**Task 1 Query:**

Select \*

From subscriptions

Limit 100;

**Query 1 Results: (only provided sample of 20 of the 100 results displayed)**

|  |  |  |  |
| --- | --- | --- | --- |
| **id** | **subscription\_start** | **subscription\_end** | **segment** |
| 1 | 2016-12-01 | 2017-02-01 | 87 |
| 2 | 2016-12-01 | 2017-01-24 | 87 |
| 3 | 2016-12-01 | 2017-03-07 | 87 |
| 4 | 2016-12-01 | 2017-02-12 | 87 |
| 5 | 2016-12-01 | 2017-03-09 | 87 |
| 6 | 2016-12-01 | 2017-01-19 | 87 |
| 7 | 2016-12-01 | 2017-02-03 | 87 |
| 8 | 2016-12-01 | 2017-03-02 | 87 |
| 9 | 2016-12-01 | 2017-02-17 | 87 |
| 10 | 2016-12-01 | 2017-01-01 | 87 |
| 11 | 2016-12-01 | 2017-01-17 | 87 |
| 12 | 2016-12-01 | 2017-02-07 | 87 |
| 13 | 2016-12-01 |  | 30 |
| 14 | 2016-12-01 | 2017-03-07 | 30 |
| 15 | 2016-12-01 | 2017-02-22 | 30 |
| 16 | 2016-12-01 |  | 30 |
| 17 | 2016-12-01 |  | 30 |
| 18 | 2016-12-02 | 2017-01-29 | 87 |
| 19 | 2016-12-02 | 2017-01-13 | 87 |
| 20 | 2016-12-02 | 2017-01-15 | 87 |

How many different segments do you see? **Two, segments 30 and 87**.

**Task 2 Query:**

Select MIN(subscription\_start)

From subscriptions;

Select Max(subscription\_start)

From subscriptions;

**Query 2 Results:**

|  |
| --- |
| **MIN(subscription\_start)** |
| 2016-12-01 |

|  |
| --- |
| **Max(subscription\_start)** |
| 2017-03-30 |

Which months will you be able to calculate churn for?

**You can calculate churn for January 2017, February 2017, March 2017.**

**Task 3 Query:**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

) Select \* From months;

**Query 3 Results:**

|  |  |
| --- | --- |
| **first\_day** | **last\_day** |
| 2017-01-01 | 2017-01-31 |
| 2017-02-01 | 2017-02-28 |
| 2017-03-01 | 2017-03-31 |

**Task 4 Query :**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

),

cross\_join AS

(SELECT \*

FROM subscriptions

Cross JOIN months)

Select \*

From cross\_join

Limit 10;

**Query 4 Results: (Only provided 10 samples due to size of table)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **id** | **subscription\_start** | **subscription\_end** | **segment** | **first\_day** | **last\_day** |
| 1 | 2016-12-01 | 2017-02-01 | 87 | 2017-01-01 | 2017-01-31 |
| 1 | 2016-12-01 | 2017-02-01 | 87 | 2017-02-01 | 2017-02-28 |
| 1 | 2016-12-01 | 2017-02-01 | 87 | 2017-03-01 | 2017-03-31 |
| 2 | 2016-12-01 | 2017-01-24 | 87 | 2017-01-01 | 2017-01-31 |
| 2 | 2016-12-01 | 2017-01-24 | 87 | 2017-02-01 | 2017-02-28 |
| 2 | 2016-12-01 | 2017-01-24 | 87 | 2017-03-01 | 2017-03-31 |
| 3 | 2016-12-01 | 2017-03-07 | 87 | 2017-01-01 | 2017-01-31 |
| 3 | 2016-12-01 | 2017-03-07 | 87 | 2017-02-01 | 2017-02-28 |
| 3 | 2016-12-01 | 2017-03-07 | 87 | 2017-03-01 | 2017-03-31 |
| 4 | 2016-12-01 | 2017-02-12 | 87 | 2017-01-01 | 2017-01-31 |

**Task 5 Query:**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

),

cross\_join AS

(SELECT \*

FROM subscriptions

Cross JOIN months

),

status AS

(Select id,

first\_day AS month,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 87) THEN 1

ELSE 0

END AS is\_active\_87,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 30) Then 1

ELSE 0

END AS is\_active\_30

From cross\_join

) Select \* From status Limit 5;

**Query 5 results: (Limited to 5 samples due to size of table)**

|  |  |  |  |
| --- | --- | --- | --- |
| **id** | **month** | **is\_active\_87** | **is\_active\_30** |
| 1 | 2017-01-01 | 1 | 0 |
| 1 | 2017-02-01 | 0 | 0 |
| 1 | 2017-03-01 | 0 | 0 |
| 2 | 2017-01-01 | 1 | 0 |
| 2 | 2017-02-01 | 0 | 0 |

**Task 6 Query:**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

),

cross\_join AS

(SELECT \*

FROM subscriptions

Cross JOIN months

),

status AS

(Select id,

first\_day AS month,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 87) THEN 1

ELSE 0

END AS is\_active\_87,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 30) Then 1

ELSE 0

END AS is\_active\_30,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 87) Then 1

ELSE 0

END AS is\_canceled\_87,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 30) Then 1

ELSE 0

END AS is\_canceled\_30

From cross\_join

)

Select \* From status Limit 5;

**Query 6 results: (Sample of 5 provided due to table size)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **id** | **month** | **is\_active\_87** | **is\_active\_30** | **is\_canceled\_87** | **is\_canceled\_30** |
| 1 | 2017-01-01 | 1 | 0 | 0 | 0 |
| 1 | 2017-02-01 | 0 | 0 | 1 | 0 |
| 1 | 2017-03-01 | 0 | 0 | 0 | 0 |
| 2 | 2017-01-01 | 1 | 0 | 1 | 0 |
| 2 | 2017-02-01 | 0 | 0 | 0 | 0 |

**Query 7 Task:**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

),

cross\_join AS

(SELECT \*

FROM subscriptions

Cross JOIN months

),

status AS

(Select id,

first\_day AS month,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 87) THEN 1

ELSE 0

END AS is\_active\_87,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 30) Then 1

ELSE 0

END AS is\_active\_30,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 87) Then 1

ELSE 0

END AS is\_canceled\_87,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 30) Then 1

ELSE 0

END AS is\_canceled\_30

From cross\_join

), status\_aggregate AS

(SELECT

month,

SUM(is\_active\_87) AS sum\_active\_87,

SUM(is\_active\_30) AS sum\_active\_30,

SUM(is\_canceled\_87) AS sum\_canceled\_87,

SUM(is\_canceled\_30) AS sum\_canceled\_30

FROM status

Group BY month

) Select \* From status\_aggregate;

**Query 7 Results:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **month** | **sum\_active\_87** | **sum\_active\_30** | **sum\_canceled\_87** | **sum\_canceled\_30** |
| 2017-01-01 | 278 | 291 | 70 | 22 |
| 2017-02-01 | 462 | 518 | 148 | 38 |
| 2017-03-01 | 531 | 716 | 258 | 84 |

**Query 8 Task:**

WITH months AS

(SELECT

'2017-01-01' AS first\_day,

'2017-01-31' AS last\_day

UNION

Select

'2017-02-01' AS first\_day,

'2017-02-28' AS last\_day

UNION

Select

'2017-03-01' AS first\_day,

'2017-03-31' AS last\_day

),

cross\_join AS

(SELECT \*

FROM subscriptions

Cross JOIN months

),

status AS

(Select id,

first\_day AS month,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 87) THEN 1

ELSE 0

END AS is\_active\_87,

CASE

WHEN (subscription\_start < first\_day) AND (subscription\_end > first\_day OR subscription\_end IS NULL) AND (segment = 30) Then 1

ELSE 0

END AS is\_active\_30,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 87) Then 1

ELSE 0

END AS is\_canceled\_87,

CASE

WHEN (subscription\_end BETWEEN first\_day AND last\_day) AND (segment = 30) Then 1

ELSE 0

END AS is\_canceled\_30

From cross\_join

), status\_aggregate AS

(SELECT

month,

SUM(is\_active\_87) AS sum\_active\_87,

SUM(is\_active\_30) AS sum\_active\_30,

SUM(is\_canceled\_87) AS sum\_canceled\_87,

SUM(is\_canceled\_30) AS sum\_canceled\_30

FROM status

Group BY month

)

Select month,

1.0 \* sum\_canceled\_87/sum\_active\_87 AS churn\_rate\_87,

1.0 \* sum\_canceled\_30/sum\_active\_30 AS churn\_rate\_30

From status\_aggregate;

**Query 8 Results:**

|  |  |  |
| --- | --- | --- |
| **month** | **churn\_rate\_87** | **churn\_rate\_30** |
| 2017-01-01 | 0.251798561151079 | 0.0756013745704467 |
| 2017-02-01 | 0.32034632034632 | 0.0733590733590734 |
| 2017-03-01 | 0.485875706214689 | 0.11731843575419 |