Query Explanation

- Public home -

1) search flight by departure and arrival city and departure date:

q = '''SELECT airline_name, flight_num, departure_airport, departure_time, arrival_airport, arrival_time, price, status, airplane_id FROM flight, airport AS a1, airport AS a2\ WHERE status = 'Upcoming' AND a1.airport_name = departure_airport AND a2.airport_name = arrival_airport AND (departure_airport = "{}" OR a1.airport_city = "{}") \ AND (arrival_airport = "{}" OR a2.airport_city = "{}") AND DATE(departure_time) = {}"""".format(depart_city, depart_city, arrival_city, arrival_city, depart_date)

2) search flight status by flight number and departure date:

q = 'SELECT airline_name, flight_num, status, departure_time, arrival_time FROM flight WHERE flight_num = {} AND (DATE(departure_time) = "{}" OR DATE(arrival_time) ="{}")'.format(flight_num, date, date)

- Log In -

Receive username, password, and user type to log in:

(Customer) q = 'SELECT * FROM customer WHERE email = %s and password = md5(%s)'

(Airline staff) q = 'SELECT * FROM airline_staff WHERE username = %s and password = md5(%s)'

(Booking agent) q = 'SELECT * FROM booking_agent WHERE email = %s and password = md5(%s)'

- Sign Up -

There are three pages for customers, airline staff, booking agents to sign up.

(Customer) Check if the user exists with q. Then insert the info if it doesn't exist. Otherwise, it returns error.
q = 'SELECT * FROM customer WHERE email = %s'
insert = "INSERT INTO customer VALUES(\'{}\', \'{}\', md5(\'{}\'), \'{}\', \'{}\', \'{}\', \'{}\', \'{}\', \'{}\', \'{}\', \'{}\', \'{}\')"

(Airline staff) Check if the user exists with q. Then insert the info if it doesn't exist. Otherwise, it returns error.
q = 'SELECT * FROM airline_staff WHERE username = %s'
insert = "INSERT INTO airline_staff VALUES(\'{}\', md5(\'{}\'), \'{}\', \'{}\', \'{}\', \'{}\')"

(Booking agent) Check if the user exists with q. Then insert the info if it doesn't exist.

Otherwise, it returns error.
q = 'SELECT * FROM booking_agent WHERE email = %s'
insert = "INSERT INTO booking_agent VALUES(\'{}\', md5(\'{}\'), \'{}\')"

- Customer -

1) Home page includes flights bought by this user and the same function of public home that could search flights and flight status.

q = 'SELECT purchases.ticket_id, ticket.airline_name, ticket.flight_num, departure_airport, departure_time, arrival_airport, arrival_time FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND customer_email = \'{}\'

q = '"SELECT airline_name, flight_num, departure_airport, departure_time, arrival_airport, arrival_time, price, status, airplane_id FROM flight, airport AS a1, airport AS a2\ WHERE status = 'Upcoming' AND a1.airport_name = departure_airport AND a2.airport_name = arrival_airport AND (departure_airport = "{}" OR a1.airport_city = "{}") \ AND (arrival_airport = "{}" OR a2.airport_city = "{}") AND DATE(departure_time) = {}"""".format(depart_city, depart_city, arrival_city, arrival_city, depart_date)

q = 'SELECT airline_name, flight_num, status, departure_time, arrival_time FROM flight WHERE flight_num = {} AND (DATE(departure_time) = "{}" OR DATE(arrival_time) = "{}")'.format(flight_num, date, date)

2) Home page also has the function to search specific flights by date, airport, city.

q = 'SELECT purchases.ticket_id, ticket.airline_name, ticket.flight_num, departure_airport, departure_time, arrival_airport, arrival_time FROM purchases, ticket, flight, airport WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND flight.departure_airport = airport.airport_name AND purchases.customer_email = %s AND flight.departure_time BETWEEN CAST(%s AS DATE) AND CAST(%s AS DATE) AND flight.departure_airport = %s AND flight.arrival_airport = %s'

3) Home page leads to the customer purchase page. Customer can book tickets by providing date, city, airport info. The results showed will be around 2 days of departure and arrival date. Then put the airline name and flight num in after check if there is any ticket available on this plane. Otherwise, it returns error. Lastly, update the purchase info.

q = 'SELECT * FROM flight, airport WHERE airport.airport_name = flight.departure_airport AND airport.airport_city = %s AND airport.airport_name = %s AND flight.status = "Upcoming" AND %s BETWEEN

DATE_SUB(flight.departure_time, INTERVAL 2 DAY) AND
DATE_ADD(flight.departure_time, INTERVAL 2 DAY) AND %s BETWEEN
DATE_SUB(flight.arrival_time, INTERVAL 2 DAY) AND
DATE_ADD(flight.arrival_time, INTERVAL 2 DAY) AND (flight.airline_name,
flight.flight_num) in (SELECT flight.airline_name, flight.flight_num FROM flight,
airport WHERE airport.airport_name=flight.arrival_airport AND airport.airport_city =
%s AND airport.airport_name = %s)'

(check available seats)
queryCount = 'SELECT COUNT(*) as count FROM ticket WHERE flight_num=%s
AND airline_name = %s’

(Generate ticket ID)
q = “SELECT COUNT(*) as count FROM ticket”

q = "SELECT * FROM flight, airplane WHERE flight.airline_name = %s AND
flight_num = %s AND flight.airplane_id = airplane.airplane_id AND
flight.airline_name = airplane.airline_name AND airplane.seats >= %s "
insert = 'INSERT INTO ticket VALUES(%s, %s, %s)'
insert = 'INSERT INTO purchases VALUES(%s, %s, %s, CURDATE())'

4) Home page has another function to search flights by given city, airport, date.

q = 'SELECT * FROM flight, airport WHERE airport.airport_name =
flight.departure_airport AND airport.airport_city = %s AND airport.airport_name = %s
AND flight.status = "Upcoming" AND %s BETWEEN
DATE_SUB(flight.departure_time, INTERVAL 2 DAY) AND
DATE_ADD(flight.departure_time, INTERVAL 2 DAY) AND %s BETWEEN
DATE_SUB(flight.arrival_time, INTERVAL 2 DAY) AND
DATE_ADD(flight.arrival_time, INTERVAL 2 DAY) AND (flight.airline_name,
flight.flight_num) in (SELECT flight.airline_name, flight.flight_num FROM flight,
airport WHERE airport.airport_name=flight.arrival_airport AND airport.airport_city =
%s AND airport.airport_name = %s)'

5) Home page leads to the page of spending track in a year and customer can
choose the preferred period of time. The result will be presented as a bar table.

(query for a year spending)
q = 'SELECT sum(price) as total FROM purchases, ticket, flight WHERE
purchases.ticket_id = ticket.ticket_id AND ticket.airline_name =
flight.airline_name AND ticket.flight_num = flight.flight_num AND
purchases.purchase_date BETWEEN DATE_SUB(CURDATE(), INTERVAL 1 YEAR)
AND CURDATE() AND purchases.customer_email = %s'

(query for 6 months spending and store results as a string to pass to the page)
q = f'SELECT sum(price) as spending FROM purchases, ticket, flight WHERE
purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name

AND ticket.flight_num = flight.flight_num AND year(purchases.purchase_date) = year(CURDATE() - interval {i} month) AND month(purchases.purchase_date) = month(CURDATE() - interval {i} month) AND purchases.customer_email = "{username}"'

(query for a specific period spending)
q = 'SELECT sum(price) as total FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND purchases.purchase_date BETWEEN CAST(%s AS DATE) AND CAST(%s AS DATE) AND purchases.customer_email = %s'

(query for 6 months spending and store results as a string to pass to the page)
q = 'SELECT sum(price) as spending FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND year(purchases.purchase_date) = year(%s - interval ' + str(i) + ' month) AND month(purchases.purchase_date) = month(%s - interval ' + str(i) + ' month) AND purchases.customer_email = %s'

6) Home page leads to the function searching top destinations in a year and 3 months by given airline name.

q = 'SELECT airport_city FROM (ticket NATURAL JOIN flight NATURAL JOIN purchases) JOIN airport WHERE flight.arrival_airport = airport_name AND flight.airline_name = %s AND purchase_date BETWEEN CURRENT_DATE - INTERVAL 3 MONTH AND CURRENT_DATE GROUP BY airport_city ORDER BY COUNT(airport_city) DESC LIMIT 3'

q = 'SELECT airport_city FROM (ticket NATURAL JOIN flight NATURAL JOIN purchases) JOIN airport WHERE flight.arrival_airport = airport_name AND flight.airline_name = %s AND purchase_date BETWEEN CURRENT_DATE - INTERVAL 1 YEAR AND CURRENT_DATE GROUP BY airport_city ORDER BY COUNT(airport_city) DESC LIMIT 3'

- Booking Agent -
1) Home page includes all flights bought for customers and the same function of public home that could search flights and flight status.
q = 'SELECT purchases.customer_email, purchases.ticket_id, ticket.airline_name, ticket.flight_num, departure_airport, departure_time, arrival_airport, arrival_time FROM purchases, ticket, flight, booking_agent WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND booking_agent.booking_agent_id = purchases.booking_agent_id AND booking_agent.email = %s AND departure_time > curdate() ORDER BY customer_email'

q = "'SELECT airline_name, flight_num, departure_airport, departure_time, arrival_airport, arrival_time, price, status, airplane_id FROM flight, airport AS a1, airport AS a2\ WHERE status = 'Upcoming' AND a1.airport_name = departure_airport AND a2.airport_name = arrival_airport AND (departure_airport = "{}" OR a1.airport_city = "{}") \ AND (arrival_airport = "{}" OR a2.airport_city = "{}") AND DATE(departure_time) = {}"""".format(depart_city, depart_city, arrival_city, arrival_city, depart_date)

q = 'SELECT airline_name, flight_num, status, departure_time, arrival_time FROM flight WHERE flight_num = {} AND (DATE(departure_time) = "{}" OR DATE(arrival_time) = "{}")'.format(flight_num, date, date)

2) Home page has a function searching specific flights bought before given date, city, airport.

q = 'SELECT purchases.customer_email, purchases.ticket_id, ticket.airline_name, ticket.flight_num, departure_airport, departure_time, arrival_airport, arrival_time FROM purchases, ticket, flight, airport, booking_agent WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND flight.departure_airport = airport.airport_name AND booking_agent.booking_agent_id = purchases.booking_agent_id AND booking_agent.email = %s AND flight.departure_time BETWEEN CAST(%s AS DATE) AND CAST(%s AS DATE) AND airport.airport_city = %s AND airport.airport_name = %s AND (flight.airline_name, flight.flight_num) in (SELECT flight.airline_name, flight.flight_num FROM flight, airport WHERE airport.airport_name=flight.arrival_airport AND airport.airport_city = %s AND airport.airport_name = %s AND flight.status = "Upcoming")'

3) Home page has a searching function for booking flights given city, airport, date.

q = 'SELECT * FROM flight, airport WHERE airport.airport_name = flight.departure_airport AND airport.airport_city = %s AND airport.airport_name = %s AND flight.status = "Upcoming" AND %s BETWEEN DATE_SUB(flight.departure_time, INTERVAL 2 DAY) AND DATE_ADD(flight.departure_time, INTERVAL 2 DAY) AND %s BETWEEN DATE_SUB(flight.arrival_time, INTERVAL 2 DAY) AND DATE_ADD(flight.arrival_time, INTERVAL 2 DAY) AND (flight.airline_name, flight.flight_num) in (SELECT flight.airline_name, flight.flight_num FROM flight, airport WHERE airport.airport_name=flight.arrival_airport AND airport.airport_city = %s AND airport.airport_name = %s)'

4) Home page is able to purchase tickets for customer.

(check if the agent works for the airline)
q = 'SELECT * FROM booking_agent_work_for WHERE email = %s AND airline_name = %s'

(check available seats)
queryCount = 'SELECT COUNT(*) as count FROM ticket WHERE flight_num = %s AND airline_name = %s’

(Generate ticket ID)
q = “SELECT COUNT(*) as count FROM ticket”

q = "SELECT * FROM flight, airplane WHERE flight.airline_name = %s AND flight_num = %s AND flight.airplane_id = airplane.airplane_id AND flight.airline_name = airplane.airline_name AND airplane.seats >= %s "

q = 'INSERT INTO ticket VALUES(%s, %s, %s)'

q = 'SELECT booking_agent_id FROM booking_agent WHERE email = %s'

q = 'INSERT INTO purchases VALUES (%s, %s, %s, CURDATE())'

5) Home page has another function to search flights by given city, airport, date.

query = 'SELECT * FROM flight, airport WHERE airport.airport_name = flight.departure_airport AND airport.airport_city = %s AND airport.airport_name = %s AND flight.status = "Upcoming" AND %s BETWEEN DATE_SUB(flight.departure_time, INTERVAL 2 DAY) AND DATE_ADD(flight.departure_time, INTERVAL 2 DAY) AND %s BETWEEN DATE_SUB(flight.arrival_time, INTERVAL 2 DAY)AND DATE_ADD(flight.arrival_time, INTERVAL 2 DAY) AND (flight.airline_name, flight.flight_num) in (SELECT flight.airline_name, flight.flight_num FROM flight, airport WHERE airport.airport_name=flight.arrival_airport AND airport.airport_city = %s AND airport.airport_name = %s)'

6) Home page leads to another page of view commission in past month and presents the total commission, average commission, and total amount of tickets sold. Also, agent can query the commission within a specific period given the start date and end date.

(get the agent id)
q = 'SELECT booking_agent_id FROM booking_agent WHERE email=%s'

q = 'SELECT sum(price)*.10 as totalComm FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND purchases.purchase_date BETWEEN DATE_SUB(CURDATE(), INTERVAL 30 DAY) AND CURDATE() AND purchases.booking_agent_id = %s'

q = 'SELECT count(*) as ticketCount FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND purchases.purchase_date BETWEEN

DATE_SUB(CURDATE(), INTERVAL 30 DAY) AND CURDATE() AND purchases.booking_agent_id = %s'

q = 'SELECT sum(price)*.10 as totalComm FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND purchases.purchase_date BETWEEN CAST(%s AS DATE) AND CAST(%s AS DATE) AND purchases.booking_agent_id = %s'

q = 'SELECT count(*) as ticketCount FROM purchases, ticket, flight WHERE purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND purchases.purchase_date BETWEEN CAST(%s AS DATE) AND CAST(%s AS DATE) AND purchases.booking_agent_id = %s'

7) Home page can lead agent to the page to view top 5 customers who bought the most tickets in past 6 months and a year.

(get the top customer and tickets amount)
q = 'SELECT customer_email, count(ticket_id) AS ticket_sales FROM booking_agent NATURAL JOIN purchases WHERE (purchase_date between date_sub(curdate(), interval 6 month) and curdate()) AND email = %s GROUP BY customer_email ORDER BY ticket_sales DESC LIMIT 5'

(get the total commission and customer email)
q = 'SELECT customer_email, sum(flight.price) AS commission FROM booking_agent, purchases, ticket, flight WHERE (purchase_date between date_sub(curdate(), interval 1 year) and curdate()) AND booking_agent.booking_agent_id = purchases.booking_agent_id AND purchases.ticket_id = ticket.ticket_id AND ticket.airline_name = flight.airline_name AND ticket.flight_num = flight.flight_num AND booking_agent.email = %s GROUP BY purchases.customer_email ORDER BY commission DESC LIMIT 5'

- Airline Staff -
1) Home page includes the upcoming flights of the airline and the same function of public home that could search flights and flight status.

q = 'SELECT * FROM flight WHERE airline_name = %s AND departure_time BETWEEN CURRENT_DATE AND CURRENT_DATE + INTERVAL 30 DAY'

q = '''SELECT airline_name, flight_num, departure_airport, departure_time, arrival_airport, arrival_time, price, status, airplane_id FROM flight, airport AS a1, airport AS a2\ WHERE status = 'Upcoming' AND a1.airport_name = departure_airport AND a2.airport_name = arrival_airport AND (departure_airport = "{}" OR a1.airport_city = "{}") \ AND (arrival_airport = "{}" OR a2.airport_city = "{}") AND DATE(departure_time) = {}"""'.format(depart_city, depart_city, arrival_city, arrival_city, depart_date)

```
q = 'SELECT airline_name, flight_num, status, departure_time, arrival_time FROM
flight WHERE flight_num = {} AND (DATE(departure_time) = "{}" OR
DATE(arrival_time) = "{}" )'.format(flight_num, date, date)
```

2) Home page has a function to search flights with given date and city.

(without departure and arrival city)

```
q = 'SELECT * FROM flight WHERE airline_name = "%s" AND
((convert(departure_time,date) BETWEEN "%s" AND "%s") OR
(convert(arrival_time,date) BETWEEN "%s" AND "%s"))'
```

(without departure city)

```
q = 'SELECT * FROM flight WHERE airline_name = %s AND (arrival_airport = %s
OR arrival_airport IN (SELECT airport_name FROM airport WHERE airport_city =
%s)) AND ((convert(departure_time,date) BETWEEN %s AND %s) OR
(convert(arrival_time,date) BETWEEN %s AND %s))'
```

(without arrival city)

```
q  = 'SELECT * FROM flight WHERE airline_name = %s AND (departure_airport =
%s OR departure_airport IN (SELECT airport_name FROM airport WHERE
airport_city = %s)) AND ((convert(departure_time,date) BETWEEN %s AND %s) OR
(convert(arrival_time,date) BETWEEN %s AND %s))'
```

(with departure and arrival city)

```
q = 'SELECT * FROM flight WHERE airline_name = "%s" AND (departure_airport =
"%s" OR departure_airport IN (SELECT airport_name FROM airport WHERE
airport_city = "%s")) AND (arrival_airport = "%s" OR arrival_airport IN (select
airport_name FROM airport WHERE airport_city = "%s")) AND
((convert(departure_time,date) BETWEEN "%s" AND "%s") OR
(convert(arrival_time,date) BETWEEN "%s" AND "%s"))'
```

3) Home page can also show customer on a certain flight.

```
q = 'SELECT customer_email FROM purchases NATURAL JOIN ticket WHERE
flight_num = %s AND airline_name = %s'
```

4) Home page can lead to add flights. (only for staff has admin permission)

(check permission type)

```
q = "SELECT * FROM permission WHERE permission_type = 'operator' AND
username = %s "
```

(check info accuracy)

```
q = 'SELECT * FROM airplane WHERE airplane_id = %s AND airline_name = %s'
```

```
q = 'SELECT * FROM airport WHERE airport_name = %s'
```

q = 'SELECT * FROM airport WHERE airport_name = %s'

insert = 'INSERT INTO flight VALUES (%s, %s, %s, %s, %s, %s, %s, %s, %s)'

5) Home page can lead to change flights status. (only for staff has Operator permission)

(check info accuracy)
q = 'SELECT * FROM flight WHERE flight_num = %s AND airline_name = %s'

q = 'UPDATE flight SET status = %s WHERE flight_num = %s AND airline_name = %s'

6) Home page can lead to add airplanes and show all planes after operation. (only for staff has admin permission)

(check info accuracy)
q = 'SELECT * FROM airplane WHERE airplane_id = %s'

q = 'INSERT INTO airplane VALUES (%s, %s, %s)'

q = 'SELECT * FROM airplane WHERE airline_name = %s'

7) Home page can lead to add airports. (only for staff has admin permission)

(check info accuracy)
q = 'SELECT * FROM airport WHERE airport_name = %s'

q = 'INSERT INTO airport VALUES (%s, %s)'

8) Home page can lead to see booking agents working for the airline. And top 5 agents will be showed who have the highest the total tickets sold in past month and year and the total commission in the year.

q = 'SELECT email, COUNT(ticket_id) AS ticket_sales FROM booking_agent NATURAL JOIN purchases NATURAL JOIN ticket WHERE (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 month) AND curdate()) AND airline_name = %s GROUP BY email ORDER BY ticket_sales DESC LIMIT 5'

q = 'SELECT email, COUNT(ticket_id) AS ticket_sales FROM booking_agent NATURAL JOIN purchases NATURAL JOIN ticket WHERE (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) AND airline_name = %s GROUP BY email ORDER BY ticket_sales DESC LIMIT 5'

q = 'SELECT email, SUM(price)*0.1 AS totalcommission FROM booking_agent

NATURAL JOIN purchases NATURAL JOIN ticket NATURAL JOIN flight WHERE (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) AND airline_name = %s GROUP BY email ORDER BY totalcommission DESC LIMIT 5'

9) Home page can lead to see the most frequent customer in the past year or search the history of a certain customer given the email.

q = 'SELECT customer.name, purchases.customer_email, COUNT(ticket.ticket_id) AS ticket_purchased FROM (purchases NATURAL JOIN ticket), customer WHERE customer.email = purchases.customer_email AND ticket.airline_name = %s AND (purchases.purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) GROUP BY purchases.customer_email ORDER BY ticket_purchased DESC LIMIT 1'

q = 'SELECT * FROM purchases NATURAL JOIN ticket WHERE airline_name = %s AND customer_email = %s'

10) Home page can lead to see the report of the year or within a given date or within a specific period.

q = 'SELECT year, month, COUNT(ticket_id) FROM (SELECT YEAR(purchase_date) AS year, MONTH(purchase_date) AS month, ticket_id FROM purchases NATURAL JOIN ticket WHERE (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) AND airline_name = %s) AS a GROUP BY year, month'

(count the tickets)
q = 'SELECT COUNT(ticket_id) AS sales FROM purchases NATURAL JOIN ticket WHERE airline_name = %s AND purchase_date BETWEEN %s AND %s'

q = 'SELECT year, month, COUNT(ticket_id) FROM (SELECT YEAR(purchase_date) AS year, MONTH(purchase_date) AS month, ticket_id FROM purchases NATURAL JOIN ticket WHERE (purchase_date BETWEEN %s AND %s) AND airline_name = %s) AS a GROUP BY year, month'

(count the tickets)
q = 'SELECT COUNT(ticket_id) AS sales FROM purchases NATURAL JOIN ticket WHERE airline_name = %s AND (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 ' + period + ') AND curdate())'

q = 'SELECT year, month, COUNT(ticket_id) FROM (SELECT YEAR(purchase_date) AS year, MONTH(purchase_date) AS month, ticket_id FROM purchases NATURAL JOIN ticket WHERE (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 ' + period + ') AND curdate()) AND airline_name = %s) AS a GROUP BY year, month'

11) Home page leads to see the staff's revenues in past 3 months and a year with booking agents' work and without them.

(without agent in 3 months)
q = 'SELECT SUM(price) FROM flight NATURAL JOIN purchases NATURAL JOIN ticket WHERE airline_name = %s AND (purchase_date BETWEEN date_sub(curdate(), INTERVAL 3 month) AND curdate()) AND booking_agent_id IS null'

(with agent in 3 months)
q = 'SELECT SUM(price) FROM flight NATURAL JOIN purchases NATURAL JOIN ticket WHERE airline_name = %s AND (purchase_date BETWEEN date_sub(curdate(), INTERVAL 3 month) AND curdate()) AND booking_agent_id IS NOT null'

(without agent in year)
q = 'SELECT SUM(price) FROM flight NATURAL JOIN purchases NATURAL JOIN ticket WHERE airline_name = %s AND (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) AND booking_agent_id IS null'

(with agent in year)
q = 'SELECT SUM(price) FROM flight NATURAL JOIN purchases NATURAL JOIN ticket WHERE airline_name = %s AND (purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()) AND booking_agent_id IS NOT null'

12) Home page leads to see top 5 destination in 3 months and year.

q = 'SELECT flight.arrival_airport, airport.airport_city, COUNT(*) AS total_purchase FROM (flight NATURAL JOIN purchases NATURAL JOIN ticket),airport WHERE flight.arrival_airport = airport.airport_name AND ticket.airline_name = %s AND purchases.purchase_date BETWEEN date_sub(curdate(), INTERVAL 3 month) AND curdate() GROUP BY flight.arrival_airport, airport.airport_city ORDER BY count(*) DESC LIMIT 5'

q = 'SELECT flight.arrival_airport, airport.airport_city, COUNT(*) AS total_purchase FROM (flight NATURAL JOIN purchases NATURAL JOIN ticket),airport WHERE flight.arrival_airport = airport.airport_name AND ticket.airline_name = %s AND purchases.purchase_date BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate() GROUP BY flight.arrival_airport, airport.airport_city ORDER BY count(*) DESC LIMIT 5'

13) Home page leads to grant new permission. If staff who has admin permission grants himself operator permission, staff needs to log out then log in to refresh the page. (only for staff has admin permission)

(check permission)
q = 'SELECT * FROM airline_staff NATURAL JOIN permission WHERE username = %s AND permission_type = "admin"'

q = 'SELECT * FROM airline_staff WHERE username = %s AND airline_name = %s'

q = 'INSERT INTO permission VALUES(%s, %s)'

14) Home page leads to add agents. (only for staff has admin permission)

(check info accuracy)
q = 'SELECT * FROM booking_agent_work_for WHERE email = %s'

q = 'INSERT INTO booking_agent_work_for VALUES (%s, %s)'

15) Home page leads to see flight status statistics.
(count on-time and delayed flights in past 3 months)
q = 'SELECT COUNT(DISTINCT flight_num) FROM flight WHERE airline_name = %s AND status = "On-time" AND departure_time BETWEEN date_sub(curdate(), INTERVAL 3 month) AND curdate()'
q = 'SELECT COUNT(DISTINCT flight_num) FROM flight WHERE airline_name = %s AND status = "Delayed" AND departure_time BETWEEN date_sub(curdate(), INTERVAL 3 month) AND curdate()'

(count on-time and delayed flights in past year)
q = 'SELECT COUNT(DISTINCT flight_num) FROM flight WHERE airline_name = %s AND status = "On-time" AND departure_time BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()'
q = 'SELECT COUNT(DISTINCT flight_num) FROM flight WHERE airline_name = %s AND status = "Delayed" AND departure_time BETWEEN date_sub(curdate(), INTERVAL 1 year) AND curdate()'