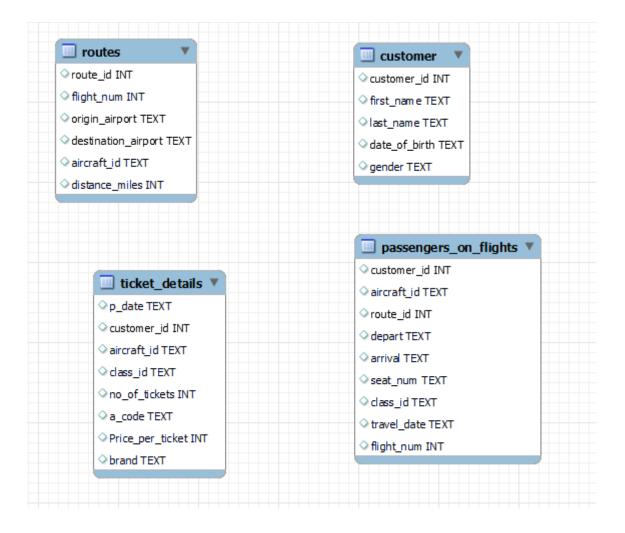
Course-End Project

Air Cargo Analysis

1. Create an ER diagram for the given airlines database.



2. Write a query to create route_details table using suitable data types for the fields, such as route_id, flight_num, origin_airport, destination_airport, aircraft_id, and distance_miles. Implement the check constraint for the flight number and unique constraint for the route_id fields. Also, make sure that the distance miles field is greater than 0.

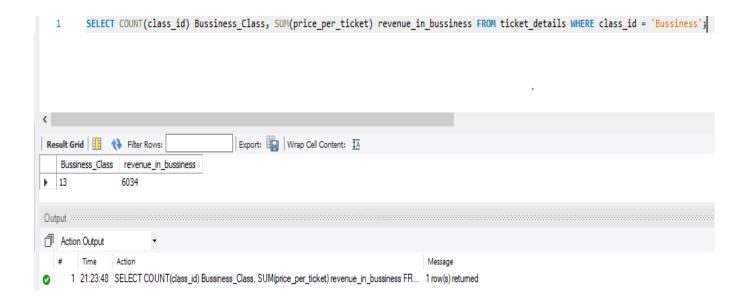
```
1 • ⊖ CREATE TABLE route_details (
              route_id INT NOT NULL UNIQUE,
  2
              flight_num INT
                                NOT NULL CHECK (flight_num > 0),
              origin_airport CHAR (3) NOT NULL,
              destination_airport CHAR (3) NOT NULL,
  5
              aircraft_id INT
                                      NOT NULL,
  6
                                           NOT NULL CHECK (distance_miles > 0),
  7
              distance miles SMALLINT
              PRIMARY KEY (route id)
  9
 10
 11
 12
Output ::
Action Output
       Time
               Action
     1 23:01:21 CREATE TABLE route_details ( route_id INT NOT NULL UNIQUE, flight_numINT NOT NULL... 0 row(s) affected
```

3.Write a query to display all the passengers who have travelled in routes 01 to 25 from the passengers_on_flights table

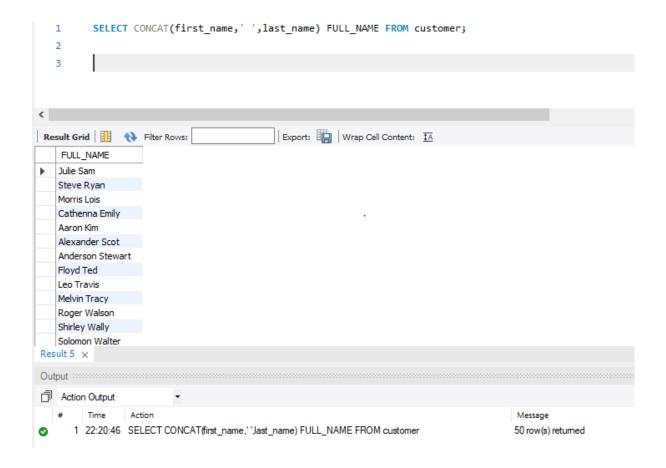
1 • SELECT * FROM passengers_on_flights where route_id between 01 and 25;

sult Grid 🔢	ws:	Export: Wrap Cell Content: 🔼							
customer_id	aircraft_id	route_id	depart	arrival	seat_num	class_id	travel_date	flight_nu	
2	767-301ER	4	JFK	LAX	01E	Economy	02-09-2018	1114	
1	ERJ142	9	DEN	LAX	01EP	Economy Plus	26-12-2019	1119	
5	767-301ER	12	ABI	ADK	02B	Bussiness	02-07-2018	1122	
5	ERJ142	18	ANI	BGR	02E	Economy	06-05-2020	1128	
4	767-301ER	5	LAX	JFX	02FC	First Class	06-04-2020	1115	
7	767-301ER	20	AVL	BOI	03B	Bussiness	08-07-2020	1130	
5	ERJ142	22	BGR	BJI	03E	Economy	31-05-2020	1132	
4	767-301ER	4	JFK	LAX	03FC	First Class	30-04-2020	1114	
11	767-301ER	5	LAX	JFX	04B	Bussiness	12-11-2020	1115	
17	A321	13	ABI	ADK	04EP	Economy Plus	03-06-2019	1123	
9	767-301ER	15	CAK	ANI	04FC	First Class	10-09-2020	1125	
11	767-301ER	4	JFK	LAX	05B	Bussiness	09-11-2020	1114	
10	A321	10	HNL	DEN	05E	Economy	11-10-2020	1120	
15	A321	14	BQN	CAK	06B	Bussiness	02-11-2018	1124	
13	A321	13	ADK	BQN	06FC	First Class	05-01-2019	1123	
22	ERJ142	22	BGR	BJI	07EP	Economy Plus	09-02-2020	1132	
24	A321	14	BQN	CAK	08B	Bussiness	22-07-2019	1124	
25	767-301ER	23	BLV	BFL	09B	Bussiness	07-03-2019	1133	
50	A321	21	BFL	BET	10EP	Economy Plus	15-08-2020	1131	
29	ERJ142	9	DEN	LAX	11B	Bussiness	03-05-2018	1119	
44	767-301ER	15	CAK	ANI	11FC	First Class	06-10-2020	1125	

4. Write a query to identify the number of passengers and total revenue in business class from the ticket_details table.



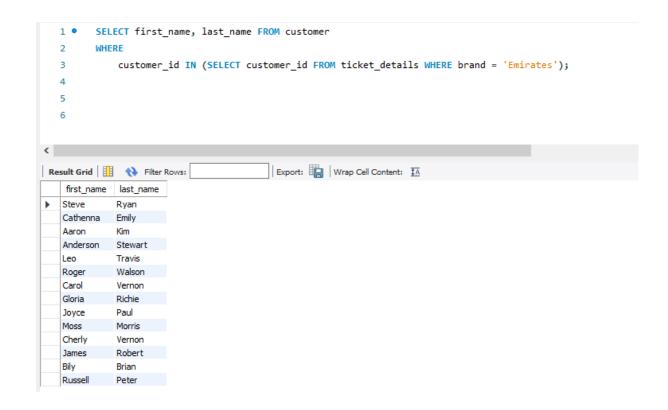
5. Write a query to display the full name of the customer by extracting the first name and last name from the customer table.



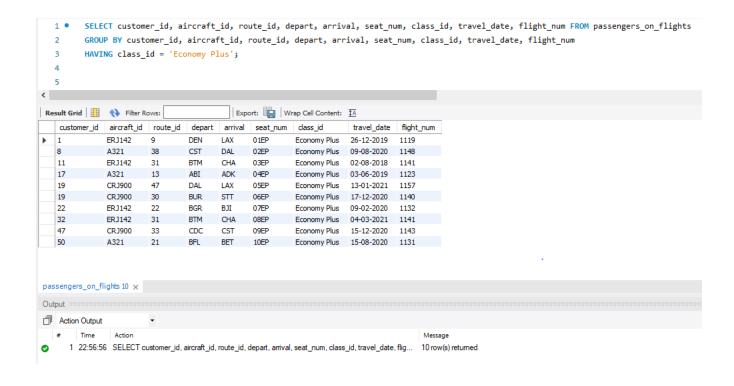
6. Write a query to extract the customers who have registered and booked a ticket from the customer and ticket_details tables.

```
SELECT customer.customer_id,customer.first_name,customer.last_name,ticket_details.p_date
          FROM customer
          INNER JOIN ticket_details
   3
          ON customer.customer_id = ticket_details.customer_id;
   5
   6
   7
Result Grid
               Filter Rows:
                                              Export: Wrap Cell Content: IA
    customer_id
                first_name
                           last_name p_date
                Cherly
                           Vernon
                                      26-12-2018
   22
                           Eri
                                     02-02-2020
               Pheny
   21
               Chirstv
                           Josh
                                     03-03-2020
               Cathenna
                           Emily
                                     04-04-2020
               Aaron
                           Kim
                                     05-05-2020
               Anderson
                          Stewart
                                     07-07-2020
                           Ted
                                     08-08-2020
               Leo
                                     09-09-2020
               Melvin
                           Tracy
                                     10-10-2020
   11
                           Walson
                                     11-11-2020
               Roger
                           Paul
   19
                                      12-12-2020
                Joyce
               Solomon
                           Walter
                                     01-01-2019
   13
                                     02-02-2019
   14
               Carol
                           Vernon
   25
               Moss
                           Morris
                                     03-03-2019
    16
                Chirstine
                                     04-04-2019
    17
               Catherine
                           Shad
                                     03-05-2019
    18
                           Richie
                                      06-06-2019
   24
               Calvin
                                     07-07-2019
                           Willis
```

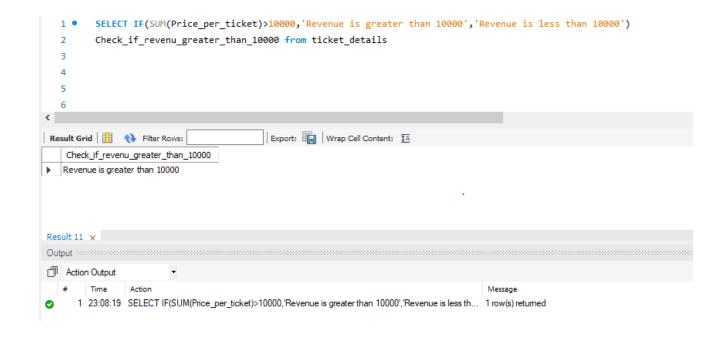
7. Write a query to identify the customer's first name and last name based on their customer ID and brand (Emirates) from the ticket_details table.



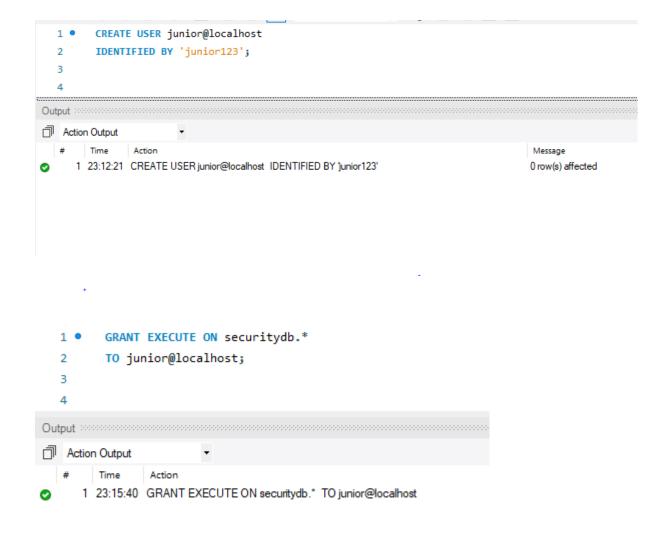
8. Write a query to identify the customers who have travelled by *Economy Plus* class using Group By and Having clause on the passengers_on_flights table.



9. Write a query to identify whether the revenue has crossed 10000 using the IF clause on the ticket_details table.



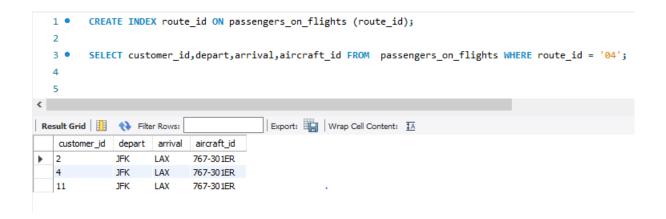
10.Write a query to create and grant access to a new user to perform operations on a database.



11.Write a query to find the maximum ticket price for each class using window functions on the ticket_details table.

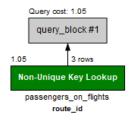
```
SELECT *, MAX(Price_per_ticket) OVER ( PARTITION BY class_id ) max_price
       FROM ticket_details;
 3
 4
 5
Export: Wrap Cell Content: IA
          customer_id aircraft_id class_id no_of_tickets a_code Price_per_ticket brand
  p_date
                                                                                   max_price
                                               BHX
                                                          499
  03-03-2019 25
                      767-301ER Bussiness
                                                                       Emirates
                                                                                   510
  17-07-2020 49
                     767-301ER Bussiness 1
                                                  BFS
                                                          430
                                                                      Emirates
                                                                                   510
  03-03-2020
           21
                      CRJ900
                               Bussiness
                                                   BOH
                                                          490
                                                                       Bristish Airways
  12-03-2020 33 CRJ900 Bussiness 1
                                                 BOH
                                                          490
                                                                      Bristish Airways 510
  01-04-2018 29
                      ERJ142
                               Bussiness 1
                                                                       Jet Airways
                                                                                   510
  07-07-2020 7 767-301ER Bussiness 1
                                                BFS
                                                          430
                                                                      Emirates
                                                                                   510
                     A321
  07-07-2019 24
                                                   CTM
                                                          480
                                                                                   510
                               Bussiness
                                        1
                                                                       Oatar Airways
                    A321
  01-11-2018 15
                                                   BFS
                               Bussiness 1
                                                          430
                                                                      Qatar Airways
                                                                                   510
  25-01-2019 2
                     A321
                                                   YVR
                                                          505
                                                                                   510
                               Bussiness 1
                                                                       Oatar Airways
  11-11-2020 11 767-301ER Bussiness 1
                                                          465
  22-10-2019 29
                     A321
                                                   PEK
                                                          410
                               Bussiness 1
                                                                       Oatar Airways
                                                                                   510
  01-07-2018 5
                   767-301ER Bussiness 1
                                                   BFS
                                                          430
                                                                       Emirates
                                                                                   510
  08-11-2020 11
                      767-301ER Bussiness
                                                   AGB
                                                          465
                                                                       Emirates
                                                                                    510
  26-12-2018 27
                   767-301ER Economy 1
                                                   DAL
                                                          130
                                                                       Emirates
                                                                                   190
  01-09-2018 2
                      767-301ER Economy
                                                          170
  01-12-2018 28
                   ERJ142 Economy 1
                                                   BHX
                                                                       Jet Airways
                                                                                   190
  05-05-2020
                      ERJ142
                               Economy
                                                   CTM
                                                          120
                                                                       Jet Airways
                     ERJ142 Economy 1
  02-02-2019 14
                                                   CTM
                                                          120
                                                                       Jet Airways
                                                                                   190
  19-12-2018 31
                      767-301ER Economy 1
                                                   DAL
                                                          130
                                                                       Emirates
                                                                                    190
  10-10-2020 10
                      A321 Economy 1
                                                   MCO
                                                          135
                                                                       Qatar Airways
                                                                                   190
  30-05-2020 5
                      ERJ142 Economy 1
                                                          120
                                                                       Jet Airways
                                                                                    190
```

12.Write a query to extract the passengers whose route ID is 4 by improving the speed and performance of the passengers_on_flights table.

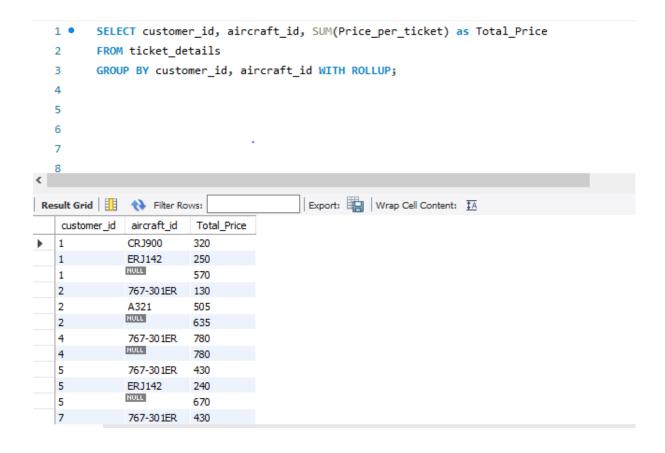


13. For the route ID 4, write a query to view the execution plan of the passengers_on_flights table.

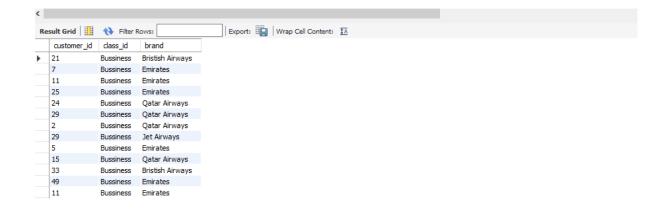
```
SELECT * FROM passengers_on_flights WHERE route_id = '04';
  1 •
  2
  3
  4
  5
                                              Export: Wrap Cell Content: IA
Result Grid
               Filter Rows:
   customer_id
               aircraft_id
                           route_id
                                    depart
                                            arrival
                                                    seat_num
                                                               class_id
                                                                          travel_date
                                                                                      flight_num
               767-301ER
                                                                         02-09-2018
                                    JFK
                                            LAX
                                                    01E
                                                              Economy
               767-301ER 4
                                    JFK
                                            LAX
                                                    03FC
                                                              First Class 30-04-2020
                                                                                      1114
                                                    05B
  11
               767-301ER 4
                                    JFK
                                            LAX
                                                              Bussiness
                                                                         09-11-2020
                                                                                      1114
```



14. Write a query to calculate the total price of all tickets booked by a customer across different aircraft IDs using rollup function.



15. Write a query to create a view with only business class customers along with the brand of airlines.



16.Write a query to create a stored procedure to get the details of all passengers flying between a range of routes defined in run time. Also, return an error message if the table doesn't exist.

```
DROP PROCEDURE IF EXISTS getPassengersBetweenRoutes;
      DELIMITER &&
  3 • \bigcirc CREATE PROCEDURE getPassengersBetweenRoutes(
        IN route_a INT,
        IN route_b INT)
  6 ⊝ BEGIN
      DECLARE EXIT HANDLER FOR SQLEXCEPTION
 8 🖨 BEGIN
         GET DIAGNOSTICS CONDITION 1
         @sqlstate = RETURNED SQLSTATE,
 10
         @errno = MYSQL_ERRNO,
 11
         @text = MESSAGE_TEXT;
         SET @full_error = CONCAT("SQLEXCEPTION Handler - ERROR ", @errno, " (", @sqlstate, "): ", @text);
         SELECT @full_error AS msg;
 15 - END;
       -- MySQL Query
 16
17 SE. END &&
       SELECT * FROM passengers_on_flights WHERE route_id BETWEEN route_a AND route_b;
19 • CALL getPassengersBetweenRoutes(1,25);
```

	customer_id	aircraft_id	route_id	depart	arrival	seat_num	class_id	travel_date	flight_num
•	2	767-301ER	4	JFK	LAX	01E	Economy	2018-09-02	1114
	1	ERJ142	9	DEN	LAX	01EP	Economy Plus	2019-12-26	1119
	5	767-301ER	12	ABI	ADK	02B	Bussiness	2018-07-02	1122
	5	ERJ142	18	ANI	BGR	02E	Economy	2020-05-06	1128
	4	767-301ER	5	LAX	JFX	02FC	First Class	2020-04-06	1115
	7	767-301ER	20	AVL	BOI	03B	Bussiness	2020-07-08	1130
	5	ERJ142	22	BGR	BJI	03E	Economy	2020-05-31	1132
	4	767-301ER	4	JFK	LAX	03FC	First Class	2020-04-30	1114
	11	767-301ER	5	LAX	JFX	04B	Bussiness	2020-11-12	1115
	17	A321	13	ABI	ADK	04EP	Economy Plus	2019-06-03	1123
	9	767-301ER	15	CAK	ANI	04FC	First Class	2020-09-10	1125
	11	767-301ER	4	JFK	LAX	05B	Bussiness	2020-11-09	1114
	10	A321	10	HNL	DEN	05E	Economy	2020-10-11	1120
	15	A321	14	BQN	CAK	06B	Bussiness	2018-11-02	1124
	13	A321	13	ADK	BQN	06FC	First Class	2019-01-05	1123
	22	ERJ142	22	BGR	BJI	07EP	Economy Plus	2020-02-09	1132
	24	A321	14	BQN	CAK	08B	Bussiness	2019-07-22	1124
	25	767-301ER	23	BLV	BFL	09B	Bussiness	2019-03-07	1133
	50	A321	21	BFL	BET	10EP	Economy Plus	2020-08-15	1131
	29	ERJ142	9	DEN	LAX	11B	Bussiness	2018-05-03	1119

17. Write a query to create a stored procedure that extracts all the details from the routes table where the travelled distance is more than 2000 miles.

```
1
          DELIMITER &&
  2 •
          CREATE PROCEDURE Get Customers With 2K()
  3
          SELECT * FROM routes where distance_miles>2000;
          END &&
  5
  6 •
          CALL Get_Customers_With_2K();
                                                Export: Wrap Cell Content: IA
Result Grid
              Filter Rows:
                                      destination_airport
   route id
             flight_num
                                                         aircraft_id
                                                                    distance_miles
                        origin_airport
            1111
                       EWR
                                     HNL
                                                        767-301ER
                                                                    4962
  2
            1112
                       HNL
                                     EWR
                                                        767-301ER
                                                                    4962
            1113
                       EWR
                                                        A321
                                                                    3466
   4
            1114
                        JFK
                                     LAX
                                                        767-301ER
                                                                   2475
            1115
                       LAX
                                                        767-301ER
                                     JFK
                                                                    2475
  6
            1116
                       HNL
                                     LAX
                                                        767-301ER
                                                                    2556
   10
            1120
                       HNL
                                     DEN
                                                        A321
                                                                    3365
   12
            1122
                        ABI
                                     ADK
                                                        767-301ER
                                                                   4300
   13
            1123
                        ADK
                                     BQN
                                                        A321
                                                                    2232
   14
            1124
                       BQN
                                                        A321
                                                                    2445
                                     CAK
            1128
                        ANI
                                     BGR
                                                        ERJ142
                                                                    2450
   18
   19
            1129
                       ATW
                                     AVL
                                                        A321
                                                                    2222
  20
            1130
                        AVL
                                     BOI
                                                        767-301ER
                                                                    3134
  21
            1131
                       BFL
                                                        A321
                                                                    2425
                                     BET
  23
            1133
                       BLV
                                     BFL
                                                        767-301ER
                                                                    2354
  25
            1135
                       RDM
                                     BJI
                                                        A321
                                                                    2425
  34
            1144
                        CRW
                                     COD
                                                        A321
                                                                    2452
   35
            1145
                        STT
                                     CDB
                                                        ERJ142
                                                                    2121
   43
            1153
                                     BOI
                                                                    8989
                        CBM
                                                        A321
  44
            1154
                       COU
                                     CAK
                                                        767-301ER
                                                                    7676
```

18.Write a query to create a stored procedure that groups the distance travelled by each flight into three categories. The categories are, short distance travel (SDT) for >=0 AND <=2000 miles, intermediate distance travel (IDT) for >2000 AND <=6500, and long-distance travel (LDT) for >6500.

```
DROP PROCEDURE IF EXISTS getTravelType;
 2
       DELIMITER $$
 3
       CREATE PROCEDURE getTravelType()
 5

→ BEGIN

          DECLARE dist INT DEFAULT 0;
          DECLARE done BIT DEFAULT FALSE;
 7
 8
          DECLARE route_cur CURSOR FOR SELECT distance_miles FROM routes;
          DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = TRUE;
          OPEN route_cur;
10
11
          CREATE TEMPORARY TABLE IF NOT EXISTS routes_2 (
12
              travel_type VARCHAR(3)
13
          ) AS ( SELECT * FROM routes);
14
15
          while_label: WHILE done = FALSE DO
16
              FETCH route_cur INTO dist;
17
              IF dist >=0 AND dist <= 2000 THEN
18
19
                UPDATE routes 2
                   SET travel_type = "SDT"
  20
                   WHERE distance miles = dist;
   21
   22
                 ELSEIF dist >2000 AND dist <=6500 THEN
   23
                   UPDATE routes_2
   24
                   SET travel_type = "IDT"
   25
   26
                   WHERE distance_miles = dist;
   27
                 ELSEIF dist >6500 THEN
   28
                   UPDATE routes_2
   29
                   SET travel_type = "LDT"
   30
   31
                   WHERE distance_miles = dist;
   32
                 ELSE
   33
                   ITERATE while_label;
   34
                 END IF;
  35
   36
             END WHILE while_label;
  37
             SELECT * FROM routes 2 ORDER BY distance miles;
  38
```

```
39 END$$
```

41 • CALL getTravelType();

travel_type	route_id	flight_num	origin_airport	destination_airport	aircraft_id	distance_miles
SDT	28	1138	BOS	CDC	767-301ER	246
SDT	32	1142	CLD	CHI	767-301ER	246
SDT	27	1137	BOI	CLD	A321	578
SDT	31	1141	BTM	CHA	ERJ142	660
SDT	47	1157	DAL	LAX	CRJ900	675
SDT	45	1155	CCR	EWR	CRJ900	676
SDT	8	1118	ORD	EWR	A321	719
SDT	30	1140	BUR	STT	CRJ900	780
SDT	9	1119	DEN	LAX	ERJ142	862
SDT	42	1152	CSG	BOS	767-301ER	890
SDT	41	1151	CAE	DRT	ERJ142	898
SDT	29	1139	BKG	CRW	767-301ER	909
SDT	40	1150	CDB	DEC	A321	909
SDT	37	1147	CHI	CST	767-301ER	999
SDT	38	1148	CST	DAL	A321	1111
SDT	36	1146	CHA	COU	CRJ900	1212
SDT	22	1132	BGR	BJI	ERJ142	1242
SDT	26	1136	BET	BTM	ERJ142	1311
SDT	33	1143	CDC	CST	CRJ900	1345
SDT	24	1134	BJI	BQN	A321	1575
SDT	39	1149	COD	SCC	CRJ900	1579
SDT	16	1126	ALB	APN	A321	1700

19.Write a query to extract ticket purchase date, customer ID, class ID and specify if the complimentary services are provided for the specific class using a stored function in stored procedure on the ticket details table.

Condition:

• If the class is *Business* and *Economy Plus*, then complimentary services are given as *Yes*, else it is *No*

Create stored function:

```
DELIMITER $$

CREATE FUNCTION complimentary_servicess(class_id VARCHAR(225))

RETURNS VARCHAR(2255) DETERMINISTIC

BEGIN DECLARE complimentary_servicess VARCHAR(2255);

If class_id = 'Bussiness' THEN SET complimentary_servicess = 'Yes';

ELSEIF class_id = 'Economy Plus' THEN SET complimentary_servicess = 'Yes';

ELSE SET complimentary_servicess = 'No';

END IF;

RETURN (complimentary_servicess);

END$$

DELIMITER $$;
```

Create stored procedure to call stored function:

```
DELIMITER $$

CREATE PROCEDURE Extra_complimentary_services()

BEGIN

SELECT p_date,customer_id,class_id,complimentary_servicess(class_id) as Extra_complimentary_services

FROM ticket_details

ORDER BY class_id;

END$$ DELIMITER $$;

call Extra_complimentary_services();

20

21
```

		J :J	Esta annihunatani annihun
p_date	customer_id	class_id	Extra_complimentary_services
11-11-2020	11	Bussiness	Yes
22-10-2019	29	Bussiness	Yes
01-07-2018	5	Bussiness	Yes
08-11-2020	11	Bussiness	Yes
26-12-2018	27	Economy	No
01-09-2018	2	Economy	No
01-12-2018	28	Economy	No
05-05-2020	5	Economy	No
02-02-2019	14	Economy	No
19-12-2018	31	Economy	No
10-10-2020	10	Economy	No
30-05-2020	5	Economy	No
07-10-2020	46	Economy	No
06-06-2019	18	Economy	No
21-09-2019	25	Economy	No
24-12-2019	14	Economy	No
01-02-2018	19	Economy	No
01-05-2018	8	Economy	No
02-02-2020	22	Economy	Yes

.

20. Write a query to extract the first record of the customer whose last name ends with Scott using a cursor from the customer table.

