create database airport\_db;

use airport\_db;

create database airportdetail

-- problem statment 1

SELECT

Origin\_airport,

Destination\_airport,

SUM(Passengers) AS total\_passengers

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport

ORDER BY

total\_passengers DESC;

-- problem statement2

SELECT

Origin\_airport,

Destination\_airport,

avg(cast(Passengers as FLOAT)/nullif(seats,0))\*100 AS avgerage\_seat\_utilization

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport

ORDER BY

avgerage\_seat\_utilization DESC;

-- problem statement 3

select

Origin\_airport,

Destination\_airport,

sum(Passengers) total\_Passengers

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport

order by

total\_Passengers desc

limit 3;

-- problem statement 4

select

origin\_city,

count(flights) total\_flights,

sum(Passengers) total\_passangers

from

airports2

group by

origin\_city

order by

total\_passangers desc;

-- problem statement 5

select

origin\_airport,

sum(distance) total\_distance

from

airports2

group by

origin\_airport

order by

total\_distance desc;

-- problem statement 6

SELECT

YEAR(fly\_date) AS year,

MONTH(fly\_date) AS month,

COUNT(flights) AS total\_flights,

SUM(Passengers) AS total\_passengers,

AVG(distance) AS avg\_distance

FROM

airports2

GROUP BY

YEAR(fly\_date), MONTH(fly\_date)

ORDER BY

YEAR(fly\_date) DESC, MONTH(fly\_date) DESC;

-- problem statement 7

SELECT

Origin\_airport,

Destination\_airport,

SUM(Passengers) AS total\_passengers,

SUM(Seats) as total\_seats,

(SUM(passengers)\*1.0/nullif((Seats),0))passengers\_to\_seats\_ratio

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport

having

passengers\_to\_seats\_ratio < 0.5

ORDER BY

passengers\_to\_seats\_ratio;

-- problem statement 8

select

Origin\_airport,

count(flights) total\_flights

FROM

airports2

GROUP BY

Origin\_airport

order by

total\_flights desc

limit 3;

-- problem statement 9

select

Origin\_city,

count(flights) total\_flights,

SUM(Passengers) AS total\_passengers

FROM

airports2

where

destination\_city = "Bend,OR" and

origin\_city<>"Bend,Or"

GROUP BY

Origin\_city

order by

total\_flights desc,

total\_passengers desc

limit 3;

-- problem statemet 10

SELECT

Origin\_airport,

Destination\_airport,

max(distance) long\_distance

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport

ORDER BY

long\_distance DESC

limit 1;

-- problem statement 11

with Monthly\_flights as

(select

MONTH(fly\_date)Month,

count(flights) total\_flights

from

airports2

group by

MONTH(fly\_date)

)

select

MONTH,

total\_flights,

CASE

WHEN total\_flights = (Select Max(total\_flights) from Monthly\_flights) then "most busy"

WHEN total\_flights = (Select Min(total\_flights) from Monthly\_flights) then "least busy"

ELSE NULL

END AS status

from

Monthly\_flights

where

total\_flights = (Select Max(total\_flights) from Monthly\_flights) OR

total\_flights = (Select Min(total\_flights) from Monthly\_flights);

-- problem statement 12

WITH passengers\_summary AS (

SELECT

Origin\_airport,

Destination\_airport,

YEAR(fly\_date) AS year,

SUM(Passengers) AS total\_passengers

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport,

YEAR(fly\_date)

),

passengers\_growth as

(SELECT

Origin\_airport,

Destination\_airport,

year,

total\_passengers,

LAG(total\_passengers) OVER (

PARTITION BY Origin\_airport, Destination\_airport

ORDER BY year

) AS previous\_year\_passenger

FROM

passengers\_summary)

select

Origin\_airport,

Destination\_airport,

year,

total\_passengers,

CASE

when previous\_year\_passenger is not null then

(( total\_passengers - previous\_year\_passenger)\*100 / nullif(previous\_year\_passenger,0))

end as growth\_percentage

from

passengers\_growth

order by

Origin\_airport,

Destination\_airport,

year;

-- problem statement 13

WITH Flight\_Summary AS (

SELECT

Origin\_airport,

Destination\_airport,

YEAR(Fly\_date) AS Year,

COUNT(Flights) AS Total\_Flights

FROM

airports2

GROUP BY

Origin\_airport,

Destination\_airport,

YEAR(Fly\_date)

),

Flight\_Growth AS (

SELECT

Origin\_airport,

Destination\_airport,

Year,

Total\_Flights,

LAG(Total\_Flights) OVER (PARTITION BY Origin\_airport, Destination\_airport ORDER BY Year) AS Previous\_Year\_Flights

FROM

Flight\_Summary

),

Growth\_Rates AS (

SELECT

Origin\_airport,

Destination\_airport,

Year,

Total\_Flights,

CASE

WHEN Previous\_Year\_Flights IS NOT NULL AND Previous\_Year\_Flights > 0 THEN

((Total\_Flights - Previous\_Year\_Flights) \* 100.0 / Previous\_Year\_Flights)

ELSE NULL

END AS Growth\_Rate,

CASE

WHEN Previous\_Year\_Flights IS NOT NULL AND Total\_Flights > Previous\_Year\_Flights THEN 1

ELSE 0

END AS Growth\_Indicator

FROM

Flight\_Growth

)

-- Final query to identify routes with consistent growth and their growth rate

SELECT

Origin\_airport,

Destination\_airport,

MIN(Growth\_Rate) AS Minimum\_Growth\_Rate,

MAX(Growth\_Rate) AS Maximum\_Growth\_Rate

FROM

Growth\_Rates

WHERE

Growth\_Indicator = 1

GROUP BY

Origin\_airport,

Destination\_airport

HAVING

MIN(Growth\_Indicator) = 1

ORDER BY

Origin\_airport,

Destination\_airport;

-- problem statement 14

with utilization\_ratio as(select

Origin\_airport,

SUM(Passengers) AS total\_passengers,

SUM(seats) as total\_seats,

COUNT(Flights) AS total\_flights,

SUM(passengers)\*1.0/SUM(seats) as passengers\_seats\_ratio

from

airports2

group by

Origin\_airport),

weighted\_utilization as (select

Origin\_airport,

total\_passengers,

total\_seats,

total\_flights,

passengers\_seats\_ratio,

(passengers\_seats\_ratio \* total\_flights)/SUM(total\_flights)

over () as weighted\_utilization

from

utilization\_ratio)

select

Origin\_airport,

total\_passengers,

total\_seats,

total\_flights,

weighted\_utilization

from

weighted\_utilization

order by weighted\_utilization desc

limit 3;

-- problem statment 15

with monthly\_passengers\_count as(select

origin\_city,

year(fly\_date)year,

month(fly\_date)month,

sum(passengers) total\_passengers

from

airports2

group by

origin\_city,

year,month),

max\_passengers\_per\_city as (select

origin\_city,

max(total\_passengers) as peak\_passengers

from

monthly\_passengers\_count

group by

origin\_city)

select

mpc.origin\_city,

mpc.year,

mpc.month,

mpc.total\_passengers

from

monthly\_passengers\_count mpc

join

max\_passengers\_per\_city mp on

mpc.origin\_city = mp.origin\_city and

mpc.total\_passengers = mp.peak\_passengers

order by

mpc.origin\_city,

mpc.year,

mpc.month;

-- problem statement 16

WITH yearly\_passengers\_count AS (

SELECT

origin\_airport,

destination\_airport,

YEAR(fly\_date) AS year,

SUM(passengers) AS total\_passengers

FROM

airports2

GROUP BY

origin\_airport,

destination\_airport,

YEAR(fly\_date)

),

yearly\_decline AS (

SELECT

y1.origin\_airport,

y1.destination\_airport,

y1.year AS year1,

y1.total\_passengers AS passengers\_year1,

y2.year AS year2,

y2.total\_passengers AS passengers\_year2,

((y2.total\_passengers - y1.total\_passengers) / NULLIF(y1.total\_passengers, 0)) \* 100 AS percentage\_change

FROM

yearly\_passengers\_count y1

JOIN

yearly\_passengers\_count y2

ON

y1.origin\_airport = y2.origin\_airport

AND y1.destination\_airport = y2.destination\_airport

AND y1.year = y2.year + 1

)

SELECT

origin\_airport,

destination\_airport,

year1,

passengers\_year1,

year2,

passengers\_year2,

percentage\_change

FROM

yearly\_decline

WHERE

percentage\_change < 0

ORDER BY

percentage\_change

LIMIT 5;

-- problem statement 17

with flights\_stats as (select

origin\_airport,

destination\_airport,

count(flights) total\_flights,

sum(passengers) total\_passengers,

sum(seats) total\_seats,

(sum(passengers)/nullif(sum(seats),0)) avg\_seats\_utilization

from

airports2

group by

origin\_airport,

destination\_airport)

select

origin\_airport,

destination\_airport,

total\_flights,

total\_passengers,

round((avg\_seats\_utilization\*100),2) avg\_seat\_utilization\_percentage

from

flights\_stats

where

total\_flights>=10 and

round((avg\_seats\_utilization\*100),2) <0.5

order by

avg\_seat\_utilization\_percentage;

-- problem statement 18

with distance\_stats as (select

origin\_airport,

destination\_airport,

avg(distance) as avg\_flights\_distance

from

airports2

group by

origin\_airport,

destination\_airport)

select

origin\_airport,

destination\_airport,

round((avg\_flights\_distance),2) avg\_distance\_utilization

from

distance\_stats

order by

avg\_distance\_utilization desc;

-- problem statement 19

WITH yearly\_summary AS (

SELECT

YEAR(fly\_date) AS year,

COUNT(flights) AS total\_flights,

SUM(passengers) AS total\_passengers

FROM

airports2

GROUP BY

YEAR(fly\_date)

),

yearly\_growth AS (

SELECT

year,

total\_flights,

total\_passengers,

LAG(total\_flights) OVER (ORDER BY year) AS prev\_year\_flights,

LAG(total\_passengers) OVER (ORDER BY year) AS prev\_year\_passengers

FROM

yearly\_summary

)

SELECT

year,

total\_flights,

total\_passengers,

ROUND((total\_flights - prev\_year\_flights) / NULLIF(prev\_year\_flights, 0) \* 100, 2) AS flights\_growth\_per,

ROUND((total\_passengers - prev\_year\_passengers) / NULLIF(prev\_year\_passengers, 0) \* 100, 2) AS passengers\_growth\_per

FROM

yearly\_growth;

-- problem statement 20

with route\_distance as(select

origin\_airport,

destination\_airport,

sum(flights) as total\_flights,

sum(distance) as total\_distance

from

airports2

group by

origin\_airport,

destination\_airport),

weighted\_distance as (select

origin\_airport,

destination\_airport,

total\_flights,

total\_distance,

(total\_distance \* total\_flights) as weightes\_distance

from

route\_distance)

select

origin\_airport,

destination\_airport,

total\_flights,

total\_distance,

weightes\_distance

from

weighted\_distance

order by

weightes\_distance desc

limit 3;