

COMP132: Advanced Programming
Programming Project Report

KU Travel Agency

<Çağlar Çoban, 87105>

<Fall 2024>



General Demo Information:

List of users (customers and admins); provide username & password.

1. Username: admin, Password: admin, Type: Admin.
2. Username: Çağlar, Password: 123C, Type: Customer.
3. Username: Poyraz, Password: 123P, Type: Customer.
4. Username: Seher, Password: 123S, Type: Customer.

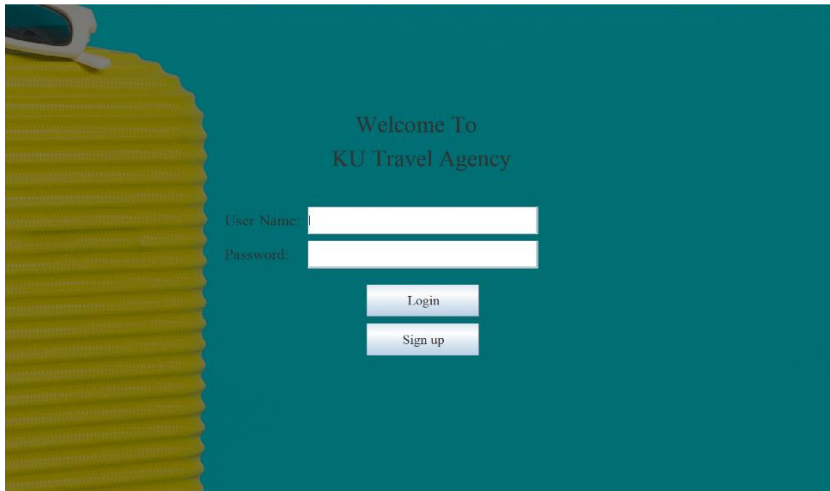
List of existing reservations made by the users.

1. Date-Time :2025 01 01 - 07:00:00, User: Çağlar, Reservation Action: Travel Package booking
2. Date-Time :2025 02 04 - 15:30:00, User: Çağlar, Reservation Action: Flight booking
3. Date-Time :2024 11 06 - 12:00:00, User: Çağlar, Reservation Action: Hotel Reservation
4. Date-Time :2025 01 01 - 21:00:00, User: Poyraz, Reservation Action: Flight booking
5. Date-Time :2025 04 02 - 12:00:00, User: Poyraz, Reservation Action: Travel Package booking
6. Date-Time :2024 07 20 - 20:00:00, User: Poyraz, Reservation Action: Hotel Reservation
7. Date-Time :2025 01 01 - 12:30:00, User: Seher, Reservation Action: Flight booking
8. Date-Time :2024 12 29 - 12:00:00, User: Seher, Reservation Action: Flight booking
9. Date-Time :2025 05 04 - 19:30:00, User: Seher, Reservation Action: Travel Package booking

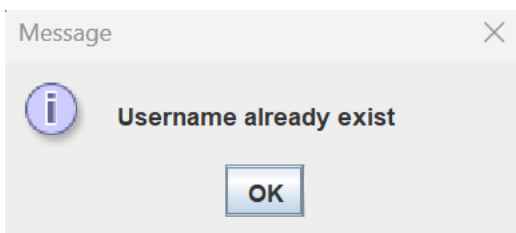
List of existing travel packages made by the admin.

1. Package name: Rome, General Information: The Rome,
 - a. Hotel: Marriott, Duration of stay: 3, Airline Option: Pegasus Airlines, Departure City: Istanbul, Arrival City: Rome, Departure Time: 12:00, Arrival Time: 14:00, Class: Economy, Available Seats: 104, Taxi Type: Yellow Taxi, Taxi Service area: Rome, Hotel Distance to Airport ;33.11
2. Package Name: Paris, General Information: The paris,
 - a. Hotel: Marriott, Duration of stay: 5, Airline Option: Pegasus Airlines, Departure City: Istanbul, Stopover City: Prague, Final Arrival City: Paris, Leg 1 Departure Time: 7:30, Leg 1 Arrival Time: 14:30, Leg 2 Departure Time: 12:30, Leg 2 Arrival Time: 14:30, Class: First Class, Available Seats: 34, Taxi Type: Orange Taxi, Taxi Service area: Paris, Hotel Distance to Airport: 18.03
3. Package name: Czech, General Information: Czech Republic,
 - a. Hotel: Marriott, Duration of stay: 5, Airline Option: GlobalJet, Departure City: Istanbul, Stopover City: Edinburgh, Final Arrival City: Prague, Leg 1 Departure Time: 15:30, Leg 1 Arrival Time: 1:30, Leg 2 Departure Time: 20:30, Leg 2 Arrival Time: 1:30, Class: First Class, Available Seats: 80, Taxi Type: Orange Taxi, Taxi Service area: Prague, Hotel Distance to Airport: 26.71
4. Package name: Dublin, General Information: Ireland,
 - a. Hotel: Hilton, Duration of stay: 3, Airline Option: Pegasus Airlines, Departure City: Paris, Arrival City: Dublin, Departure Time: 7:00, Arrival Time: 9:00, Class: Economy, Available Seats: 37, Taxi Type: Yellow Taxi, Taxi Service area: Dublin, Hotel Distance to Airport: 47.36

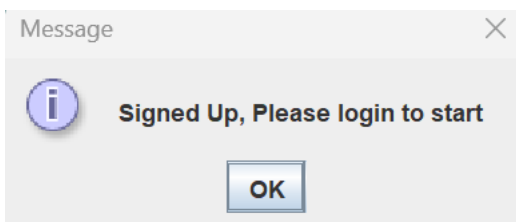
Sign up/Login Guide

The image shows a login page for 'KU Travel Agency'. The background is a teal color with a yellow corrugated metal texture on the left side. The text 'Welcome To KU Travel Agency' is centered at the top. Below this, there are two input fields: 'User Name:' and 'Password:'. To the right of each label is a white text box. Below the input fields are two buttons: 'Login' and 'Sign up'.

After you have determined your username and password to register, enter this username and password into the appropriate Text Fields as specified on the login page and click sign up.

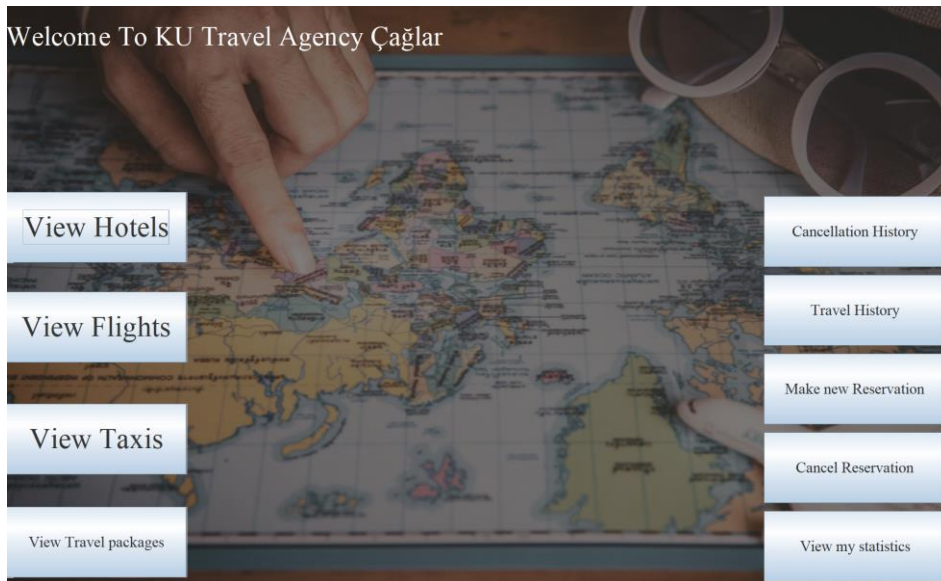


If the username is already used by someone else, the system will notify the user with a message like the one in the picture.



If there is no problem, the system will display this message and inform the user that it is ready for use. After the registration is completed, the user can log in to the system by entering the username and password used during registration and clicking the Login button.

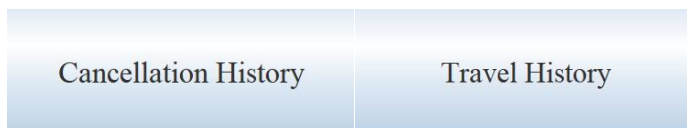
User's Guide



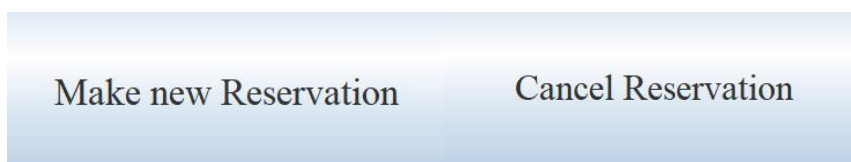
After the user logs in, a page like this will appear that is specific to the username.



If the user wants to see the hotels, travel packages, flights or taxis that can be actively booked, the user can access all entities in a table form by clicking on the view buttons on the left.

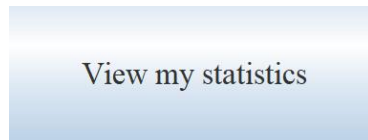


By clicking on the cancellation history button, the user can see the reservations they have cancelled. The user can see their past and future reservations with their times using the Travel history button.



With the Make new Reservation button, the user can make a flight reservation, taxi reservation, hotel reservation, a Travel package reservation prepared by the admin, or a reservation for a

custom travel package that user can create. With the cancel reservation button, the user can see future and past reservations and can click on reservations to cancel them, but cannot cancel past ones.



With the View my Statistics button, the user can see how many reservations they have made, how many reservations they have cancelled, how many reservations they have made successfully, their total spending, the average spending rate per reservation, and the success and failure rate of their reservations.

Admin's Guide



After entering the system with the admin login page, admin will encounter this page that says welcome specifically for admin's user name.



Admin can add a new travel package to the system using the creating new travel package button. Admin can also edit the features of an existing package in the system to suit your

needs with the Edit travel package button. If the admin wants to completely remove a travel package from the system, admin can permanently delete the travel package from the system by clicking the delete travel package button.



The view travel package, view flights, view taxis, view hotels buttons on the admin page are the same as those on the Customer page and display these entities in the table.



With the view all cancellations button and view all reservation button, admin allows customers to see their cancelled and completed or uncompleted reservations.



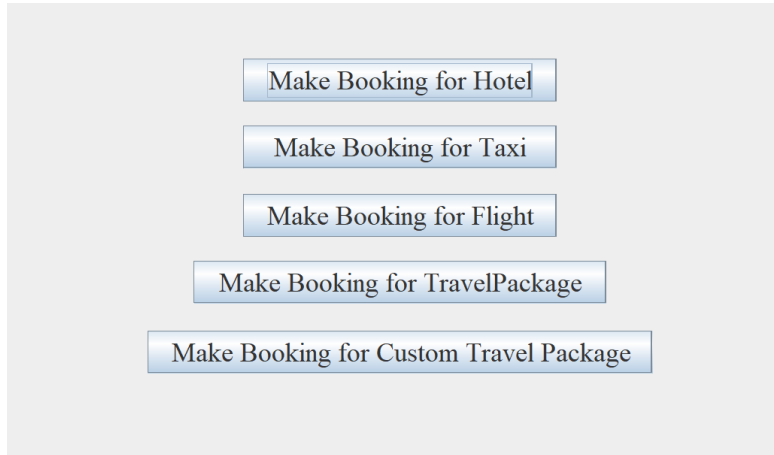
When the admin clicks on the edit specific user reservation button, the existing user table appears. When admin selects the user, he wants to edit, the admin can log in to this user's private customer page and make a reservation for this user, and also access this user's private statistics.



With the view statistics, which is special for the admin, you can see the total profit of the agency and which entities this profit is obtained from, how much revenue airlines earn according to their brands, how much revenue hotels earn according to their brands, how much revenue taxi type and the country the taxi is located in are shown in a table.

Creating a New Reservation Guide

To create a new reservation, the user must first click on the Make New Reservation button and then select the type of reservation from 5 different options on the page that appears.



Hotel booking screen

	Hotel Name	City	Room Type	Available Rooms	Price per Night (\$)	Distance to Airport (km)
1	Marriott	Istanbul	Standard	8	451	22.38
2	Marriott	Istanbul	Deluxe	14	203.3	22.38
3	Marriott	Istanbul	Suite	7	394.1	22.38
4	Marriott	Paris	Standard	16	124.81	18.03
5	Marriott	Paris	Deluxe	15	264.33	18.03
6	Marriott	Paris	Suite	12	498.7	18.03
7	Marriott	Berlin	Standard	16	195.85	30.15
8	Marriott	Berlin	Deluxe	12	408.7	30.15
9	Marriott	Berlin	Suite	12	421.36	30.15
10	Marriott	Rome	Standard	10	206.03	33.11
11	Marriott	Rome	Deluxe	12	460.43	33.11
12	Marriott	Rome	Suite	16	145.58	33.11
13	Marriott	Amsterdam	Standard	8	345.94	36.74
14	Marriott	Amsterdam	Deluxe	9	174.15	36.74
15	Marriott	Amsterdam	Suite	6	300.8	36.74
16	Marriott	Madrid	Standard	13	470.84	9.56
17	Marriott	Madrid	Deluxe	13	471.51	9.56
18	Marriott	Madrid	Suite	8	184.34	9.56
19	Marriott	Vienna	Standard	20	302.37	10.49
20	Marriott	Vienna	Deluxe	17	274.61	10.49
21	Marriott	Vienna	Suite	20	433.67	10.49
22	Marriott	Prague	Standard	15	484.32	26.71
23	Marriott	Prague	Deluxe	16	482.95	26.71
24	Marriott	Prague	Suite	12	389.19	26.71
25	Marriott	Budapest	Standard	8	111.58	30.52
26	Marriott	Budapest	Deluxe	15	455.25	30.52
27	Marriott	Budapest	Suite	14	187.48	30.52
28	Marriott	Dublin	Standard	19	109.94	18.29

Select Stayday

Select Date Year Month Day

Select Hour

If the user is only going to make a hotel reservation, he/she must click on the Make Reservation for Hotel button that appears and then select the hotel he/she wants to make a reservation from the table in the window that opens, select the number of days he/she will stay, the year, month, day and hour he/she wants to make the reservation by clicking on the combo boxes, and finally complete the reservation by clicking on the Complete Reservation button.

Flight booking screen

	Flight ID	Airline	Departu...	Arrival ...	Departu...	Arrival ...	Ticket ...	Price (\$)	Availabl...	Stopov...	Final Ar...	Leg 1 D...	Leg 1 A...	Leg 2 D...	Leg 2 A...
1	FL8604	Turkish ...	Istanbul	Paris	18:00	23:00	Economy	1375.01	26						
2	FL1331	Pegasu...	Istanbul				First Cla...	1103.77	34	Prague	Paris	7:30	9:30	12:30	14:30
3	FL5928	JavaAir	Istanbul	Berlin	16:00	21:00	Business	711.99	52						
4	FL9557	GlobalJet	Istanbul				Economy	1398.28	111	Amsterd...	Berlin	7:00	12:00	15:00	19:00
5	FL7392	Pegasu...	Istanbul	Rome	12:00	14:00	Economy	823.53	104						
6	FL3977	KUFly	Istanbul				Economy	1379.19	26	Prague	Rome	11:00	15:00	17:00	21:00
7	FL9290	Turkish ...	Istanbul	Amsterd...	12:00	16:00	Economy	946.7	65						
8	FL8863	KUFly	Istanbul				Business	520.14	71	Prague	Amsterd...	21:30	1:30	4:30	6:30
9	FL5954	EuroWi...	Istanbul	Madrid	15:00	17:00	First Cla...	706.47	49						
10	FL2172	AeroFly	Istanbul				Business	923.69	64	Oslo	Madrid	7:30	9:30	11:30	15:30
11	FL6473	Pegasu...	Istanbul	Vienna	13:00	15:00	Economy	626.91	113						
12	FL3167	Turkish ...	Istanbul				First Cla...	1752.32	57	Edinburgh	Vienna	15:30	18:30	21:30	1:30
13	FL2832	JavaAir	Istanbul	Prague	10:00	14:00	Economy	1485.13	85						
14	FL3519	GlobalJet	Istanbul				First Cla...	1962.57	80	Edinburgh	Prague	15:30	18:30	20:30	1:30
15	FL4343	JavaAir	Istanbul	Budapest	22:00	3:00	Economy	866.75	34						
16	FL4342	Comp1...	Istanbul				Economy	1664.29	69	Zurich	Budapest	20:30	23:30	0:30	3:30
17	FL7063	Pegasu...	Istanbul	Dublin	12:00	15:00	Economy	637.89	110						
18	FL7196	Anadolu...	Istanbul				Business	1113.7	102	Prague	Dublin	11:30	13:30	16:30	21:30
19	FL6364	KUFly	Istanbul	Copenh...	16:00	20:00	First Cla...	815.84	72						
20	FL7223	KUFly	Istanbul				Business	921.77	79	Dubai	Copenh...	14:00	20:00	21:00	2:00
21	FL4382	EuroWi...	Istanbul	Stockholm	8:00	13:00	Economy	1238.11	52						
22	FL7340	KUFly	Istanbul				Business	1039.57	52	Copenh...	Stockholm	11:30	16:30	18:30	22:30
23	FL9839	JavaAir	Istanbul	Helsinki	21:30	23:30	Economy	1122.45	55						
24	FL7699	GlobalJet	Istanbul				Business	664.13	99	Lisbon	Helsinki	6:00	10:00	11:00	13:00
25	FL1143	KUFly	Istanbul	Ankara	8:30	9:30	First Cla...	930.96	19						
26	FL7441	KUFly	Istanbul				First Cla...	161.63	16	Madrid	Ankara	19:00	0:00	2:00	5:00
27	FL8544	FlyDubai	Istanbul	Lisbon	16:00	19:00	First Cla...	1164.63	67						
28	FL9518	JavaAir	Istanbul				Business	1844.35	17	Amsterd...	Lisbon	18:30	23:30	1:30	4:30
29	FL4716	Pegasu...	Istanbul	Brussels	10:30	15:30	Business	1362.23	93						
30	FL6764	FlyDubai	Istanbul				Business	960.53	38	Vienna	Brussels	11:30	13:30	14:30	17:30
31	FL2886	Comp1...	Istanbul	Zurich	7:30	11:30	Economy	468.01	56						
32	FL8667	Comp1...	Istanbul				Economy	1758.13	79	Ankara	Zurich	19:30	21:30	23:30	2:30

Year: 0 Month: 1 Day: 1

Select Date time: 0 1 1

Complete Reservation

If the user is only going to make a flight reservation, he/she must click on the Make Reservation for Flight button and then select the flight he/she wants from the table in the window that opens and set the year, month, and day he/she wants this ticket by using the combo boxes. The reservation time will be automatically set to the time of the flight ticket, so the user does not need to select it.

Taxi booking screen

	City	Taxi Type	Available Taxis	Base Fare (\$)	Per KM Rate (\$)
1	Istanbul	Yellow Taxi	17	12.66	7.03
2	Istanbul	Orange Taxi	36	24.3	7.83
3	Istanbul	Black Taxi	11	43.4	2.77
4	Paris	Yellow Taxi	25	18.01	4.81
5	Paris	Orange Taxi	47	23.55	3.15
6	Paris	Black Taxi	31	10.2	7.59
7	Berlin	Yellow Taxi	10	46.63	4.62
8	Berlin	Orange Taxi	17	11.48	3.3
9	Berlin	Black Taxi	30	49.11	8.27
10	Rome	Yellow Taxi	42	24.53	4.03
11	Rome	Orange Taxi	28	43.38	6.97
12	Rome	Black Taxi	43	28.78	2.03
13	Amsterdam	Yellow Taxi	18	35.94	9.41
14	Amsterdam	Orange Taxi	10	21.91	3.08
15	Amsterdam	Black Taxi	36	19.03	5.8
16	Madrid	Yellow Taxi	11	11.67	2.67
17	Madrid	Orange Taxi	26	15.37	7.35
18	Madrid	Black Taxi	20	17.27	7.34
19	Vienna	Yellow Taxi	24	23.73	3.73
20	Vienna	Orange Taxi	46	20.63	7.44
21	Vienna	Black Taxi	32	37.83	4.56
22	Prague	Yellow Taxi	30	18.23	6.83
23	Prague	Orange Taxi	22	41.28	6.13
24	Prague	Black Taxi	28	29.96	9.6
25	Budapest	Yellow Taxi	47	29.64	6.24
26	Budapest	Orange Taxi	36	46.5	8.93
27	Budapest	Black Taxi	47	33.32	2.05

Select Distance: 0

Select Date: Year: 0 Month: 1 Day: 1

Select Hour: 1

Select Minute: 1

Complete Reservation

If the user is only going to make a taxi reservation, he/she must click on the Make Reservation for Taxi button and then select the taxi he/she wants from the table in the window that opens, then set the number of kilometres he/she will travel, the year, month, day, hour and minute he/she will travel by clicking on the combo boxes and make the reservation by saying Complete Reservation.

Travel Package booking screen

	Pack...	Gen...	Hotel	Dura...	Airline	Dep...	Arriv...	Dep...	Arriv...	Tick...	Avail...	Stop...	Final...	Leg ...	Leg ...	Leg ...	Leg ...	Taxi ...	Taxi ...	dista...	Total...
1	Rome	The ...	Marri...	3	Pega...	Istan...	Rome	12:00	14:00	Econ...	104							Yello...	Rome	33.11	1539...
2	Paris	The ...	Marri...	5	Pega...	Istan...				First ...	34	Prague	Paris	7:30	14:30	12:30	14:30	Oran...	Paris	18.03	2756...
3	Czech	Czec...	Marri...	5	Glob...	Istan...				First ...	80	Edin...	Prague	15:30	1:30	20:30	1:30	Oran...	Prague	26.71	5040...
4	Dublin	Ireland	Hilton	3	Pega...	Paris	Dublin	7:00	9:00	Econ...	37							Yello...	Dublin	47.36	1106...

Year

Month

Day

Select Date time

0

1

1

Complete Reservation

If the user is going to make a reservation for an existing travel package, after clicking on make a booking for a travel package, they should select the desired travel package from the table in the opened window and choose which year, which month, and which day they will go. The travel package reservation time is set according to the flight ticket, the number of days to stay is determined by the admin, and the route the taxi will take is automatically set as the distance between the hotel and the airport, so the user cannot make an external selection.

Custom Travel Package booking screen

	Flight ID	Airline	Departu...	Arrival ...	Departu...	Arrival ...	Ticket	Price (\$)	Availabl...	Stopov...	Final Ar...	Leg 1 D...	Leg 1 A...	Leg 2 D...	Leg 2 A...
1	FL8604	Turkish	Istanbul	Paris	16:00	23:00	Economy	1375.01	26						
2	FL1331	Pegasus	Istanbul	Paris	16:00	23:00	First Cla...	1103.77	34	Prague	Paris	7:30	9:30	12:30	14:30
3	FL5928	JavaAir	Istanbul	Berlin	16:00	21:00	Business	711.99	52						
4	FL9557	GlobalJet	Istanbul				Economy	1398.28	111	Amsterd...	Berlin	7:00	12:00	15:00	19:00
5	FL7392	Pegasus	Istanbul	Rome	12:00	14:00	Economy	623.63	104						
6	FL3977	KUfly	Istanbul				Economy	1379.19	26	Prague	Rome	11:00	15:00	17:00	21:00
7	FL9290	Turkish	Istanbul	Amsterd...	12:00	16:00	Economy	946.7	65						
8	FL8863	KUfly	Istanbul				Business	520.14	71	Prague	Amsterd...	21:30	1:30	4:30	6:30
9	FL5954	EuroWl...	Istanbul	Madrid	15:00	17:00	First Cla...	706.47	49						
10	FL2172	AeroFly	Istanbul				Business	923.69	54	Oslo	Madrid	7:30	9:30	11:30	15:30
11	FL5473	Pegasus	Istanbul	Vienna	13:00	15:00	Economy	626.91	113						
12	FL3167	Turkish	Istanbul				First Cla...	1752.32	57	Edinburgh	Vienna	15:30	18:30	21:30	1:30

Select Stayday

0

Year

Month

Day

Select Date

0

1

1

Complete Reservation

If the user wants to create their travel package and make a reservation for it, after clicking on the make booking for custom travel package button, they should select which plane, which hotel, which taxi, and how many days they want to stay from the three tables in the opened window, and then they should determine which year, which month and which day for the reservation date with the combo boxes. Since the custom travel package reservation time will be automatically set to the time of the flight ticket, the user does not need to make an external selection. When creating a custom travel package, if the user selects two entities that are incompatible with each other, for example, the plane lands in Berlin. Still, the hotel is in Amsterdam, the system informs the user that it will not create such a travel package. The user can get information about the entities from the text area on the right at each booking stage and see the total cost.

Creating a New Travel Package

It is impossible to create a permanent travel package from the user page and only the admin can create a permanent travel package.

Travel Package Creation screen

Flight ID	Airline	Departu...	Arrival ...	Departu...	Arrival ...	Ticket ...	Price (\$)	Availabl...	Stopov...	Final Ar...	Leg 1 D...	Leg 1 A...	Leg 2 D...	Leg 2 A...	
1	FL8604	Turkish	Istanbul	Paris	18:00	23:00	Economy	1375.01	26						
2	FL1331	Pegasus	Istanbul	Berlin	16:00	21:00	First Cla.	1103.77	34	Prague	Paris	7:30	9:30	12:30	14:30
3	FL5928	JetAir	Istanbul	Berlin	16:00	21:00	Business	711.99	52	Amsterd...	Berlin	7:00	12:00	15:00	19:00
4	FL9557	GlobalJet	Istanbul	Rome	12:00	14:00	Economy	623.63	104						
5	FL7392	Pegasus	Istanbul	Rome	12:00	14:00	Economy	623.63	104						
6	FL3977	KUfly	Istanbul	Amsterd...	12:00	16:00	Economy	1379.19	26	Prague	Rome	11:00	15:00	17:00	21:00
7	FL9290	Turkish	Istanbul	Amsterd...	12:00	16:00	Economy	946.7	65						
8	FL8863	KUfly	Istanbul	Madrid	15:00	17:00	Business	520.14	71	Prague	Amsterd...	21:30	1:30	4:30	6:30
9	FL9554	EuroW...	Istanbul	Madrid	15:00	17:00	First Cla.	706.47	49						
10	FL2172	AeroFly	Istanbul	Oslo	13:00	15:00	Business	923.69	64	Oslo	Madrid	7:30	9:30	11:30	15:30
11	FL6473	Pegasus	Istanbul	Vienna	13:00	15:00	Economy	626.91	113						
12	FL3167	Turkish	Istanbul	Edinburgh/Vienna	15:30	18:30	First Cla.	1752.32	57	Edinburgh/Vienna	15:30	18:30	21:30	1:30	

Hotel Name	City	Room Type	Available Rooms	Price per Night (\$)	Distance to Airport (km)	
1	Marriott	Istanbul	Standard	8	451	22.38
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6	Marriott	Paris	Suite	12	498.7	18.03
7	Marriott	Berlin	Standard	16	199.85	30.15
8	Marriott	Berlin	Deluxe	12	408.7	30.15
9	Marriott	Berlin	Suite	12	421.36	30.15
10	Marriott	Rome	Standard	10	206.03	33.11
11	Marriott	Rome	Deluxe	12	460.43	33.11

City	Taxi Type	Available Taxis	Base Fare (\$)	Per KM Rate (\$)	
1	Istanbul	Yellow Taxi	17	12.66	7.03
2	Istanbul	Orange Taxi	36	24.3	7.03
3	Istanbul	Black Taxi	11	43.4	2.77
4	Paris	Yellow Taxi	25	18.01	4.81
5	Paris	Orange Taxi	47	23.55	3.15
6	Paris	Black Taxi	31	10.2	7.59
7	Berlin	Yellow Taxi	10	46.63	4.62
8	Berlin	Orange Taxi	17	11.48	3.3
9	Berlin	Black Taxi	30	49.11	8.27
10	Rome	Yellow Taxi	42	24.53	4.03
11	Rome	Orange Taxi	28	43.38	6.97
12	Rome	Black Taxi	43	28.78	2.03

Select Stayday

Commision Rate:

PackageName :

Package Description:

To create a permanent travel package, the admin must first click on the Create New Travel Package button and then select a suitable flight, a suitable hotel, and a suitable taxi from the three tables in the opened window. The city where the flight lands, the city where the hotel is

located, and the city where the taxi serves must be the same, otherwise the system will not allow the creation of a travel package. After selecting these appropriately, a name must be determined for the package a description must be specified and this must be written in the necessary text fields. Then, the number of days the travel package is for must be selected from the necessary combo box and a special commission rate must be set. Finally, the travel package can be created by clicking on the Create Travel Package button.

User Statistics & Agency Reports

Users can see their special statistics by clicking on the view my statistics button.

User Statistics Page

The statistics of :Çağlar

Number Of Reservation : 3

Successful Reservations : 3.0

Canceled Reservations : 0.0

Total Amount Spent (\$) : 4671

Average Spending per Reservation : 1557

Reservation Success Rate : %100.0

Cancellation Rate : %0.0

User Name	Number of Res.	Total Amount Sp.	Successful Res.	Canceled Res.
1 Çağlar	3	4671.0	3	0
2 Pınar	3	2075.0	3	0
3 Seher	3	5154.0	3	0

Total Reservations Across All Users : 9

Successful :9

Canceled :0

Overall Success and Cancellation Rates

Successful : %100.0

Canceled : %0.0

Total Revenue Generated (\$) : 1840.0

From Flights:955

From Hotels :295

From Taxis:0

From Travel Packages :590

Admin Statistics Page

Airline	Earnings
1 AnadoluJet	2111.304
2 FlyDubai	751.8399999999999
3 Pegasus	1588.5199999999999
4 Turkish Airlines	2102.7899999999997
5 Pegasus Airlines	1899.4179999999998

Hotel Name	Earnings
1 Marriott	2937.1679999999997
2 Hilton	372.8854545454546

Taxi type - City	Earnings
1 Dublin Yellow Taxi	288.4343636363637
2 Roma Yellow Taxi	170.28439999999998
3 Brussels Black Taxi	137.89836

Admin can see more statistics and reports by clicking on the view statistics button. When the admin wants to see statistics of a specific user, he can click on the "Edit specific users reservations" button, select the existing user he wants from the table from the window that appears, go to that user's page, and see the special statistics of that user. When admin wants to see the complete statistics and report, he can click on the view statistics page on the admin page

and see the total number of reservations, the number of successful reservations, the number of unsuccessful reservations, the successful reservation rate, the unsuccessful reservation rate, the total amount each user will spend, how much income is earned, how much of this income comes from which entity and how much the airline tickets, hotel reservations and taxi reservations sold earn in a table specific to the companies.

How to check log information

Reservations in the logs

Reservation ID	Date - Time	User Name	Reservation Action	Price	StayDay	Details
1	2025-1-1_7:00:00	Çağlar	TravelPackage booking	1097.3389090909093	3	Flight Id :FL3411_ City:Dublin...
2	2025-2-4_15:30:00	Çağlar	Flight Booking	2102.7839999999997		Airline:Turkish Airlines_ Depar...
3	2024-11-6_12:00:00	Çağlar	Hotel Reservation	1471.32	3	Hotel Name:Marriott_ City:Berl...
4	2025-1-1_21:00:00	Poyraz	Flight Booking	751.8359999999999		Airline:FlyDubai_ Departure C...
5	2025-4-2_12:00:00	Poyraz	TravelPackage booking	1526.9272363636362	3	Flight Id :FL7392_ City:Rome_...
6	2024-7-20_20:00:00	Poyraz	Hotel Reservation	299.544	2	Hotel Name:Marriott_ City:Parl...
7	2024-12-29_12:00:00	Seher	Flight Booking	765.468		Airline:Pegasus Airlines_ Dep...
8	2025-5-4_19:30:00	Seher	TravelPackage booking	2227.09236	2	Flight Id :FL1079_ City:Brusse...
9	2025-1-1_12:30:00	Seher	Flight Booking	2111.304		Airline:AnadoluiJet_ Departure...

Travel Packages page

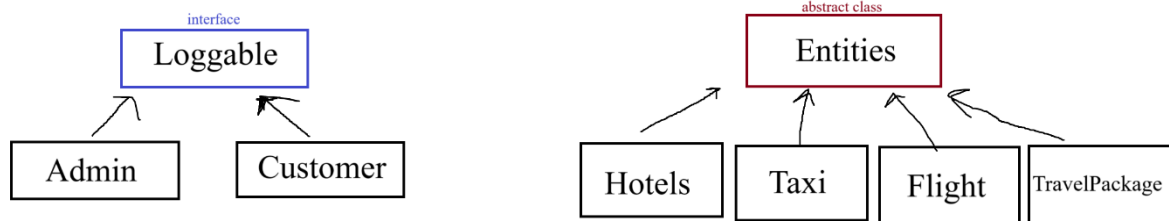
	Package n.	General Inf.	Hotel	Duration of	Airline Opt.	Departure ...	Arrival City	Departure ...	Arrival Time	Ticket Class	Available ...	Stopover C.	Final Arriv.	Leg 1 Dep.	Leg 1 Arriv.	Leg 2 Dep.	Leg 2 Arriv.	Taxi Type	Taxi Serv.	distance	Total Price
1	Rome	The Rome	Marriott	3	Pegasus Al.	Istanbul	Rome	12:00	14:00	Economy	104							Yellow Taxi	Rome	33.11	1539.65163
2	Paris	The paris	Marriott	5	Pegasus Al.	Istanbul				First Class	34	Prague	Paris	7:30	14:30	12:30	14:30	Orange Taxi	Paris	18.03	2756.3409...
3	Czech	Czech Rep.	Marriott	6	GlobalJet	Istanbul				First Class	80	Edinburgh	Prague	15:30	1:30	20:30	1:30	Orange Taxi	Prague	26.71	5040.56553
4	Dublin	Ireland	Hilton	3	Pegasus Al.	Paris	Dublin	7:00	9:00	Economy	37							Yellow Taxi	Dublin	47.36	1106.4834...

The information recorded in the logs can be accessed by the admin and the number of users, travel packages, reservations made, cancelled reservations, and payments are recorded in the logs. The system records the actions made in the Txt file in the logs folder. The admin can only look at the statistics page to see how many users there are and how many reservations have been made, all users are there in the form of a table. The admin can access these travel packages by clicking the view travel packages button to see the created travel packages. This information accessed by the admin is taken from the logs and presented to the admin via the GUI. Although the admin and users cannot see it, the travel package modifications made by the admin and each user entry are recorded in the logs.

Project Design Description:

Class relations

The scheme of class relations I used



```
public class TravelPackage extends Entities {  
  
    private String name;  
  
    private String generalInformation;  
  
    private Hotels hotels;  
  
    private Flight flight;  
  
    private Taxi taxi;  
  
    ...  
}
```

The travel package under the reservationentities package has a "Has-a" relationship with flight, hotels, taxi. At the same time, the travel package has a "Dependency" to these classes, that is, it creates its constructor and implements the “isavilable()” (checks whether the travel package can be created)" method by taking the flight, hotel, taxi objects.

```
public static void saveReservation(String Name,int stayday,double taxidistance,Flight flight,Taxi taxi,Hotels  
hotel,TravelPackage travelpackage,String year,String month,String day,String hour,String minute,String second)  
{  
  
    String fileName = "logs/ReservationLogs.txt";  
  
    ...  
}
```

The Reservation class under the travelagency packages class has a dependency relationship with the travelpackage, flight, hotels, taxi classes because the “saveReservation()”(saves reservation to folder) method requires either flight, taxi, hotel or travelpackage as parameters.

```
public static void EditTravelPackage(int id,String name, String description,double commisionrate,double discount,int flightindex,int hotelindex,int taxiindex,int stayday) {  
  
    String filePath = "data/FinalKU_Travel_Agency_TravelPackages.txt";  
  
    String modifiedpart ="";  
  
    ...  
}
```

The File helpers class located under the helpers packages class has a Dependency relationship with the travelpackage, flight, hotels, taxi classes because the “EditTravelPackage()”(changes travel packages) method requires flight, taxi, hotel and travelpackage as parameters.

Inheritances, type hierarchies, interfaces, abstract classes.

```
public interface Loggable {  
  
    String getUsername();  
  
    String getPassword();  
  
    String getType();  
  
    int getId();  
  
}
```

There is one interface in the project, that is the Loggable interface, this interface has two subclasses and they are Admin and Customer. In the Loggable interfaces, I implemented the getUsername(), getPassword, getType() and finally getId() methods that I think are necessary in

both the admin and customer class. With this Loggable interface, when the user enters the login page, I read the file once and put it in a list that holds the users (admin and customer) in the Loggable objects. After that, I take the username and password that the user enters in the gui and compare it with the Loggables in the list. If the matching person is admin, the user is directed to the admin page, if the matching person is customer, the matching person is directed to the customer page.

```
public abstract class Entities {  
  
    public abstract boolean isavailable();  
  
}
```

In this project, I also have one abstract class, the Entities class under the reservationentities package. This class contains the subclasses travelpackage, flight, taxi, hotels. Since I did not want any objects to be created from this class, I set it as abstract and also the classes flights hotels, taxis and travel package had a common method called “isavailable()”, so I created and used this abstract class. The class I used is also considered inheritance because all its subclasses (taxi, hotels, flight, travel package) extend this class.

GUI components.

I used java swing while making my gui in the project. I used eclipse window builder as GUI builder and I learned how to download and use the builder from the video “Java Dersleri #116 - GUI (Swing) - WindowBuilder Kurulumu ve Kullanımı”. In the project, I generally created a panel on a contentpane, made it absolute layout and used Jtable, Jlabel, Jtextarea, Jtextfield, Jpasswordfield, JcomboBox in a way that would be suitable for its function.

Code that takes given data and show that data in the table

```
table = new JTable();

List<String[]> list = FileHelpers.SourceToList("data/FinalKU_Travel_Agency_Dataset_Hotels.csv");

Object[][] dataArray = new Object[list.size()][7];
int rowcount = 1;
for (int i = 0; i < list.size(); i++) {
    String[] row = list.get(i);
    Object[] newRow = new Object[7];
    String[] newRow = new String[row.length+1];

    newRow[0] = String.valueOf(rowcount);
    for (int t = 1; t < row.length+1; t++) {
        newRow[t] = row[t-1];
    }
    ++rowcount;
    dataArray[i] = newRow;
}

table.setModel(new DefaultTableModel(
    dataArray,
    new String[] {
        "", "Hotel Name", "City", "Room Type", "Available Rooms", "Price per Night"
    }
));

scrollPane.setViewportView(table);
```

With Jtable, I pulled the data stored in the logs or the values from the data given directly and showed them to the user and made Jtable clickable with the addMouseListener method. After the user clicked, I ensured that the index of the row he clicked, such as hotel, taxi, flight and travelpackage, were taken from the file according to that index and created. I did operations such as new reservation records or deletion operations with the created entities.

Example of JLabel usage exist my code

```
User Name:
Password:

JLabel lblNewLabel_2 = new JLabel(" User Name:");
lblNewLabel_2.setFont(new Font("Times New Roman", Font.PLAIN, 25));
lblNewLabel_2.setBounds(356, 338, 130, 46);
contentPane.add(lblNewLabel_2);

JLabel lblNewLabel_2_1 = new JLabel(" Password:");
lblNewLabel_2_1.setFont(new Font("Times New Roman", Font.PLAIN, 25));
lblNewLabel_2_1.setBounds(356, 395, 130, 46);
contentPane.add(lblNewLabel_2_1);
```

With JLabel, I showed which value the user should enter where by writing text on the gui.

With JTextarea, when the user clicked on an entity from the table, I wrote the properties of this clicked entity to that textarea and showed the total cost to the user in this way.

Example usage of JTextField and JpasswordField exist in my code

```
passwordField = new JPasswordField();
passwordField.setBounds(496, 395, 368, 46);
contentPane.add(passwordField);

Usernamefield = new JTextField();
Usernamefield.setBounds(496, 338, 368, 46);
contentPane.add(Usernamefield);
Usernamefield.setColumns(10);
```

Çağlar

....|

I got username and password from the user with JTextField and JPasswordField. and according to this password and username received in the system, I realized whether the user can log in or register. At the same time, while creating a travelpackage with JTextField, I got the decriptpn and package name information from the admin. Similarly, when the user cancels a reservation, if there is a reason, I got that reason in the textfield and got that information and saved it.

Example usage of JComboBox exist my code

Select Stayday

Select Date Year Month Day

Select Hour

```
ArrayList<Integer> items = new ArrayList<>();
for(int a =0; a<50;a++) {
    items.add(a);
}
JComboBox<Integer> comboBox = new JComboBox<>(items.toArray(new Integer[0]));
comboBox.setBounds(119, 17, 121, 19);
panel.add(comboBox);
```

With Jcombobox, I got the user's reservation dates, duration of stay, and how many kilometers he wants to go for the taxi as values and printed them on the screen accordingly. I used the addActionListener method to add an action to the combo box. Thanks to these comboboxes, I also got information such as commission rate and stayday from the admin while creating a travelpackage and created a travelpack accordingly.

Example usage of using image exist my code

```
JLabel lbl_Background = new JLabel(new ImageIcon(getClass().getResource("LoginImage.jpg")));
lbl_Background.setBounds(0, -12, 2218, 1000);

contentPane.add(lbl_Background);
```

I learned how to add a GUI image from this video "Java Eclipse GUI Tutorial 7 # Add image, pictures and icons in JFrame". I downloaded the image I wanted and created a background by putting it in the JLabel.

.txt file processing details

Most of the txt files I created are in the logs folder and their names are Payments, Reservations, LoginLogs, Modifications, Users, Cancellations and also the FinalKU_Travel_Agency_TravelPackages file in the data folder.

The format of the payments folder

```
'Date-Time :"+ dateTime +"; User :"+ Name+"; Payment :"+ newprice +"; Booking type:" +type+"; Action  
action + "; Cost :"+ cost + "; Airline :"+ airline + "; Hotelname :"+ hotelname + "; Taxi type :"+ taxitype + "; Taxi City :"+ city)
```

The Payments folder stores the fee received from the user and the refund made and provides statistics accordingly.

The format of the Reservations folder

```
Flight == null && taxi==null&& hotel==null) {
double comissionrate = ((travelpackage.getComissionRate() +100.0)/100.0);
writer.println("Date-Time :"+ dateTime +"; User :"+ Name + "; Reservation Action : " + "TravelPackage booking" + "; Price : " + travelpackage.getPrice() + "; Stayday : " + travelpackage.getStayDay() + "
+"; Details -" + "Flight Id : " + travelpackage.getFlight().getFlightId() + " City:" + travelpackage.getHotels().getLocation()
+ " Hotel Name:" + travelpackage.getHotels().getName() + " Airline:" + travelpackage.getFlight().getAirline() + " Taxi Type:" + travelpackage.getTaxi().getType() + " Taxi City:" + travelpackage.getTaxi().ge
+ " Hotel Cost : " + ((travelpackage.getHotels().getPricePerNight()*travelpackage.getStayDay()*comissionrate) + "_ Flight Cost : " + (travelpackage.getFlight().getTicketPrice()*comissionrate) + "_ Taxi Cost :
+"; TotalCost : " + travelpackage.TotalCostnocon());
FileHelpers.savePaymentToFile(Name, travelpackage.getPrice(),travelpackage.TotalCostnocon(), "TravelPackage booking", "Make Reservation",0.0,0.0,travelpackage.getFlight().getAirline(),travelpackage.getHotels().getNa

travelpackage== null && taxi==null&& hotel==null) {
if(flight.getArrivalCity() == null) {
writer.println("Date-Time :"+ dateTime +"; User :"+ Name + "; Reservation Action : " + "Flight Booking" + "; Price : " + (flight.getTicketPrice()*1.2) + "; Stayday : " + "
+"; Details -" + "Airline:" + flight.getAirline() + " Departure City : " + flight.getDepartureCity() + " Stopover City:" + flight.getStopoverCity() + " Final Arrival City:" + flight.getFinalArrivalCity() + " Leg 1 D
+ "_ Leg 1 Arrival Time:" + flight.getLeg1ArrivalTime() + " Leg 2 Departure time:" + flight.getLeg2DepartureTime() + " Leg 2 Arrival Time:" + flight.getLeg2ArrivalTime() + "_ Class:" + flight.getTheClass() + "; T
}
else {
writer.println("Date-Time :"+ dateTime +"; User :"+ Name + "; Reservation Action : " + "Flight Booking" + "; Price : " + (flight.getTicketPrice()*1.2) + "; Stayday : " + "
+"; Details -" + "Airline:" + flight.getAirline() + " Departure City : " + flight.getDepartureCity() + " Arrival City : " + flight.getArrivalCity() + " Departure Time : " + flight.getDepartureTime() + " Arrival Time:
}
}

FileHelpers.savePaymentToFile(Name,flight.getTicketPrice(),flight.getTicketPrice(), "Flight Booking", "Make Reservation",20.0,0.0,flight.getAirline(),"","");

Flight == null && taxi==null&& hotel==null) {
writer.println("Date-Time :"+ dateTime +"; User :"+ Name + "; Reservation Action : " + "Taxi Booking" + "; Price : " + ((taxi.getBasefare()+(taxi.getFarePerKm()*taxidistance))*1.2) + "; Stayday : " + "
+"; Details -" + "City:" + taxi.getCity() + " Taxi Type : " + taxi.getType() + "; TotalCost : " + (taxi.getBasefare()+(taxi.getFarePerKm()*taxidistance)));
FileHelpers.savePaymentToFile(Name, (taxi.getBasefare()+(taxi.getFarePerKm()*taxidistance)),(taxi.getBasefare()+(taxi.getFarePerKm()*taxidistance)), "Taxi Booking", "Make Reservation",20.0,0.0,"",taxi.getType(),t

Flight == null && taxi==null&& travelpackage==null) {
writer.println("Date-Time :"+ dateTime +"; User :"+ Name + "; Reservation Action : " + "Hotel Reservation" + "; Price : " + (hotel.getPricePerNight()*stayday*1.2) + "; Stayday : " + stayday + "
+"; Details -" + "Hotel Name:" + hotel.getName() + " City:" + hotel.getLocation() + " Hotel Name:" + hotel.getName() + " Room Type:" + hotel.getRoomTypes() + " TotalCost : " + hotel.getPricePerNight()*stayday );
FileHelpers.savePaymentToFile(Name, (hotel.getPricePerNight()*stayday),(hotel.getPricePerNight()*stayday), "Hotel Reservation", "Make Reservation",20.0,0,"",hotel.getName(),"","");
```

```
getCity()
" + (travelpackage.getTaxi().getBasefare() + ((travelpackage.getTaxi().getFarePerKm()*travelpackage.getHotels().getDistanceToAirport()*comissionrate)

me(),travelpackage.getTaxi().getType(),travelpackage.getTaxi().getCity());

departure time:" + flight.getLeg1departuretime()
TotalCost : " + flight.getTicketPrice());

" + flight.getArrivalTime() + "_ Class:" + flight.getTheClass() + "; TotalCost : " + flight.getTicketPrice());

taxi.getCity());
```

The Reservations file helps me store future and past uncanceled reservations with their information.

The format of the Login logs folder.

```
"Date-Time :"+ dateTime +"; User :"+ Name +"; Action :Login "
```

The LoginLogs file helps me record each time a user logs in to the system.

The format of the Modification folder .

```

modifiedpart = t.getName() + "- is Edited by admin -" + "Changes[";
int hindex;
int findex;
int tindex;
if(!name.equals("")) {
    t.setName(name);
    modifiedpart += ", Name Changed :" + name;
}
if(!description.equals("")) {
    t.setGeneralInformation(description);
    modifiedpart += ", Description Changed :" + description;
}
if(commisionrate != -1) {
    t.setCommisionRate(commisionrate);
    modifiedpart += ", Commision Rate Changed :" + commisionrate;
}
if(discount != -1) {
    t.setPrice(t.getPrice()*((100-discount)/100));
    modifiedpart += ", Discount Changed :" + discount;
}
if(flightindex != -1) {
    t.setFlight(Flight.getFlightbyindex(flightindex));
    modifiedpart += ", Flight Changed :" + flightindex ;
}
if(hotelindex != -1) {
    t.setHotels(Hotels.getHotelbyindex(hotelindex));
    modifiedpart += ", Hotel Changed :" + flightindex ;
}
if(taxiindex != -1) {
    t.setTaxi(Taxi.getTaxibyindex(taxiindex));
    modifiedpart += ", Taxi Changed :" + taxiindex ;
}
}
if(stayday != -1) {
    t.setStayDay(stayday);
    modifiedpart += ", Stayday Changed :" + stayday ;
}
}
modifiedpart += " ]";

```

```
writemodification(modifiedpart);
```

```

public static void writemodification(String line) {
    String filepath = "logs/Modifications.txt";

    try (PrintWriter writer = new PrintWriter(new FileWriter(filepath, true))) {
        writer.println(line);
    } catch (IOException e) {
        e.printStackTrace();
    }
}

```

The Modifications file allows me to store changes made to travel packages.

The format of the Users folder

```
"Username:"+s + " - " + "Password:" + p + " - " + "Type:" + type + " - " + "Id:" + id);
```

The Users file allows me to store the created customers and the existing admin user's unique IDs with their names and passwords.

The format of the Cancellations folder is like on the screen

```
line + "; Cancel Reason :" + reason
```

The Cancellations file helps me store the canceled reservation when a reservation is canceled. With the cancelation file, canceled reservations can be shown to both the user and the admin. Line represents the reservation that cancelled.

The format of the FinalKU_Travel_Agency_TravelPackages folder.

```
writer.println("Package name ;" + travelPackage.getName() + " - "
+ " General Information ;"+ travelPackage.getGeneralInformation() + " - "
+ " Hotel ;" +travelPackage.getHotels().getName()+ " - "
+ " Duration of stay ;" + travelPackage.getStayDay() + " - "
+ "Airline Option ;" + travelPackage.getFlight().getAirline() + " - "
+ "Departure City ;" + travelPackage.getFlight().getDepartureCity() + " - "
+ "Arrival City ;" + travelPackage.getFlight().getArrivalCity()+ " - "
+ " Departure Time ;" + travelPackage.getFlight().getDepartureTime() + " - "
+ " Arrival Time ;" + travelPackage.getFlight().getArrivalTime() + " - "
+ "Class ;" + travelPackage.getFlight().getTheClass() + " - "
+ "Available Seats ;" + travelPackage.getFlight().getAvailableSeats()+ " - "
+ "Stopover City ;" +travelPackage.getFlight().getStopoverCity()+ " - "
+ "Final Arrival City ;" +travelPackage.getFlight().getFinalArrivalCity()+ " - "
+ "Leg 1 Departure Time ;" +travelPackage.getFlight().getLeg1departuretime()+ " - "
+ "Leg 1 Arrival Time ;" +travelPackage.getFlight().getLeg2ArrivalTime()+ " - "
+ "Leg 2 Departure Time ;" +travelPackage.getFlight().getLeg2DepartureTime()+ " - "
+ "Leg 2 Arrival Time ;" +travelPackage.getFlight().getLeg2ArrivalTime()+ " - "
+ "Taxi Type ;" + travelPackage.getTaxi().getType() + " - "
+ "Taxi Service area ;" + travelPackage.getTaxi().getCity() + " - "
+ "distance ;" + travelPackage.getHotels().getDistanceToAirport() + " - "
+ "Total Fare ;" + travelPackage.TotalCost() + " - "
+ "Hotel index ;" + hindex + " - "
+ "Flight index ;" + findex + " - "
+ "Taxi index ;" + tindex);
```

When a travelpackage is created, the FinalKU_Travel_Agency_TravelPackages file in the data folder helps me store it with its information.

Your implementation of finding availability for the reservations

My algorithm finding availability for reservations

```
if (arrivalCity == "") {
    if (finalArrivalCity.equals(city) && city.equals(cityt)&&flight.isavailable())&&taxi.isavailable())&&hotel.isavailable()) {
        TravelPackage t = new TravelPackage(packagename,info,hotel,flight,taxi,comrate,selectedItem);
        FileHelpers.CreatNewTravelPackage(t, rowh+1, rowf+1, rowt+1);
        JOptionPane.showMessageDialog(null, "TravelPackage Created", "Message",JOptionPane.INFORMATION_MESSAGE);
    }
    else {
        JOptionPane.showMessageDialog(null, "The Cities of Flight,Taxi,Hotel is not matching or availability of entities is false", "Message",JOptionPane.INFORMATION_MESSAGE);
    }
}
else {
    if (arrivalCity.equals(city) && city.equals(cityt)&& flight.isavailable())&&taxi.isavailable())&&hotel.isavailable()) {
        TravelPackage t = new TravelPackage(packagename,info,hotel,flight,taxi,comrate,selectedItem);
        FileHelpers.CreatNewTravelPackage(t, rowh+1, rowf+1, rowt+1);
        JOptionPane.showMessageDialog(null, "TravelPackage Created", "Message",JOptionPane.INFORMATION_MESSAGE);
    }
    else {
        JOptionPane.showMessageDialog(null, "The Cities of Flight,Taxi,Hotel is not matching", "Message",JOptionPane.INFORMATION_MESSAGE);
    }
}
}
```

To understand whether a reservation is suitable or not, I check if there are any empty seats or suitable tickets in the entities according to the type of reservation and allow the reservation accordingly. For the travel package, I also check if the city where the flight lands, the city where the hotel is located and the city where the taxi provides service are the same.

Your implementation of calculating the profits of the agency

The screen shots of calculating all money from payments

```
public static double[] CalculateTotalfrompayment() {
    double[] total = new double[4];
    String fileName = "logs/Payments.txt";
    double flightpay = 0.0;
    double hotelpay = 0.0;
    double taxipay = 0.0;
    double travelpay = 0.0;

    try (BufferedReader reader = new BufferedReader(new FileReader(fileName))) {
        String line;

        while ((line = reader.readLine()) != null) {
            String[] parts = line.split(";");
            if(parts.length ==1) {
                break;
            }
            if(parts[3].split(":")[1].equals("TravelPackage booking")) {
                travelpay += Double.parseDouble(parts[2].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Flight Booking")) {
                flightpay += Double.parseDouble(parts[2].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Hotel Reservation")) {
                hotelpay += Double.parseDouble(parts[2].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Taxi Booking")) {
                taxipay += Double.parseDouble(parts[2].split(":")[1]);
            }
        }
    }
}
```

The screen shots of calculating all costs from payments

```
public static double[] CalculateTotalcosts() {
    double[] total = new double[4];
    String fileName = "logs/Payments.txt";
    double flightpay = 0.0;
    double hotelpay = 0.0;
    double taxipay = 0.0;
    double travelpay = 0.0;

    try (BufferedReader reader = new BufferedReader(new FileReader(fileName))) {
        String line;
        int lineNumber = 0;
        while ((line = reader.readLine()) != null) {
            String[] parts = line.split(";");
            if(parts.length ==1) {
                break;
            }
            if(parts[3].split(":")[1].equals("TravelPackage booking")) {
                travelpay += Double.parseDouble(parts[5].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Flight Booking")) {
                flightpay += Double.parseDouble(parts[5].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Hotel Reservation")) {
                hotelpay += Double.parseDouble(parts[5].split(":")[1]);
            }
            if(parts[3].split(":")[1].equals("Taxi Booking")) {
                taxipay += Double.parseDouble(parts[5].split(":")[1]);
            }
        }
    }
}
```


To calculate the agency's profit, I add the total fee the agency receives from reservations from the payment folder and then subtract the cost the agency spent on these reservations from the same folder. In this way, I calculate the total income.

Implementation of Save/Load

Code that save new travel packages with taking TravelPackage object

```
public static void CreatNewTravelPackage(TravelPackage travelPackage,int hindex,int findex,int tindex) {
    String filepath = "data/FinalKU_Travel_Agency_TravelPackages.txt";

    try (PrintWriter writer = new PrintWriter(new FileWriter(filepath, true))) {
        writer.println("Package name ;" + travelPackage.getName() + " - "
            + " General Information ;" + travelPackage.getGeneralInformation() + " - "
            + " Hotel ;" + travelPackage.getHotels().getName() + " - "
            + " Duration of stay ;" + travelPackage.getStayDay() + " - "
            + " Airline Option ;" + travelPackage.getFlight().getAirline() + " - "
            + " Departure City ;" + travelPackage.getFlight().getDepartureCity() + " - "
            + " Arrival City ;" + travelPackage.getFlight().getArrivalCity() + " - "
            + " Departure Time ;" + travelPackage.getFlight().getDepartureTime() + " - "
            + " Arrival Time ;" + travelPackage.getFlight().getArrivalTime() + " - "
            + " Class ;" + travelPackage.getFlight().getTheClass() + " - "
            + " Available Seats ;" + travelPackage.getFlight().getAvailableSeats() + " - "
            + " Stopover City ;" + travelPackage.getFlight().getStopoverCity() + " - "
            + " Final Arrival City ;" + travelPackage.getFlight().getFinalArrivalCity() + " - "
            + " Leg 1 Departure Time ;" + travelPackage.getFlight().getLeg1DepartureTime() + " - "
            + " Leg 1 Arrival Time ;" + travelPackage.getFlight().getLeg1ArrivalTime() + " - "
            + " Leg 2 Departure Time ;" + travelPackage.getFlight().getLeg2DepartureTime() + " - "
            + " Leg 2 Arrival Time ;" + travelPackage.getFlight().getLeg2ArrivalTime() + " - "
            + " Taxi Type ;" + travelPackage.getTaxi().getType() + " - "
            + " Taxi Service area ;" + travelPackage.getTaxi().getCity() + " - "
            + " distance ;" + travelPackage.getHotels().getDistanceToAirport() + " - "
            + " Total Fare ;" + travelPackage.TotalCost() + " - "
            + " Hotel index ;" + hindex + " - "
            + " Flight index ;" + findex + " - "
            + " Taxi index ;" + tindex);
    }
    catch (IOException e) {
        e.printStackTrace();
    }
}
```

In general, for saving data, I used printwriter class in my code. With printwriter class, I can write the received string directly to the file like writing to the console.

Code in the project that load data and turn them into list of string list

```
public static List<String[]> Travelpackagetolist() {  
    List<String[]> h = new ArrayList<>();  
    String filepath = "Data/FinalKU_Travel_Agency_TravelPackages.txt";  
    try (BufferedReader br = new BufferedReader(new FileReader(filepath))) {  
        String line;  
  
        while ((line = br.readLine()) != null) {  
            String[] parts = line.split(" - ");  
            String[] c = new String[parts.length];  
            if(parts.length ==1) {  
                break;  
            }  
            for(int i =0; i < parts.length;i++) {  
                String p = parts[i].split(";")[1];  
                c[i] =p;  
            }  
  
            h.add(c);  
        }  
    } catch (IOException e) {  
    }  
  
    return h;  
}
```

In general, for loading data, I used the buffer reader class to read a file. Thanks to the buffer reader class, I can open the file and read it line by line, and I add these lines to a List<String[]> by dividing them into parts. With this list, I put the data in my hand into a table and showed it to the user. With this list, I can transform the information received into the necessary entities with the help of constructors.

References

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