	Food	Housekeeper	Status	
kebabci	adana	keeper	Completed	
tatlici	katmer	keeper1	Delivering	

Figure 6. My food orders

On the “My food Orders” page, guests can see all their orders’ details which are the restaurant from which the order was given, the food they ordered, the housekeeper assigned to the order or no housekeeper if no one was assigned yet, and lastly the status of the order: completed, delivering or pending.

5.3 Housekeeper Interface

5.3.1 Training Programs

Login Page	Assigned Orders	Training Programs	My Applications
----------------------------	---------------------------------	-----------------------------------	---------------------------------

Apply for a Program

Choose Program

TP

Apply For

Leave Request Form

Which period of time for do you want to make a leave request?

From:

08/04/2011

To:

08/19/2011

Leave Request

Figure 7. Training programs or leave request form application

On the “Training Programs” page, housekeepers can do two things. First, they can apply for a training program which they can track the status from the “My Applications” page. Secondly, they can give a request form to the manager by specifying the dates.

5.3.2 My Applications

Login Page Assigned Orders Training Programs My Applications		
My Applications		
Training Name	Status	
TP	Pending	
hkeeper program	Pending	

My Leave Requests		
Start	End	Status
2011-08-04	2011-08-19	Pending

Figure 8. My applications

On the “My applications” page housekeepers can track the status of their training program applications and leave requests. they can be either pending, accepted or rejected.

5.3.3 Assigned Orders

Login Page Assigned Orders Training Programs My Applications				
My Applications				
Restraunt Name	Guest Name	Food Name	Status	Deliver
tatlici	guest	katmer	Delivering	Completed

Figure 9. Food orders assigned to housekeeper to deliver

On this page, housekeepers can see their assigned food orders. When a food order is assigned to a housekeeper its status is updated from preparing to delivering. When the

housekeeper delivers the food order they click the completed button and the status of the food order updates to “completed”.

5.4 Security Interface

5.4.1 Home

The screenshot shows the 'Security Staff' home page. At the top, there are navigation links: 'Login Page', 'Home', and 'My Applications'. The main heading is 'Security Staff'. Below this, there are two main sections. The left section is for leave requests, titled 'Which period of time for do you want to make a leave request?'. It has a 'From:' field with the date '08/19/2011' and a calendar icon, and a 'To:' field with the date '08/22/2011' and a calendar icon. Below these fields is a blue 'Leave Request' button. The right section is for applying for a program, titled 'Apply for a program'. It has a 'Choose Program' dropdown menu with 'training program' selected and a blue 'Apply For' button. At the bottom of the page, there is a section titled 'Bilgiler:' (Information) with the text 'You are responsible for Building: A'.

Login Page Home My Applications

Security Staff

Which period of time for do you want to make a leave request?

From: 08/19/2011

To: 08/22/2011

Leave Request

Apply for a program

Choose Program

training program

Apply For

Bilgiler:

You are responsible for Building: A

Figure 10. Security home page

On this page security staff can see the building that they are assigned to at the bottom. On the top, they can use the form on the left to make leave requests and they can use the form on the right to apply to training programs.

5.4.2 My Applications

[Login Page](#) [Home](#) [My Applications](#)

My Applications

Training Name	Status
TP	Pending
training program	Pending

My Leave Requests

Start	End	Status
2011-08-19	2011-08-22	Pending

Figure 11. Security application screen

On the my applications page security staff can see their applications to training programs and leave requests.

5.5 Manager Interface

5.5.1 Informations Page

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Informations](#)

Reservations

User	Building	Room	Startdate	Enddate
guest	A	4	2011-08-18T21:00:00.000Z	2011-08-21T21:00:00.000Z
ugur	A	5	2011-08-28T21:00:00.000Z	2011-08-30T21:00:00.000Z
ugur	A	9	2011-09-18T21:00:00.000Z	2011-10-18T21:00:00.000Z

Tickets

Ticketname	Username
GToir	guest
Guest Activity	guest
Guest Activity	ugur
GToir	ugur

Comments

Comment	Building	Room	Author
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Guest Activity	guest
Guest Activity	ugur
GToir	ugur

Comments

Comment	Building	Room	Author
Beğenmedim.	A	4	guest
Odamda şu bu olsa daha iyi olurdu	A	5	ugur

Housekeepers

Name	Salary	
hkeeper	9382	<button>Fire</button>

Securitystaffs

Name	Salary	
security	10	<button>Fire</button>

Figure 12. Manager Information Page

The information page gives the manager all the relevant information on a single page. They can see all the reservations, tickets, comments, housekeepers, and security staff. They can also fire housekeepers and security staff from this page, which is an extra feature that we added.

5.5.2 Add Employee Page

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Informations](#)

Add an Employee

ID	<input type="text" value="hkeeper"/>
Password	<input type="password" value="....."/>
Name	<input type="text" value="Halit"/>
Salary	<input type="text" value="9382"/>
	<input type="text" value="Housekeeper"/>
<button>Add Employee</button>	

Figure 13. Manager Add Employee Page

Managers can add new employees to the system via the “Add Employee” page. They need to specify their names, salaries and employee type together with their id and password info then they will press the “Add Employee” button to finalize their operation.

5.5.3 Housekeeper Order

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Informations](#)

Assign Housekeeper

Restaurant	User	Status	Housekeeper	Sign Housekeeper	Submit
tatlici	guest	Delivering	hkeeper	CHOOSE HOUSEKEEPER	Assign
kebabci	ugur	Delivering	muhammed	CHOOSE HOUSEKEEPER	Assign
tatlici	ugur	Delivering	hkeeper	CHOOSE HOUSEKEEPER	Assign
kebabci	ugur	Delivering	muhammed	CHOOSE HOUSEKEEPER	Assign
kebabci	ugur	Delivering	muhammed	CHOOSE HOUSEKEEPER	Assign

Figure 14. Manager Housekeeper Orders Page

In the “Housekeeper Order” page, managers can see the food orders that are not yet completed. The status of the order can either be delivered or pending. If it's pending manager can assign a housekeeper to a food order by clicking the “Assign” button and selecting a housekeeper.

5.5.4 Security Building

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Information](#)

Building name:

X-location:

Y-location:

Building size:

Add

Security:

Building:

Assign

Figure 15. Manager Security Building Page

Managers can add new buildings to the system serving guests via the “Security Building” page. they need to specify the location and room number to add a new building. They can also assign security staff to these buildings on the same page.

5.5.5 Event Location

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Informations](#)

Event:

Guest Activity

Event Name

aktivite

Building

B

Date

08/19/2011

Price

0

Create Event

Figure 16. Manager Event Location Page

On the “Event Location” page, managers can create new events like Group activity or Training Program. To do so, they need to specify the type, the name of the activity, the building date, and the price for the tickets then simply click on the button.

5.5.6 Training App Page

[Login Page](#) [Housekeeper Order](#) [Security Building](#) [Event location](#) [Training App](#) [Request Form](#) [Add Employee](#) [Informations](#)

Security ID	Event	Status
security1	TP	<div>Y</div> <div>N</div>
security1	training program	<div>Y</div> <div>N</div>

Housekeeper ID	Event	Status
keeper1	TP	<div>Y</div> <div>N</div>
keeper1	hkeeper program	<div>Y</div> <div>N</div>
keeper2	hkeeper program	<div>Y</div> <div>N</div>

Figure 17. Manager Training App Page

On this page, managers can see the training requests of housekeepers and security staff at different tables. using the Y and N buttons on each request they can accept or decline these requests.

5.5.7 Request Form Page

Login Page	Housekeeper Order	Security Building	Event location	Training App	Request Form	Add Employee	Informations
----------------------------	-----------------------------------	-----------------------------------	--------------------------------	------------------------------	------------------------------	------------------------------	------------------------------

Security ID	Start Date	End Date	Status
security1	2011-08-19	2011-08-22	<input checked="" type="checkbox"/> <input type="checkbox"/>

Housekeeper ID	Start Date	End Date	Status
keeper1	2011-08-04	2011-08-19	<input checked="" type="checkbox"/> <input type="checkbox"/>
keeper2	2011-08-19	2011-08-27	<input checked="" type="checkbox"/> <input type="checkbox"/>

Figure 18. Manager Request Form Page

On this page, managers can see the leave requests of security staff and housekeepers at separate tables. They can accept or decline these requests by using the corresponding buttons.

6. Contributions

Faruk Balcı	client side
Uğur Erdem Seyfi	server and client side
Agil Aliyev	server side
Alperen Öziş	client side

Reports can be found at: https://github.com/kugurerdem/hotel_db