Questions to find the solution of churn analysis(MySQL and Power BI/Tableau)

1. Identify the total number of customers and the churn rate

Ans: SELECT

SUM(CASE WHEN churn\_status = 'Yes' THEN 1 ELSE 0 END) AS churn\_customers,

COUNT(\*) AS total\_customers,

(SUM(CASE WHEN churn\_status = 'Yes' THEN 1 ELSE 0 END) / COUNT(\*)) \* 100 AS churn\_rate\_percentage

FROM customer\_data;

OUTPUT:

|  | **churn\_customers** | **total\_customers** | **churn\_rate\_percentage** |
| --- | --- | --- | --- |
|  | 105 | 500 | 21.0000 |

1. Find the average age of churned customers

Ans: select Round (avg( age) ) from customer\_data where churn\_status='Yes';

OUTPUT:

Round (avg( age) )

51

1. Discover the most common contract types among churned customers

Ans: SELECT

contract\_type,

COUNT(\*) AS count

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

contract\_type

ORDER BY

count DESC;

OUTPUT:

|  | **contract\_type** | **count** |
| --- | --- | --- |
|  | Monthly | 56 |
|  | Yearly | 49 |

1. Analyze the distribution of monthly charges among churned customers

Ans: SELECT

MIN(monthly\_charges) AS min\_monthly\_charge,

MAX(monthly\_charges) AS max\_monthly\_charge,

AVG(monthly\_charges) AS avg\_monthly\_charge,

(SELECT

CASE

WHEN COUNT(\*) % 2 = 1 THEN

AVG(monthly\_charges)

ELSE

AVG(x.monthly\_charges)

END

FROM

(SELECT

monthly\_charges,

ROW\_NUMBER() OVER (ORDER BY monthly\_charges) AS row\_num

FROM

customer\_data

WHERE

churn\_status = 'Yes') AS x

WHERE

x.row\_num BETWEEN COUNT(\*) / 2 AND COUNT(\*) / 2 + 1

OR COUNT(\*) % 2 = 1 AND x.row\_num = COUNT(\*) / 2 + 1

) AS median\_monthly\_charge

FROM

customer\_data

WHERE

churn\_status = 'Yes';

OUTPUT:

|  | **min\_monthly\_charge** | **max\_monthly\_charge** | **avg\_monthly\_charge** | **median\_monthly\_charge** |
| --- | --- | --- | --- | --- |
|  | 1.17 | 99.05 | 52.49180952380953 | 54.56 |

1. Create a query to identify the contract types that are most prone to churn

Ans: select contract\_type from customer\_data

where churn\_status='Yes'

group by contract\_type

order by count(contract\_type) desc limit 1;

OUTPUT:

|  | **contract\_type** |
| --- | --- |
|  | Monthly |

1. Identify customers with high total charges who have churned

Ans: SELECT

customer\_id,

total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

ORDER BY

total\_charges DESC;

OUTPUT:

|  | **customer\_id** | **total\_charges** |
| --- | --- | --- |
|  | 352916 | 999.57 |
|  | 390805 | 980.52 |
|  | 870518 | 974.53 |
|  | 977377 | 967.92 |
|  | 705147 | 958.51 |
|  | 183738 | 950.02 |
|  | 176478 | 945.93 |
|  | 684734 | 945.9 |
|  | 310143 | 941.81 |
|  | 780901 | 940.13 |
|  | 466678 | 934.44 |
|  | 422424 | 923.41 |
|  | 447464 | 912.96 |
|  | 816833 | 897.07 |
|  | 725159 | 891.98 |
|  | 80727 | 880.69 |
|  | 242863 | 869.82 |
|  | 387321 | 865.34 |
|  | 739788 | 865.17 |
|  | 913587 | 865.16 |
|  | 972885 | 837.63 |
|  | 709361 | 829.77 |
|  | 891382 | 828.21 |
|  | 545705 | 812.42 |
|  | 473184 | 801.81 |
|  | 111234 | 773.84 |
|  | 677356 | 767.62 |
|  | 650227 | 756.13 |
|  | 71747 | 743.63 |
|  | 650067 | 739.92 |
|  | 38978 | 714.63 |
|  | 333325 | 689.1 |
|  | 683175 | 687.31 |
|  | 111831 | 683.66 |
|  | 446639 | 680.71 |
|  | 801356 | 678.95 |
|  | 288065 | 657.68 |
|  | 843682 | 652.73 |
|  | 393378 | 646.71 |
|  | 873919 | 643.44 |
|  | 322789 | 642.52 |
|  | 476672 | 637.28 |
|  | 140694 | 628.91 |
|  | 38584 | 628.47 |
|  | 369805 | 619.9 |
|  | 609218 | 618.93 |
|  | 804356 | 598.04 |
|  | 876563 | 597.8 |
|  | 884342 | 595.28 |
|  | 116390 | 589.43 |
|  | 159437 | 588.06 |
|  | 966017 | 587.13 |
|  | 522957 | 579.54 |
|  | 464172 | 574.21 |
|  | 370020 | 563.1 |
|  | 634478 | 551.05 |
|  | 881750 | 542.8 |
|  | 8712 | 538.68 |
|  | 358472 | 521.32 |
|  | 868646 | 500.87 |
|  | 624197 | 498.52 |
|  | 681735 | 493.24 |
|  | 164446 | 478.23 |
|  | 833361 | 474.12 |
|  | 706203 | 466.02 |
|  | 76479 | 465.98 |
|  | 393620 | 458.07 |
|  | 779177 | 455.35 |
|  | 268801 | 450.54 |
|  | 304656 | 449.55 |
|  | 702635 | 427.68 |
|  | 862881 | 417.95 |
|  | 734120 | 404.11 |
|  | 476849 | 397.45 |
|  | 478046 | 389.73 |
|  | 173949 | 384.58 |
|  | 707261 | 377.95 |
|  | 647246 | 371.42 |
|  | 669085 | 367.06 |
|  | 760321 | 357.39 |
|  | 910318 | 354.16 |
|  | 716348 | 319.32 |
|  | 102088 | 301.35 |
|  | 812912 | 275.22 |
|  | 366909 | 268.22 |
|  | 952339 | 227.45 |
|  | 217924 | 216.47 |
|  | 453562 | 167.62 |
|  | 966673 | 141.32 |
|  | 28995 | 127.82 |
|  | 523225 | 112.36 |
|  | 724960 | 106.03 |
|  | 366901 | 103.87 |
|  | 717731 | 98.34 |
|  | 886914 | 81.62 |
|  | 886475 | 66.29 |
|  | 541349 | 62.63 |
|  | 786533 | 62.16 |
|  | 617830 | 60.26 |
|  | 553379 | 57.64 |
|  | 205505 | 57.1 |
|  | 633507 | 36.79 |
|  | 585575 | 27.8 |
|  | 397789 | 12.91 |
|  | 163520 | 11.86 |

1. Calculate the total charges distribution for churned and non-churned customers

Ans: SELECT

MIN(total\_charges) AS min\_total\_charge,

MAX(total\_charges) AS max\_total\_charge,

AVG(total\_charges) AS avg\_total\_charge,

(SELECT

CASE

WHEN COUNT(\*) % 2 = 1 THEN

AVG(total\_charges)

ELSE

AVG(x.total\_charges)

END

FROM

(SELECT

total\_charges,

ROW\_NUMBER() OVER (ORDER BY total\_charges) AS row\_num

FROM

customer\_data

WHERE

churn\_status = 'Yes') AS x

WHERE

x.row\_num BETWEEN COUNT(\*) / 2 AND COUNT(\*) / 2 + 1

OR COUNT(\*) % 2 = 1 AND x.row\_num = COUNT(\*) / 2 + 1

) AS median\_total\_charge

FROM

customer\_data

WHERE

churn\_status = 'Yes'

OUTPUT:

|  | **min\_total\_charge** | **max\_total\_charge** | **avg\_total\_charge** | **median\_total\_charge** |
| --- | --- | --- | --- | --- |
|  | 11.86 | 999.57 | 540.7776190476189 | 579.54 |

SELECT

MIN(total\_charges) AS min\_total\_charge,

MAX(total\_charges) AS max\_total\_charge,

AVG(total\_charges) AS avg\_total\_charge,

(SELECT

CASE

WHEN COUNT(\*) % 2 = 1 THEN

AVG(total\_charges)

ELSE

AVG(x.total\_charges)

END

FROM

(SELECT

total\_charges,

ROW\_NUMBER() OVER (ORDER BY total\_charges) AS row\_num

FROM

customer\_churn\_data

WHERE

churn\_status = 'No') AS x

WHERE

x.row\_num BETWEEN COUNT(\*) / 2 AND COUNT(\*) / 2 + 1

OR COUNT(\*) % 2 = 1 AND x.row\_num = COUNT(\*) / 2 + 1

) AS median\_total\_charge

FROM

customer\_churn\_data

WHERE

churn\_status = 'No';

OUTPUT:

|  | **min\_total\_charge** | **max\_total\_charge** | **avg\_total\_charge** | **median\_total\_charge** |
| --- | --- | --- | --- | --- |
|  | 2.57 | 998 | 518.5061772151898 |  |

1. Calculate the average monthly charges for different contract types among churned customers

Ans: SELECT contract\_type, AVG(monthly\_charges) AS avg\_monthly\_charges

FROM customer\_data

WHERE churn\_status = 'Yes'

GROUP BY contract\_type;

OUTPUT:

|  | **contract\_type** | **avg\_monthly\_charges** |
| --- | --- | --- |
|  | Monthly | 52.24767857142856 |
|  | Yearly | 52.7708163265306 |

1. Identify customers who have both online security and online backup services and have not churned

Ans: SELECT

customer\_id

FROM

customer\_data

WHERE

online\_security = 'Yes'

AND online\_backup = 'Yes'

AND churn\_status = 'No';

OUTPUT:

|  | **customer\_id** |
| --- | --- |
|  | 5695 |
|  | 14262 |
|  | 41246 |
|  | 48786 |
|  | 56570 |
|  | 65669 |
|  | 68069 |
|  | 82875 |
|  | 88573 |
|  | 90097 |
|  | 101164 |
|  | 105250 |
|  | 109814 |
|  | 114619 |
|  | 123693 |
|  | 125172 |
|  | 133335 |
|  | 138229 |
|  | 144797 |
|  | 153813 |
|  | 172272 |
|  | 172396 |
|  | 184309 |
|  | 202251 |
|  | 208772 |
|  | 208839 |
|  | 228325 |
|  | 232166 |
|  | 247065 |
|  | 259183 |
|  | 266375 |
|  | 268401 |
|  | 274368 |
|  | 280063 |
|  | 294415 |
|  | 298285 |
|  | 300627 |
|  | 310818 |
|  | 311095 |
|  | 332555 |
|  | 342173 |
|  | 342220 |
|  | 353401 |
|  | 354735 |
|  | 377407 |
|  | 385029 |
|  | 406290 |
|  | 433986 |
|  | 451664 |
|  | 453049 |
|  | 462181 |
|  | 467054 |
|  | 473277 |
|  | 478653 |
|  | 479386 |
|  | 481450 |
|  | 483515 |
|  | 485368 |
|  | 486296 |
|  | 498198 |
|  | 500099 |
|  | 503161 |
|  | 521336 |
|  | 530823 |
|  | 543416 |
|  | 559726 |
|  | 583866 |
|  | 585520 |
|  | 597426 |
|  | 599260 |
|  | 608611 |
|  | 635921 |
|  | 668886 |
|  | 671332 |
|  | 685667 |
|  | 691889 |
|  | 698047 |
|  | 715582 |
|  | 731235 |
|  | 738558 |
|  | 741886 |
|  | 744768 |
|  | 753753 |
|  | 757052 |
|  | 759079 |
|  | 763601 |
|  | 771244 |
|  | 777120 |
|  | 778423 |
|  | 780201 |
|  | 808617 |
|  | 815463 |
|  | 849820 |
|  | 855843 |
|  | 858790 |
|  | 866094 |
|  | 866489 |
|  | 870223 |
|  | 870687 |
|  | 873337 |
|  | 882940 |
|  | 884340 |
|  | 892403 |
|  | 896722 |
|  | 914237 |
|  | 928289 |
|  | 928362 |
|  | 945027 |
|  | 955947 |
|  | 958538 |
|  | 965108 |
|  | 977584 |
|  | 979268 |

1. Determine the most common combinations of services among churned customers

Ans:

SELECT

CONCAT\_WS(', ',

IF(online\_security = 'Yes', 'Online Security', NULL),

IF(online\_backup = 'Yes', 'Online Backup', NULL),

IF(device\_protection = 'Yes', 'Device Protection', NULL),

IF(tech\_support = 'Yes', 'Tech Support', NULL),

IF(streaming\_tv = 'Yes', 'Streaming TV', NULL),

IF(streaming\_movies = 'Yes', 'Streaming Movies', NULL)

) AS service\_combination,

COUNT(\*) AS count

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

service\_combination

ORDER BY

count DESC;

OUTPUT:

|  |  |
| --- | --- |
| Online Security, Device Protection, Tech Support, Streaming Movies | 5 |
| Online Security, Device Protection, Streaming Movies | 4 |
| Online Security, Online Backup, Device Protection, Streaming TV | 4 |
| Tech Support, Streaming TV, Streaming Movies | 4 |
| Online Security, Streaming TV, Streaming Movies | 4 |
| Online Security, Online Backup, Device Protection, Streaming Movies | 4 |
| Online Security, Tech Support | 4 |
| Online Backup, Streaming Movies | 3 |
| Device Protection, Tech Support, Streaming TV, Streaming Movies | 3 |
| Online Security, Device Protection, Tech Support | 3 |
| Online Security, Online Backup, Tech Support | 3 |
| Online Backup, Device Protection, Streaming TV | 3 |
| Online Backup, Device Protection, Streaming Movies | 2 |
| Online Backup | 2 |
| Online Security | 2 |
| Online Security, Device Protection, Streaming TV, Streaming Movies | 2 |
| Online Backup, Tech Support, Streaming TV, Streaming Movies | 2 |
| Online Security, Tech Support, Streaming Movies | 2 |
| Online Security, Online Backup, Streaming Movies | 2 |
| Device Protection, Streaming Movies | 2 |
| Device Protection, Streaming TV, Streaming Movies | 2 |
| Device Protection | 2 |
| Tech Support | 2 |
| Online Security, Device Protection, Tech Support, Streaming TV, Streaming Movies | 2 |
| Online Security, Online Backup, Streaming TV, Streaming Movies | 2 |
| Device Protection, Tech Support, Streaming TV | 2 |
| Online Security, Device Protection | 2 |
| Online Backup, Device Protection | 2 |
| Online Security, Online Backup, Device Protection, Tech Support, Streaming TV | 2 |
| Device Protection, Tech Support | 2 |
| Online Security, Online Backup | 1 |
| Online Security, Streaming Movies | 1 |
| Online Security, Online Backup, Device Protection, Tech Support | 1 |
| Device Protection, Tech Support, Streaming Movies | 1 |
| Online Backup, Device Protection, Streaming TV, Streaming Movies | 1 |
| Online Backup, Tech Support, Streaming TV | 1 |
| Device Protection, Streaming TV | 1 |
| Online Backup, Tech Support, Streaming Movies | 1 |
| Online Security, Tech Support, Streaming TV, Streaming Movies | 1 |
| Online Security, Tech Support, Streaming TV | 1 |
| Streaming TV, Streaming Movies | 1 |
| Streaming TV | 1 |
| Online Backup, Device Protection, Tech Support | 1 |
| Online Backup, Device Protection, Tech Support, Streaming TV, Streaming Movies | 1 |
| Online Backup, Device Protection, Tech Support, Streaming Movies | 1 |
| Online Security, Online Backup, Device Protection, Tech Support, Streaming Movies | 1 |
| Online Security, Online Backup, Device Protection | 1 |
| Online Backup, Tech Support | 1 |
| Streaming Movies | 1 |
| Online Security, Online Backup, Tech Support, Streaming TV | 1 |
| Online Security, Streaming TV | 1 |
|  | 1 |
| Online Backup, Streaming TV, Streaming Movies | 1 |
| Online Security, Online Backup, Device Protection, Tech Support, Streaming TV, Streaming Movies | 1 |
| Online Security, Online Backup, Tech Support, Streaming TV, Streaming Movies | 1 |

1. Identify the average total charges for customers grouped by gender and marital status

Ans: SELECT

gender,

marital\_status,

AVG(total\_charges) AS avg\_total\_charges

FROM

customer\_data

GROUP BY

gender,

marital\_status;

OUTPUT:

|  | **gender** | **marital\_status** | **avg\_total\_charges** |
| --- | --- | --- | --- |
|  | Male | Married | 498.96423728813556 |
|  | Female | Single | 533.253358778626 |
|  | Female | Married | 544.4831851851854 |
|  | Male | Single | 511.6585344827585 |

1. Calculate the average monthly charges for different age groups among churned customers

Ans: SELECT

CASE

WHEN age BETWEEN 18 AND 30 THEN '18-30'

WHEN age BETWEEN 31 AND 40 THEN '31-40'

WHEN age BETWEEN 41 AND 50 THEN '41-50'

WHEN age BETWEEN 51 AND 60 THEN '51-60'

ELSE 'Above 60'

END AS age\_group,

AVG(monthly\_charges) AS avg\_monthly\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

age\_group

ORDER BY

age\_group;

OUTPUT:

|  | **age\_group** | **avg\_monthly\_charges** |
| --- | --- | --- |
|  | 18-30 | 71.9688888888889 |
|  | 31-40 | 42.04571428571428 |
|  | 41-50 | 42.686428571428564 |
|  | 51-60 | 50.26 |
|  | Above 60 | 52.105999999999995 |

1. Determine the average age and total charges for customers with multiple lines and online backup

Ans: SELECT

round(AVG(age)) AS avg\_age,

AVG(total\_charges) AS avg\_total\_charges

FROM

customer\_data

WHERE

multiple\_lines = 'Yes'

AND online\_backup = 'Yes';

OUTPUT:

|  | **avg\_age** | **avg\_total\_charges** |
| --- | --- | --- |
|  | 50 | 546.6671774193547 |

1. Identify the contract types with the highest churn rate among senior citizens (age 65 and over)

Ans: SELECT

contract\_type,

COUNT(\*) AS total\_customers,

SUM(CASE WHEN churn\_status = 'Yes' THEN 1 ELSE 0 END) AS churned\_customers,

(SUM(CASE WHEN churn\_status = 'Yes' THEN 1 ELSE 0 END) / COUNT(\*)) \* 100 AS churn\_rate\_percentage

FROM

customer\_data

WHERE

age >= 65

GROUP BY

contract\_type

ORDER BY

churn\_rate\_percentage DESC;

OUTPUT:

|  | **contract\_type** | **total\_customers** | **churned\_customers** | **churn\_rate\_percentage** |
| --- | --- | --- | --- | --- |
|  | Monthly | 53 | 16 | 30.1887 |
|  | Yearly | 60 | 14 | 23.3333 |

1. Calculate the average monthly charges for customers who have multiple lines and streaming TV

Ans: SELECT

AVG(monthly\_charges) AS avg\_monthly\_charges

FROM

customer\_data

WHERE

streaming\_tv = 'Yes'

AND multiple\_lines = 'Yes';

OUTPUT:

|  | **avg\_monthly\_charges** |
| --- | --- |
|  | 53.78479338842972 |

1. Identify the customers who have churned and used the most online services

Ans: SELECT

customer\_id,

SUM(

CASE

WHEN online\_security = 'Yes' THEN 1

ELSE 0

END

) +

SUM(

CASE

WHEN online\_backup = 'Yes' THEN 1

ELSE 0

END

) +

SUM(

CASE

WHEN device\_protection = 'Yes' THEN 1

ELSE 0

END

) +

SUM(

CASE

WHEN tech\_support = 'Yes' THEN 1

ELSE 0

END

) +

SUM(

CASE

WHEN streaming\_tv = 'Yes' THEN 1

ELSE 0

END

) +

SUM(

CASE

WHEN streaming\_movies = 'Yes' THEN 1

ELSE 0

END

) AS total\_online\_services

FROM

customer\_data

GROUP BY

customer\_id

ORDER BY

total\_online\_services DESC

LIMIT 1;

OUTPUT:

|  | **customer\_id** | **total\_online\_services** |
| --- | --- | --- |
|  | **101164** | **6** |
|  |  |  |
|  |  |  |

1. Calculate the average age and total charges for customers with different combinations of streaming services

Ans: select

CONCAT\_WS(', ',

IF(streaming\_tv = 'Yes', 'Streaming TV', 'No Streaming TV'),

IF(streaming\_movies = 'Yes', 'Streaming Movies', 'No Streaming Movies')

) AS streaming\_services\_combination,

round(AVG(age)) AS avg\_age,

AVG(total\_charges) AS avg\_total\_charges

FROM

customer\_data

GROUP BY

streaming\_services\_combination;

OUTPUT:

|  | **streaming\_services\_combination** | **avg\_age** | **avg\_total\_charges** |
| --- | --- | --- | --- |
|  | Streaming TV, Streaming Movies | 48 | 541.9833620689653 |
|  | Streaming TV, No Streaming Movies | 49 | 509.96211382113825 |
|  | No Streaming TV, Streaming Movies | 50 | 561.9159836065575 |
|  | No Streaming TV, No Streaming Movies | 46 | 485.1973381294965 |

1. Identify the gender distribution among customers who have churned and are on yearly contracts

Ans: SELECT

gender,

COUNT(\*) AS churned\_customers\_count

FROM

customer\_data

WHERE

churn\_status = 'Yes'

AND contract\_type = 'Yearly'

GROUP BY

gender;

OUTPUT:

|  | **gender** | **churned\_customers\_count** |
| --- | --- | --- |
|  | Female | 30 |
|  | Male | 19 |

1. Calculate the average monthly charges and total charges for customers who have churned, grouped by contract type and internet service type

Ans: SELECT

contract\_type,

internet\_service,

AVG(monthly\_charges) AS avg\_monthly\_charges,

SUM(total\_charges) AS total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

contract\_type,

internet\_service;

OUTPUT:

|  | **contract\_type** | **internet\_service** | **avg\_monthly\_charges** | **total\_charges** |
| --- | --- | --- | --- | --- |
|  | Monthly | DSL | 55.17272727272727 | 9751.37 |
|  | Monthly | Fiber Optic | 50.35499999999999 | 19093.309999999994 |
|  | Yearly | Fiber Optic | 48.31120000000001 | 14590.789999999999 |
|  | Yearly | DSL | 57.41625000000002 | 13346.18 |

1. Find the customers who have churned and are not using online services, and their average total charges

Ans: SELECT

AVG(total\_charges) AS average\_total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

AND online\_security = 'No'

AND online\_backup = 'No'

AND device\_protection = 'No'

AND tech\_support = 'No';

OUTPUT:

|  | **average\_total\_charges** |
| --- | --- |
|  | 591.2874999999999 |

1. Calculate the average monthly charges and total charges for customers who have churned, grouped by the number of dependents

Ans: SELECT

dependents,

AVG(monthly\_charges) AS average\_monthly\_charges,

AVG(total\_charges) AS average\_total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

dependents

order by dependents ;

OUTPUT:

|  | **dependents** | **average\_monthly\_charges** | **average\_total\_charges** |
| --- | --- | --- | --- |
|  | 0 | 50.385666666666665 | 610.0193333333334 |
|  | 1 | 56.876923076923056 | 600.1480769230769 |
|  | 2 | 44.71074074074075 | 488.0903703703704 |
|  | 3 | 59.73090909090909 | 440.8536363636362 |

1. Determine the average age and total charges for customers who have churned, grouped by internet service and phone service

Ans: SELECT

internet\_service,

phone\_service,

round(AVG(age)) AS average\_age,

AVG(total\_charges) AS average\_total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes'

GROUP BY

internet\_service,

phone\_service;

OUTPUT:

|  | **internet\_service** | **phone\_service** | **average\_age** | **average\_total\_charges** |
| --- | --- | --- | --- | --- |
|  | DSL | No | 47 | 498.65692307692314 |
|  | Fiber Optic | Yes | 53 | 528.6759999999999 |
|  | Fiber Optic | No | 51 | 601.9764705882352 |
|  | DSL | Yes | 53 | 506.62350000000004 |

1. Create a view to find the customers with the highest monthly charges in each contract type

Ans: CREATE VIEW highest\_monthly\_charges\_view AS

SELECT

customer\_id,

gender,

age,

marital\_status,

dependents,

contract\_type,

internet\_service,

phone\_service,

multiple\_lines,

online\_security,

online\_backup,

device\_protection,

tech\_support,

streaming\_tv,

streaming\_movies,

monthly\_charges,

total\_charges,

churn\_status,

call\_duration\_minutes,

latitude,

longitude

FROM (

SELECT

\*,

ROW\_NUMBER() OVER (PARTITION BY contract\_type ORDER BY monthly\_charges DESC) AS ranking

FROM

customer\_data

) AS ranked\_data

WHERE

ranking = 1;

1. Create a view to identify customers who have churned and the average monthly charges compared to the overall average

Ans: CREATE VIEW churned\_customers\_avg\_monthly\_charges\_view AS

SELECT

customer\_id,

churn\_status,

monthly\_charges,

AVG(monthly\_charges) OVER () AS overall\_avg\_monthly\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes';

1. Create a view to find the customers who have churned and their cumulative total charges over time

Ans: CREATE VIEW churned\_customers\_cumulative\_charges\_view AS

SELECT

customer\_id,

churn\_status,

total\_charges,

SUM(total\_charges) OVER (PARTITION BY customer\_id ORDER BY call\_duration\_minutes ) AS cumulative\_total\_charges

FROM

customer\_data

WHERE

churn\_status = 'Yes';

1. Stored Procedure to Calculate Churn Rate

Ans: DELIMITER $$

CREATE PROCEDURE CalculateChurnRate()

BEGIN

DECLARE total\_customers INT;

DECLARE churned\_customers INT;

DECLARE churn\_rate DECIMAL(10, 2);

-- Calculate total number of customers

SELECT COUNT(\*) INTO total\_customers FROM customer\_data;

-- Calculate number of churned customers

SELECT COUNT(\*) INTO churned\_customers FROM customer\_data WHERE churn\_status = 'Yes';

-- Calculate churn rate

IF total\_customers > 0 THEN

SET churn\_rate = (churned\_customers / total\_customers) \* 100;

ELSE

SET churn\_rate = 0;

END IF;

-- Display churn rate

SELECT churn\_rate AS churn\_rate\_percentage;

END$$

DELIMITER ;

1. Stored Procedure to Identify High-Value Customers at Risk of Churning.

Ans: DELIMITER $$

CREATE PROCEDURE IdentifyHighValueCustomersAtRisk()

BEGIN

-- Declare variables

DECLARE high\_value\_threshold DECIMAL(10, 2);

DECLARE total\_customers INT;

-- Set high value threshold (adjust as needed)

SET high\_value\_threshold = 1000; -- Example threshold

-- Get total number of customers

SELECT COUNT(\*) INTO total\_customers FROM customer\_data;

-- Calculate churn rate

IF total\_customers > 0 THEN

-- Calculate average total charges

SELECT AVG(total\_charges) INTO @avg\_total\_charges FROM customer\_data;

-- Identify high-value customers at risk of churning

SELECT

customer\_id,

total\_charges

FROM

customer\_churn\_data

WHERE

total\_charges > high\_value\_threshold

AND total\_charges < @avg\_total\_charges

AND churn\_status = 'Yes';

END IF;

END$$

DELIMITER ;