

CS 353 Database Systems Final Report Group 7 Travel Agency

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1. Introduction

In this report, we are going to share the description of our travel agency application system, final E/R model, final list of tables, implementation details and user's manual to explain our final DBMS.

2. Description

Our Travel Agency application is a website where one can join to check various tours, make reservations for them and book hotels or flights. In our application there are three types of users which are customer, employee and guide. All of the mentioned three user types can access different features accordingly. With its user-friendly interface and well managed access system, everyone can do different tasks on the same system in coherence. A customer can view different tours and tour's, free or paid, activities. They can filter the tours according to their location and date. After selecting a desired tour, they can make a reservation for it by selecting the activities they want to attend. The total price is calculated according to the price of the tour and price of the extra activities. Likewise, customers can check and make booking for different hotels by specifying their room preference, number of people and dates. If they wish they can talk to an employee to make their tour reservations and hotel bookings. When customers do a tour reservation or hotel booking themselves, its status will be waiting and will need to be accepted or denied by the employee. Customers can trace accepted and denied reservations from the previous trips page, they can view the reason if their request is denied. The customers can also see their profiles, edit their information or delete their account and leave feedback to their accepted hotel or tour reservations.

The employees can see the tours and assign guides if needed, reserve tours or hotels for customers and accept or decline reservation requests. They can also edit existing reservations. The same profile information is present in the employee page as well. Guides can see tours that they have been assigned to, check the details and accept or decline the job. With all these functionalities our system provides a smart way to handle the full course of a travel agency in a single application.

3. Final E/R Model

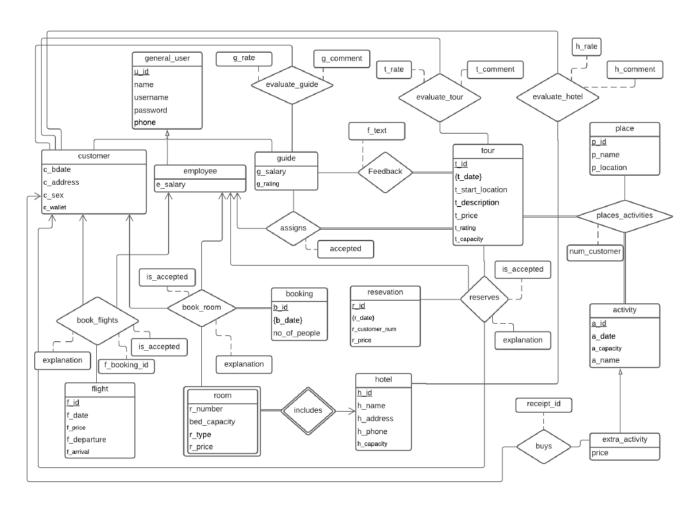


Figure 1 (ER Diagram)

4. List of Tables

4.1. Customer

```
customer(<u>u_id</u>, name, username, c_bdate, c_address, c_sex, c_wallet, pw, phone)
PRIMARY KEY (u_id));
```

4.2. Employee

```
employee(<u>u_id</u>, name, username, phone, pw, e_salary)
PRIMARY KEY (u_id));
```

4.3. Guide

```
guide(<u>u_id</u>, name, username, phone, pw, g_salary, g_points, g_rating)
PRIMARY KEY (u_id));
```

4.4. Booking

```
booking(<u>b_id</u>, b_start_date, b_end_date, no_of_people)
PRIMARY KEY (b_id));
```

4.5. Tour

```
tour(<u>t_id</u>, t_name, t_start_date, t_end_date, t_start_location, t_description, t_price, t_rating, t_capacity)

PRIMARY KEY (t_id));
```

4.6. Place

```
place(p_id, p_name, p_location)
PRIMARY KEY (p_id));
```

4.7. Activity

```
activity(a id, a date, a capacity, a name)
```

```
PRIMARY KEY (a_id));
```

4.8. Extra Activity

```
extra_activities(a_id, a_date, price)

PRIMARY KEY (a_id)),

FOREIGN KEY (a id) REFERENCES activity(a id) );
```

4.9. Hotel

```
hotel(<u>h_id</u>, h_name, h_address, h_description, h_phone, h_capacity)
PRIMARY KEY (h_id));
```

4.10. Room

```
room(h_id, r_number, bed_capacity, r_type, r_price)
PRIMARY KEY (h_id, r_number))
FOREIGN KEY (h_id) REFERENCES hotel(h_id));
```

4.11 Flight

```
flight(<u>f_id</u>, f_date, f_price, f_departure, f_arrival)
PRIMARY KEY (f_id));
```

4.12. Reservation

```
reservation(<u>r_id</u>, r_start_date, r_end_date, r_price, r_customer_num)
PRIMARY KEY (r_id));
```

4.13. Evaluate Guide

```
evaluate_guide(g_id, c_id, g_comment, g_rate)

PRIMARY KEY (g_id, c_id)),

FOREIGN KEY (g_id) REFERENCES guide(g_id) ON DELETE CASCADE),

FOREIGN KEY (c_id) REFERENCES customer(u_id) ON DELETE CASCADE);
```

4.14. Evaluate Tour

```
evaluate_tour(<u>t_id_,</u> c_id_, t_comment, t_rate)

PRIMARY KEY (t_id_, c_id_)),

FOREIGN KEY (t_id_) REFERENCES tour(t_id_)),

FOREIGN KEY (c_id_) REFERENCES customer(u_id_) ON DELETE CASCADE);
```

4.15. Evaluate Hotel

```
evaluate_hotel(h_id, c_id, h_comment, h_rate)

PRIMARY KEY (h_id, c_id)),

FOREIGN KEY (h_id) REFERENCES hotel(h_id)),

FOREIGN KEY (c id) REFERENCES customer(u id) ON DELETE CASCADE);
```

4.16. Places Activities

```
places_activities(t_id, t_start_date, t_end_date, a_id, a_date, p_id, num_customer)

PRIMARY KEY (t_id, a_id, p_id)),

FOREIGN KEY (t_id) REFERENCES tour(t_id)),

FOREIGN KEY (a_id) REFERENCES activity(a_id)),

FOREIGN KEY (p id) REFERENCES place(c id));
```

4.17. Buys

```
buys(receipt_id, a_id, c_id)

PRIMARY KEY (receipt_id)),

FOREIGN KEY (a_id) REFERENCES extra_activity(t_id)),

FOREIGN KEY (c_id) REFERENCES customer(u_id) ON DELETE CASCADE);
```

4.18. Reserves

```
reserves(<u>r_id</u>, <u>t_id</u>, <u>t_start_date</u>, <u>t_end_date</u>, <u>c_id</u>, explanation, is_accepted)

PRIMARY KEY (<u>r_id</u>, <u>t_id</u>, <u>c_id</u>)),

FOREIGN KEY (<u>r_id</u>) REFERENCES reservation(<u>r_id</u>)),

FOREIGN KEY (<u>t_id</u>) REFERENCES tour(<u>t_id</u>)),

FOREIGN KEY (<u>e_id</u>) REFERENCES employee(<u>u_id</u>) ON DELETE CASCADE),
```

4.19. Feedback

```
feedback(t_id, t_start_date, t_end_date, g_id, f_text)

PRIMARY KEY (t_id, g_id)),

FOREIGN KEY (t_id) REFERENCES tour(t_id)),

FOREIGN KEY (g_id) REFERENCES guide(u_id) ON DELETE CASCADE);
```

4.20. Assign

```
assign(t_id, t_start_date, t_end_date, g_id, e_id, accepted)

PRIMARY KEY (t_id, g_id, e_id)),

FOREIGN KEY (t_id) REFERENCES tour(t_id)),

FOREIGN KEY (e_id) REFERENCES employee(u_id) ON DELETE CASCADE),

FOREIGN KEY (g_id) REFERENCES guide(u_id) ON DELETE CASCADE);
```

4.21. Book Room

```
book_room(b_id, h_id, b_start_date, b_end_date, c_id, e_id, r_number, is_accepted, explanation)

PRIMARY KEY (b_id, h_id, r_number)),

FOREIGN KEY (b_id) REFERENCES booking(b_id)),

FOREIGN KEY (h_id, r_number) REFERENCES room(h_id, r_number)),

FOREIGN KEY (c_id) REFERENCES customer(u_id) ON DELETE CASCADE),

FOREIGN KEY (e_id) REFERENCES employee(u_id) ON DELETE CASCADE);
```

4.22. Book Flight

```
book_flight( <u>f_booking_id</u>, <u>f_id</u>, f_date, c_id, e_id, is_accepted, explanation)

PRIMARY KEY (f_booking_id,f_id)),

FOREIGN KEY (f_id) REFERENCES flight(f_id)),

FOREIGN KEY (c_id) REFERENCES customer(u_id) ON DELETE CASCADE),

FOREIGN KEY (e_id) REFERENCES employee(u_id) ON DELETE CASCADE);
```

4. Implementation Details

4.1. Development Tools

The application is implemented by using different languages and frameworks. In the frontend we have used CSS, HTML, Bootstrap as front-end framework and Javascript to handle the errors, confirmation and validation messages. In the backend we have used python's Django framework. As a relational database management system we have used SQLite.

4.2. Problems

While implementing the application we have encountered different problems. Our first choice for DBMS was MySQL while Django comes with a default database system , SQLite. Some of the group members had difficulty while installing MySQL on their computer, therefore we decided to switch back to SQLite.

Second problem was about deciding on whether we should use Django's forms feature. Form is very useful while handling post requests. However it is more useful when it is used with the models which are used withthemodelswhichareusedinDjango's ORM(Object-Relational-Mapper) system for database integration. We were not allowed to use models, since we needed to perform queries with raw SQL statements. Thus, we didn't use forms as well except for one page.

Third problem we faced was about primary keys of the tables. In the design stage, date attributes were decided to be inside the primary keys for most of the tables. However, we have realised that we need to pass a lot of primary key attributes between pages, date's type were causing problems and we didn't have time to deal with such problems. These problems increase complexity when the primary list is too long. Thus, all the tables had some id attribute which was enough as a primary key when they are created uniquely for every row. For that reason we have removed date attributes from the primary keys.

4.3. Contributions

Melike:

- Navigation bar and base.html
- Register and login(Customer)
- Profile page
- Hotel's detail (showing available rooms, description, etc.)
- Hotel booking for Customer(done by Customer and Employee)
- Tour detail (Listing Activities, and Extra Activities)
- Tour Reservation(calculating total price and making the payment accordingly)
- Listing previous reservations and bookings of the Customer (Tour and Hotel), their details and their updates on the view according to their status (waiting, accepted, denied)

Kimya:

- registration and login(Employee,Guide)
- List available Hotels and filter according to rating and hotel location
- Manage Reservation(Updating Tour Reservation by Employee, Accepting or Rejecting a Reservation made by Customer)
- Manage Booking(Updating Hotel Booking by Employee, Accepting or Rejecting a Booking made by Customer)
- Statistic Page
- Delete Account

Irmak:

- Tour Reservation page (customer).
- Tour reservation filter applications.
- Tour details page (customer).

- Feedback page for tour, guide and hotel booking.
- Table and search for flight booking.
- Calculating and updating rate of tour table.

Tanay:

- List tour and filter assigned guide (Employee)
- List guides and filter according to availability (Employee)
- Assign tours to specific guide (Employee)
- Assigned tour list (Guide)
- Accept or decline assigned tour (Guide)
- Feedback (Guide)

5. User's Manual

As we have mentioned before, in our Travel Agency application, we have 3 types of users which are customers, employees and guides. For the better understanding we will be looking at them one at a time. However, the sign in and login parts are similar so we just look at them together.

5.1. Sign in and Log in

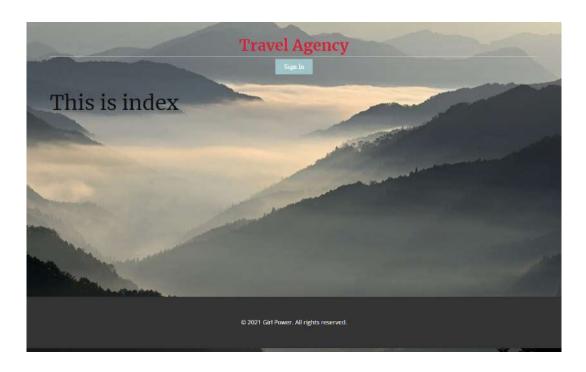


Figure 2 (Index Page)

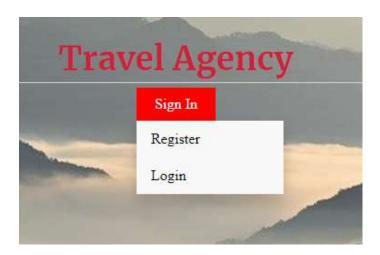


Figure 3 (Sign in bar)

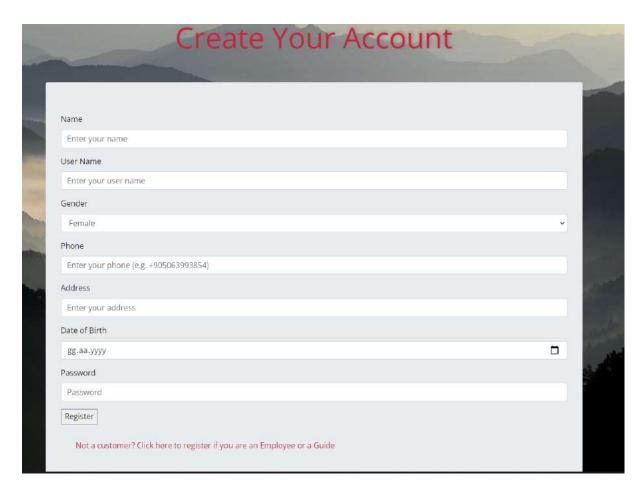


Figure 4 (Sign up Page)

In the sign-up page, there is a lot of information that is needed to be filled by the user. This sign up page is for customers. If another user type like employee or guide wants to register, they can click the writing at the bottom and they are redirected to the sign up page. The datas we take from users are held in our databases and passwords are secured. These datas can also be accessed later on in the profile page. Name, username, gender, phone, address, date of birth and password and many more are taken from the user and their profiles are created that they can use later on.

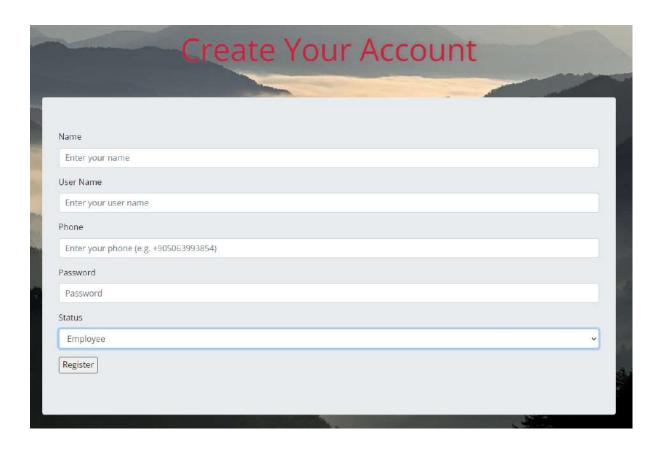


Figure 5 (Employee & Guide sign up page)



Figure 6 (Status selection)

As you can see in the above pictures, 'Not a Customer?' writing redirects the user to this page. Users can register by selecting status. We keep the user information with that status because it is added to the database according to its status.

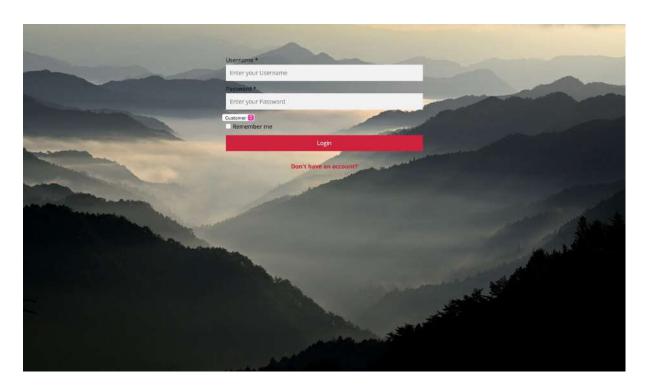


Figure 7 (Login page)

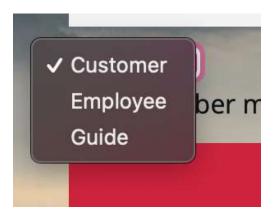


Figure 8 (User type selection)

Once the new user created his/her account, users are redirected to the login page and required to login. The login page is the same for all user types and the login is only enabled if the correct type of user is selected from the drop-down menu. If a user tries to login but realises that they don't have an account they can click on "Don't have an account?" to re-access the sign-up page.

5.2. User's Manual for Customers

5.2.1. Welcome Page

When the user logged-in, They see the welcome page of our application with our navigation bar containing first element our username that leads to profile page, Hotel booking to look and book hotel rooms, Tour Reservation for searching and looking at the tours, Flight Booking for booking flights and Statistics that we used to show several complicated queries. We will see each element with the order above.



Figure 9 (Welcome page)

5.2.2 Profile

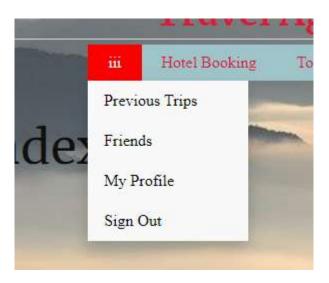


Figure 10 (Customer navigation bar options)

The "username" element contains a drop-down menu with several options. The Previous Trips are where customers can see their reservations waiting for approval, together with accepted or declined ones and their explanations. Friends option is for future developments of our application where customers can add each other to share their tours and reservations. My profile is where the customer can revise his/her information and change them if needed. They can also see their balance from My profile and delete their account if they want. And finally the Sign Out option is to close the session.

5.2.2.1 Previous Trips:



Figure 11 (Previous trips)



Figure 12 (Accepted Hotel Bookings)



Figure 13

When a booking room or reserving a tour request is made by the customer, it can be seen in the waiting list of the previous trips. When an employee accepts the booking it can be seen in the accepted list. These are previous reservations that the customer made and once they are accepted, the customer can evaluate the tour, hotel or guide. This is made by the feedback page and a customer can submit only one feedback about a hotel, tour or guide. These feedbacks are stored in the database to be seen later on.

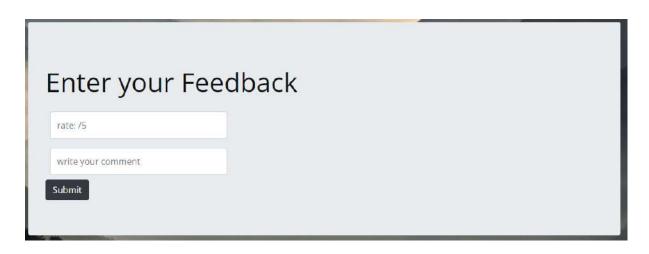


Figure 14(Hotel Feedback page)

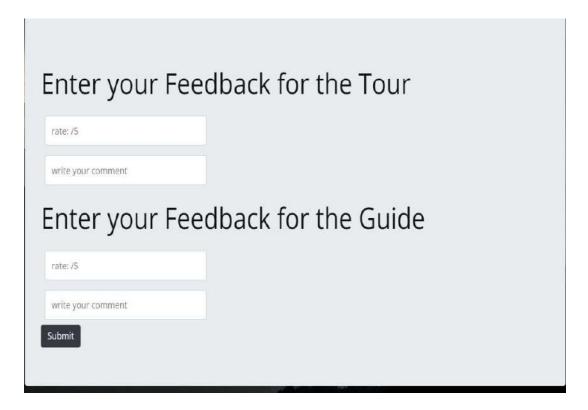


Figure 15 (Tour Feedback page)

In the My Profile, as we explained before, the customer can see his/her information, go to previous trips and if he/she chooses to do so, delete his/her account.

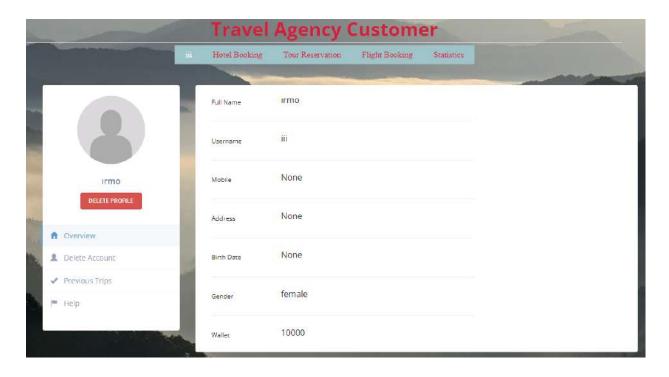


Figure 16 (Profile page)

5.2.3 Hotel Booking

In this section the customer can check the existing hotels and their information. It is also possible to search for a hotel via its location, rating, dates or number of people. Once the customer chooses a hotel, he/she can go to the book option in the table to check available types of rooms and proceed to book one.

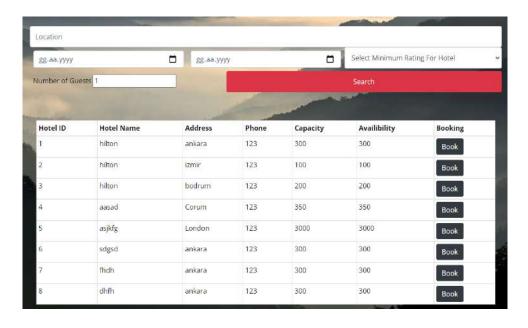


Figure 17 (Hotel Booking)

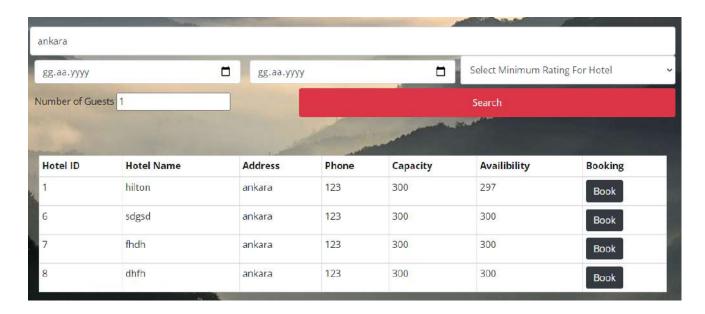


Figure 18 (Hotel search with Ankara key)

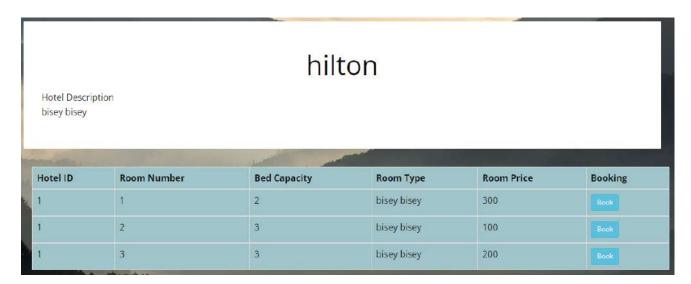


Figure 19 (Hotel information and rooms)



Figure 20 (Booking page)

5.2.4 Tour Reservation

In the tour reservation customers can check available tours with their location, description, start date and price. The customer can also search specific tours that have a specific time, location or an activity they are looking for in the description. If a customer is interested in a tour, he/she can go to check details of the tour. Here there is extended information about the tour as well as the activities that they have. Activities are divided into two categories: activities and extra-activities. Extra-activities do not come with the booking of the tour and they have their own prices. Therefore if the customer wishes to participate in one of them, he/she is required to select and reserve the extra-activities that they want to participate in. The price of the extra-activities are added to the total price of the reservation and the customer can purchase it with a selected number of people. The prices shown are per person so if the customer wishes to buy more than one person reservation he/she is charged accordingly. There is also a table at the bottom of a tour detail that should show the existing comments of the tour and calculate the rate, however in a problem of merge it was deleted and we did not have the time to implement it again.

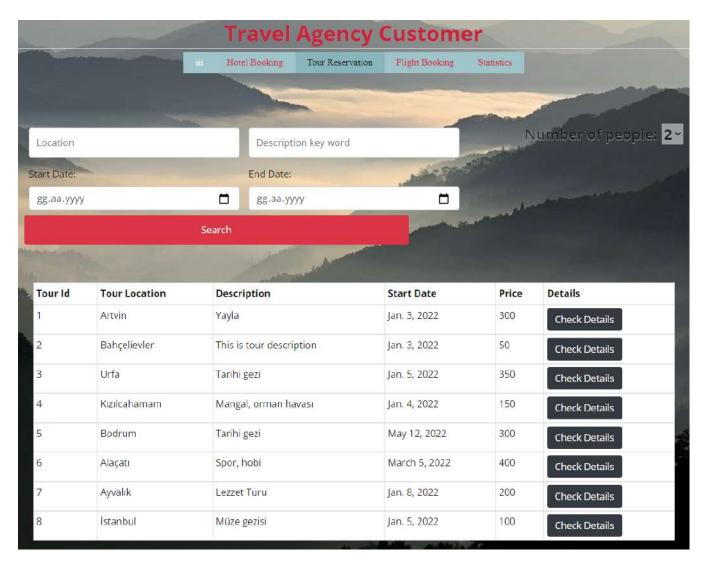


Figure 21(Tour Reservation page)

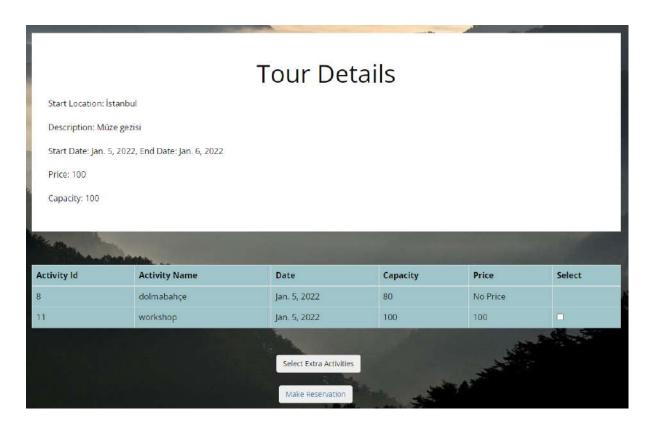


Figure 22 (Tour Details page)

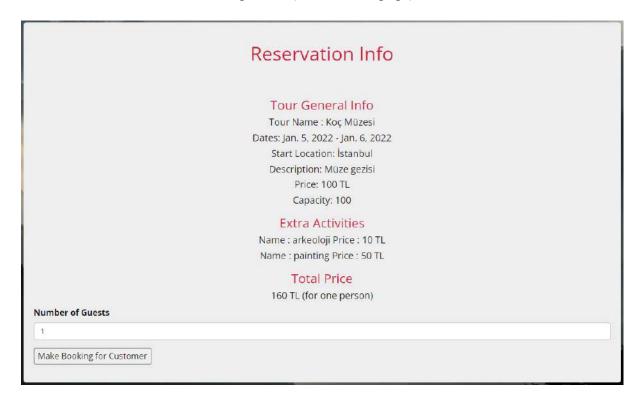


Figure 23 (Reservation Information page)



Figure 24 (Comment and Rate entries part)

5.2.5 Flight Booking

This section was our project's extra work and like other parts, a customer can see existing flights, search a specific flight looking at its date, departure and arrival location etc. Unfortunately, we did not have time to implement the booking of flights, however, logically it is the same as hotel booking and tour reservation so it could easily be implemented in the future implementations.

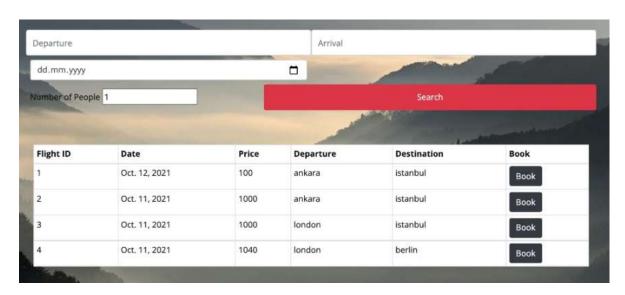


Figure 25 (Flight Booking page)

5.2.6 Statics

This part was made for the demonstration of complex queries, therefore it does not have functionality for the customer and can be removed for future applications.



Figure 26 (Statistics page)

5.3. User's Manual for Employees

5.3.1 Welcome Page

When the user logged-in, They see the welcome page of our application with our navigation bar similar to the customer with the difference that it's containing username that leads to profile page, reservation and booking management, Hotel booking to look and book hotel rooms, Tour Reservation for searching and looking at the tours, Flight Booking for booking flights and Statistics that we used to show several complicated queries. We will see each element with the order above.

Travel Agency Employee Hotel Booking Tour Reservation Flight Booking Location Select Minimum Rating For Hotel 1/04/20 Number of Guests 1 Availibility Booking Address Phone Hotel Nar Capacity 123 300 Book hilton izmir 123 100 100 Book hilton 123 200 200 bodrum 123 Book 123 3000 3000 123 300 300 123 fhdh ankara 123

5.3.2 Hotel List

Figure 27 (Hotel Booking page)

Employees can see the hotels list by clicking the Hotel Booking from the navigation bar. They can book hotels for customers by clicking the book button. They can search the desired hotels with the keywords .On the load the availability of the hotels are calculated by the values of current date and guest number = 1, later on search these values are required to be entered, otherwise a message will be displayed warning the user to enter values for check in,

check out and number of people. In the example below, when the employee writes "ank", the program returns hotels that are in Ankara.

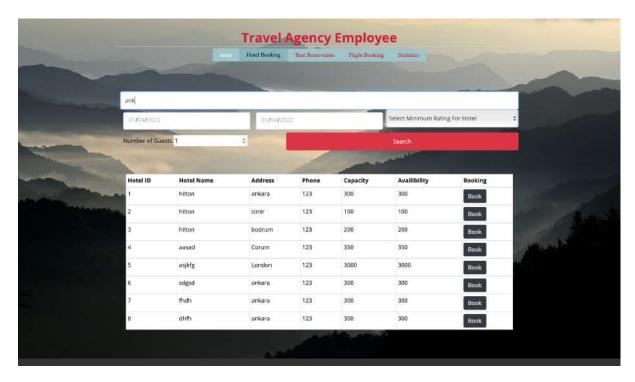


Figure 28

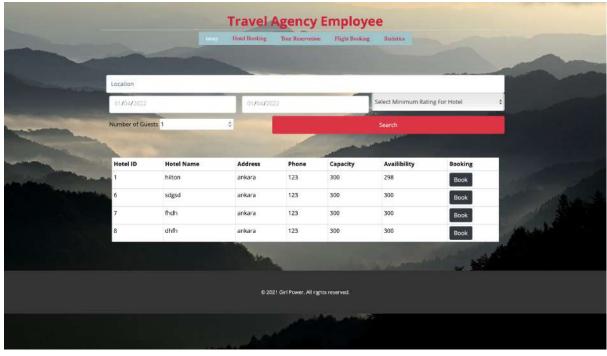


Figure 29 (Hotel Booking page, searching examples)

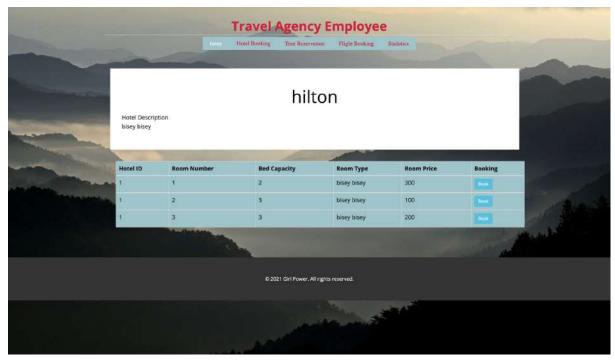


Figure 30 (Book hotel page)

When employees click the book button from the hotel booking page, this above page comes. Employees can see the room details with that specific hotel and can book the room for customers by clicking the book button.

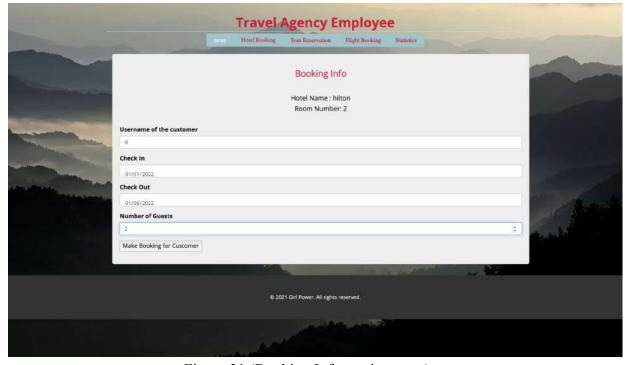


Figure 31 (Booking Information page)

Employees redirect the booking info page after clicking the book button and they can book selected rooms for customers with information they provide. After they provide the

information, and click the make booking for customer button, the booking is done and the database is updated.

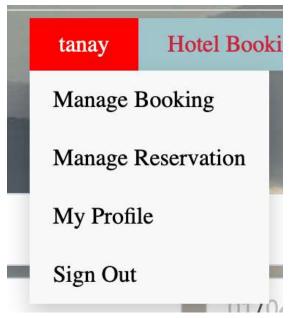


Figure 32 (Employee Navigation bar options)

Employees can select manage booking or manage reservation by clicking username on the navigation bar.

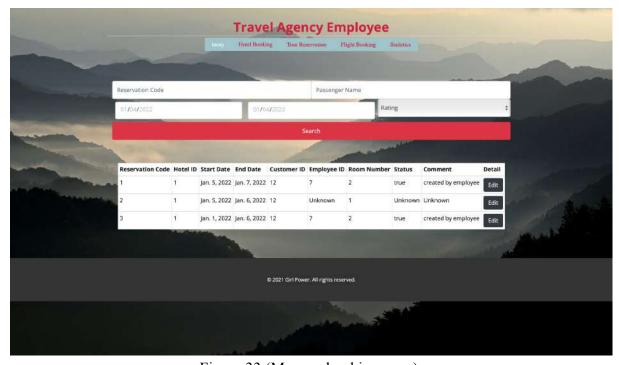


Figure 33 (Manage booking page)

This is Manage booking page, which is only accessible by employee. Employees can edit the information of booking then accept or reject the booking, adding comment while accepting or rejecting is also possible.

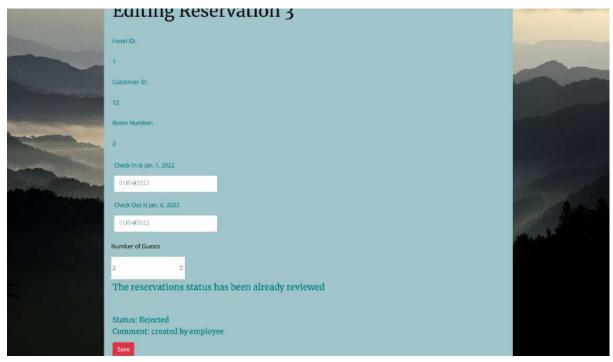


Figure 34 (Edit Reservation Page)

If booking has been already reviewed, accepting and rejecting is not possible, but editing the dates and number of people using the save has been provided.

5.3.3 Tours List

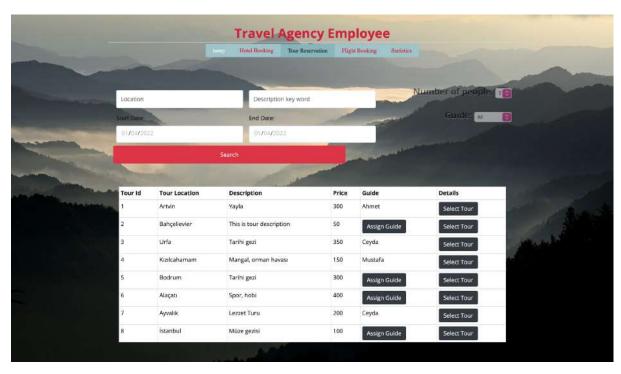


Figure 35 (Tour Reservation page)

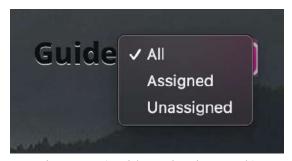


Figure 36 (Guide option in search)

Employees can see all the tours by clicking 'Tour Reservation' from the navigation bar. In the tour reservation page, there are lots of search keywords like location, description, tour start date, end date, number of people and guide. Employees can search for a demanded tour with those keywords. Tour reservation page is very similar for employees and customers unlike the guide option. Employees can list the all, assigned or unassigned tours in terms of guide. Also employees can see tours guide information and if a tour has no guide, employees can assign guide from the assign guide button.

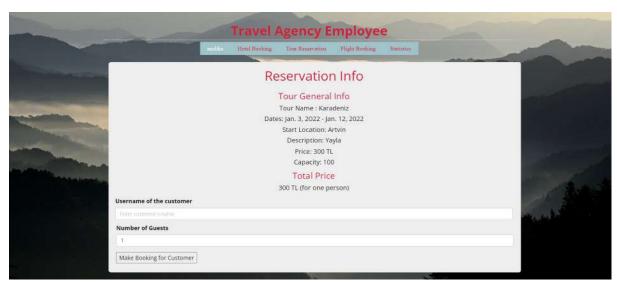


Figure 37 (Tour Reservation Complete Page)

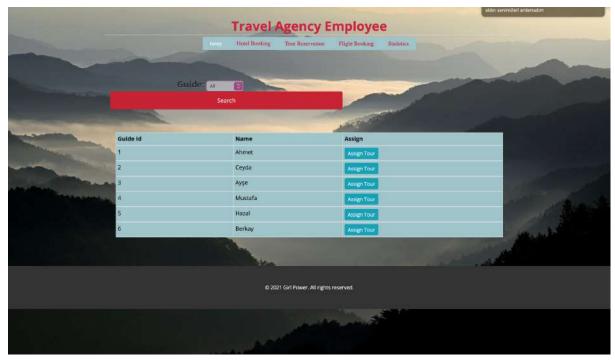


Figure 38 (Assign Tour page)

After clicking the assign guide button, this above page comes. Employees can list all available and unavailable guides. Employees can assign tours with the demanded guide by clicking the assign tour button. We click the assign guide button of the tour with id '5' and then assign tour to guide with id '3' to demonstrate what happens. As you can see in the above picture the guide information of the tour has been updated.

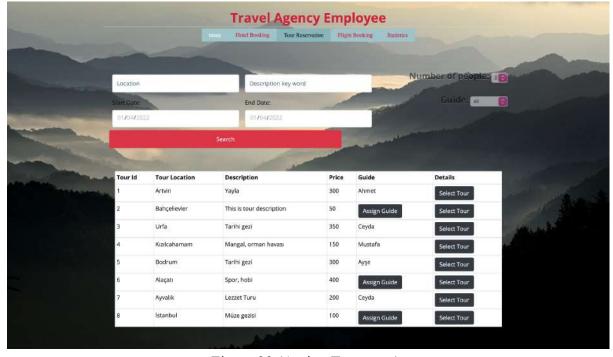


Figure 39 (Assign Tour page)

5.4. User's Manual for Guides

5.4.1. Welcome Page



Figure 40(Welcome page)

After the guide logs in to his/her account, a welcome page comes. It has a navigation bar. On the left side guide username is written. If the guide clicks that username bar, My Profile and Sign out options come. User can see his/her profile by clicking the My Profile option and can sign out by clicking the Sign out option.

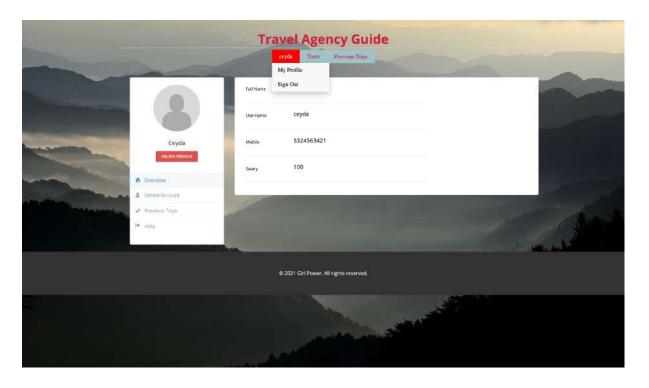


Figure 41 (My Profile page)

In the My Profile page, the guide can see his/her details and delete the account from the delete account option on the left.

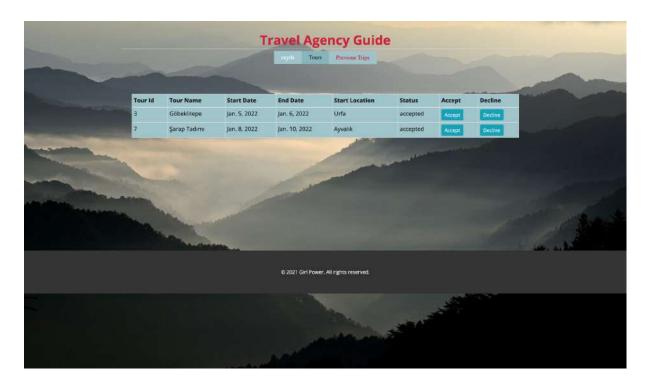


Figure 42(Tours page)

If the guide clicks the Tours button from the navigation bar, the above page comes. Guide can see all assigned tour details on that page and also the guide can see the tour status either accepted or declined.



Figure 43 (Tours page)

If the guide clicks the accept or decline button, the guide redirects to a feedback or reason page. If the guide accepts the tour, he/she can give feedback and if declines it, he/she can state the reason.

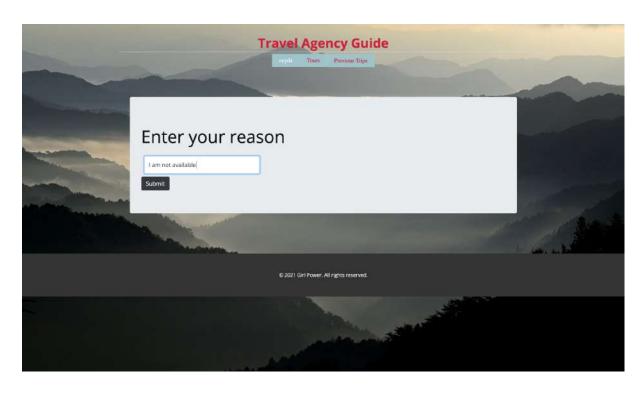


Figure 44 (Reason page)

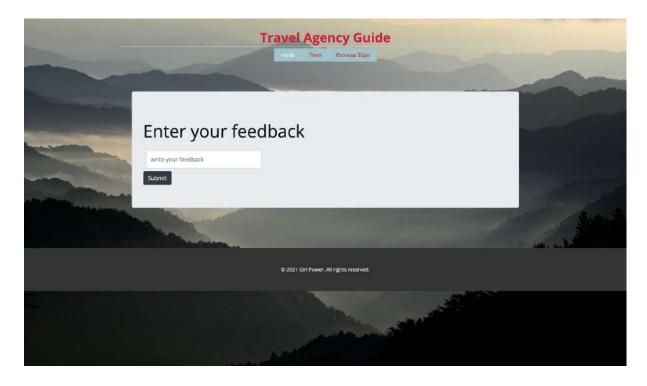


Figure 45 (Feedback page)



Figure 46 (Tours page)

When the guide clicks the accept or decline button, as you can see the status changed too. We decline the tour with id '3' to demonstrate the change. On the above tour page pictures the status of the tour was accepted.