

Introduction

The aim of this project is to provide a database system to store information about tourists and cruise ships. Different information is stored for different tours and different passengers, in order to facilitate the management and service of the company.

The background of this project is that the cruise line has more and more lines, cruise ships and passengers to manage more efficiently. Based on this DMBS, we can add, delete and modify cruise information at any time, including cruise facilities, itineraries, departure dates and sailing times. Passengers can choose different rooms, different itineraries and cancel their travel plans at any time.

Query Demonstration

1. Join query:

In this project I have passenger and manifest two tables, when crew what to know passenger's cabin number they can join these two tables to check.

Passenger table:

SELECT * FROM passenger;

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☐ Show all |
 Number of rows:
Filter rows:
Sort by key:

Extra options

		passenger_id Unique identifier for a passenger	passenger_fname Passenger first name	passenger_lname Passenger last name	passenger_dob Passenger's date of birth	passenger_gender Passenger gender(M for male, F for female, or X fo...	passenger_contact Passenger contact phone number
<input type="checkbox"/>	Edit Copy Delete	10	Smith	Harishi	2014-09-10	F	NULL
<input type="checkbox"/>	Edit Copy Delete	50	Coco	Mavry	2023-01-15	F	NULL
<input type="checkbox"/>	Edit Copy Delete	60	Jesse	Knight	2019-11-15	F	NULL
<input type="checkbox"/>	Edit Copy Delete	65	Chen	Yao	1996-09-27	F	0411224104
<input type="checkbox"/>	Edit Copy Delete	70	Jack	Frank	2011-09-15	M	NULL
<input type="checkbox"/>	Edit Copy Delete	74	Herry	Smith	1993-12-27	F	0411220023
<input type="checkbox"/>	Edit Copy Delete	79	Potter	Lilly	1991-06-27	M	0411220196
<input type="checkbox"/>	Edit Copy Delete	83	Kevin	Harry	1989-09-10	M	0411220756
<input type="checkbox"/>	Edit Copy Delete	87	Luna	Bob	1989-09-10	M	0411220912
<input type="checkbox"/>	Edit Copy Delete	89	Smith	Jackson	1978-10-07	M	0411224509

Manifest table:

Showing rows 0 – 4 (5 total, Query took 0.0002 seconds.)

SELECT * FROM manifest;

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☐ Show all |
 Number of rows: |
 Filter rows: |
 Sort by key:

	manifest_id Unique identifier for a manifest	passenger_id Unique identifier for a passenger	cruise_id Cruise identifier – used only for a single cruise	manifest_board_datetime Date/time passenger boarded ship	ship_code Identifier for ship	cabin_no Cabin number on given ship
<input type="checkbox"/> Edit Copy Delete	1	10	2	NULL	103	110
<input type="checkbox"/> Edit Copy Delete	2	89	4	2022-05-07	110	1001
<input type="checkbox"/> Edit Copy Delete	3	70	8	2022-10-29	105	8032
<input type="checkbox"/> Edit Copy Delete	4	50	3	2022-04-15	103	211
<input type="checkbox"/> Edit Copy Delete	5	79	4	2022-05-07	110	2022

☐ Check all |
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After join:

`SELECT * FROM passenger JOIN manifest ON passenger.passenger_id = manifest.passenger_id;`

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☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key:

Extra options

passenger_id Unique identifier for a passenger	passenger_fname Passenger first name	passenger_lname Passenger last name	passenger_dob Passenger's date of birth	passenger_gender Passenger gender(M for male, F for female, or X fo...	passenger_contact Passenger contact phone number	manifest_id	passenger_id	cruise_id	manifest_board_datetime	ship_code	cabin_no
10	Smith	Harishi	2014-09-10	F	NULL		1	10	2	NULL	110
89	Smith	Jackson	1978-10-07	M	0411224509	2	89	4	2022-05-07	110	1001
70	Jack	Frank	2011-09-15	M	NULL	3	70	8	2022-10-29	105	8032
50	Coco	Mavry	2023-01-15	F	NULL	4	50	3	2022-04-15	103	211
79	Potter	Lilly	1991-06-27	M	0411220196	5	79	4	2022-05-07	110	2022

By joining the two tables, we can clearly see the corresponding cabin number and ship number of each passenger.

SQL code:

```
SELECT
    *
FROM
    passenger
JOIN manifest ON passenger.passenger_id = manifest.passenger_id;
```

2. Aggregation query (functions such as min, max, average or count)

The crew wanted to find the oldest and youngest passengers to determine if any special items were needed for the voyage.

Showing rows 0 – 1 (2 total, Query took 0.0008 seconds.)

`SELECT * FROM passenger WHERE passenger_dob IN (SELECT MAX(passenger_dob) AS max_dob FROM passenger UNION ALL SELECT MIN(passenger_dob) AS min_dob FROM passenger);`

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☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key:

Extra options

passenger_id Unique identifier for a passenger	passenger_fname Passenger first name	passenger_lname Passenger last name	passenger_dob Passenger's date of birth	passenger_gender Passenger gender(M for male, F for female, or X fo...	passenger_contact Passenger contact phone number
50	Coco	Mavry	2023-01-15	F	NULL
89	Smith	Jackson	1978-10-07	M	0411224509

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SQL code:

```
SELECT
    *
```

```

FROM
    passenger
WHERE
    passenger_dob IN(
    SELECT
        MAX(passenger_dob) AS max_dob
    FROM
        passenger
    UNION ALL
    SELECT
        MIN(passenger_dob) AS min_dob
    FROM
        passenger
    );

```

3. Aggregation with group-by (aggregated value for each group)

This query can be used to check when crews wants to see the number of occupants in the rooms of different ships, sorted by the number of occupants from most to least.

`SELECT ship_code, cabin_class, AVG(cabin_capacity) AS avg_capacity FROM cabin GROUP BY ship_code, cabin_class ORDER BY ship_code, avg_capacity DESC;`

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☐ Show all | Number of rows: 25 | Filter rows:

Extra options

	ship_code	cabin_class	avg_capacity
	Identifier for ship	WC class of the cabin (B Balcony, I Interior, O Oc...	
<input type="checkbox"/> Edit Copy Delete	102	O	4.0000
<input type="checkbox"/> Edit Copy Delete	102	I	4.0000
<input type="checkbox"/> Edit Copy Delete	102	B	3.0000
<input type="checkbox"/> Edit Copy Delete	102	S	2.0000
<input type="checkbox"/> Edit Copy Delete	103	B	4.0000
<input type="checkbox"/> Edit Copy Delete	103	O	2.0000
<input type="checkbox"/> Edit Copy Delete	104	I	4.0000
<input type="checkbox"/> Edit Copy Delete	104	O	4.0000
<input type="checkbox"/> Edit Copy Delete	105	S	5.0000
<input type="checkbox"/> Edit Copy Delete	105	O	3.0000
<input type="checkbox"/> Edit Copy Delete	105	B	2.0000
<input type="checkbox"/> Edit Copy Delete	110	I	4.0000
<input type="checkbox"/> Edit Copy Delete	110	O	4.0000
<input type="checkbox"/> Edit Copy Delete	110	S	4.0000
<input type="checkbox"/> Edit Copy Delete	110	B	2.0000

SQL code:

```
SELECT
    ship_code,
    cabin_class,
    AVG(cabin_capacity) AS avg_capacity
FROM
    cabin
GROUP BY
    ship_code,
    cabin_class
ORDER BY
    ship_code,
    avg_capacity DESC;
```

4. Delete operation with Cascade

This system can delete a passenger's reservation when a passenger does not want to continue the trip.

SELECT * FROM manifest;

Profiling

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Show all

Number of rows: 25

Filter rows: Search this table

Sort by key: None

Extra options

	manifest_id Unique identifier for a manifest	passenger_id Unique identifier for a passenger	cruise_id Cruise identifier – used only for a single cruise	manifest_board_datetime Date/time passenger boarded ship	ship_code Identifier for ship	cabin_no Cabin number on given ship
<input type="checkbox"/> Edit Copy Delete	2	89	4	2022-05-07	110	1001
<input type="checkbox"/> Edit Copy Delete	3	70	8	2022-10-29	105	8032
<input type="checkbox"/> Edit Copy Delete	4	50	3	2022-04-15	103	211
<input type="checkbox"/> Edit Copy Delete	5	79	4	2022-05-07	110	2022

Check all

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1 row affected. (Query took 0.0007 seconds.)

DELETE FROM manifest WHERE manifest_id = 1;

Edit inline Edit Create PHP code

SQL code:




```
DELETE
FROM
```

```
manifest
WHERE
manifest_id = 1;
```




5. Update operation

This statement is required when a passenger's cell phone number is changed

This is original data.

<input type="checkbox"/>	 Edit	 Copy	 Delete	65	Chen	Yao	1996-09-27	F	0411224104
--------------------------	--	--	--	----	------	-----	------------	---	------------

After update:

<input type="checkbox"/>	 Edit	 Copy	 Delete	65	Chen	Yao	1996-09-27	F	0469987230
--------------------------	--	--	--	----	------	-----	------------	---	------------

SQL code:

```
UPDATE
passenger
SET
passenger_contact = '0469987230'
WHERE
passenger_id = 65;
```

Conclusion

For this project, it took more time to think about the whole design at first, maybe one or two weeks, and then the realistic structure and code of each part took about four or five weeks, and after finishing these, it took about two days to write the report. Overall, it was a challenging project for beginners.

When I design the database system, I think this was the most interesting part of this project because I can actually do something on it. The part of generating an idea was relatively boring, because it was not possible to make a reasonable model very well by a beginner.

The lecture materials and the real cases studies I googled were very helpful when I was implementing this project and allowed me to get some ideas from them to complete my project.

When a beginner wants to design a database, they must first understand the relationship of each entity, and the domain of each entity's attributes, and must be careful when determining the relationship of each entity, to make sure that the FK and PK must be correct. Only then can you achieve the effect you want when building the database system.