Farmers Insurance Analysis - Assignment

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Q1. Retrieve the names of all states (srcStateName) from the dataset.

Input

```
SELECT DISTINCT srcStateName
FROM farmersinsurancedata;
```

Output

srcStateName
JAMMU AND KASHMIR
HIMACHAL PRADESH
UTTARAKHAND
HARYANA
GUJARAT
RAJASTHAN
TELANGANA
JHARKHAND
UTTAR PRADESH

Q2. Retrieve the total number of farmers covered (TotalFarmersCovered) and the sum insured (SumInsured) for each state (srcStateName), ordered by TotalFarmersCovered in descending order.

Input

```
SELECT
    srcStateName,
    SUM(TotalFarmersCovered) AS TotalFarmersCovered,
    SUM(SumInsured) AS SumInsured
FROM farmersinsurancedata
GROUP BY srcStateName
ORDER BY TotalFarmersCovered DESC;
```

OutPut

srcStateName	TotalFarmersCovered	SumInsured
MADHYA PRADESH	9149678	8413198.288650513
MAHARASHTRA	8939015	4005734.66847685
UTTAR PRADESH	7239576	3298970.927065717
RAJASTHAN	6822958	5363500.742112458
TAMIL NADU	3962760	3025519.4509361982
ODISHA	2586332	1375248.5827995362

Q3. Retrieve all records where Year is '2020'.

Input

```
SELECT *
FROM farmersinsurancedata
WHERE srcYear = 2020;
```

Output

rowID	srcYear	srcStateName	srcDistrictName	InsuranceUnits	TotalFarmersCovered	ApplicationsL
1188	2020	KARNATAKA	Chikkaballapur	16	20	14
1316	2020	KARNATAKA	Chikkamagaluru	124	7	3
2063	2020	ODISHA	Mayurbhanj	9	19	19
2064	2020	ODISHA	Nabarangapur	7	80	98
2065	2020	ODISHA	Nayagarh	7	57	205
2066	2020	ODISHA	Nuapada	21	980	89
2067	2020	ODISHA	Puri	98	9588	29186

Q4. Retrieve all rows where the TotalPopulationRural is greater than 1 million and the srcStateName is 'HIMACHAL PRADESH'.

Input

```
SELECT *
FROM farmersinsurancedata
WHERE TotalPopulationRural > 1000000
AND srcStateName = 'HIMACHAL PRADESH';
```

output

rowID	srcYear	srcStateName	srcDistrictName	InsuranceUnits	TotalFarmersCovered	ApplicationsLoar
8	2018	HIMACHAL PRADESH	Kangra	34	30868	31638
1073	2019	HIMACHAL PRADESH	Kangra	34	34564	35348
2263	2020	HIMACHAL PRADESH	Kangra	34	32453	33380
3144	2021	HIMACHAL PRADESH	Kangra	2	11	11
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Q5. Retrieve the srcStateName, srcDistrictName, and the sum of FarmersPremiumAmount for each district in the year 2018, and display the results ordered by FarmersPremiumAmount in ascending order.

Input

```
SELECT
    srcStateName,
    srcDistrictName,
    SUM(FarmersPremiumAmount) AS FarmersPremiumAmount
FROM farmersinsurancedata
WHERE srcYear = 2018
GROUP BY srcStateName, srcDistrictName
ORDER BY FarmersPremiumAmount ASC;
```

Output	

srcStateName	srcDistrictName	FarmersPremiumAmount
KARNATAKA	Chikkaballapur	0
KARNATAKA	Chikkamagaluru	0
KARNATAKA	Mysuru	0
KARNATAKA	Ramanagara	0
KARNATAKA	Shivamogga	0
KARNATAKA	Tumakuru	0
KARNATAKA	Udupi	0
KARNATAKA	UttarKannada	0

Q6. Retrieve the total number of farmers covered (TotalFarmersCovered) and the sum of premiums (GrossPremiumAmountToBePaid) for each state (srcStateName) where the insured land area (InsuredLandArea) is greater than 5.0 and the Year is 2018.

Input	

```
SELECT
    srcStateName,
    SUM(TotalFarmersCovered) AS TotalFarmersCovered,
    SUM(GrossPremiumAmountToBePaid) AS TotalPremiumAmount
FROM farmersinsurancedata
WHERE InsuredLandArea > 5.0
AND srcYear = 2018
GROUP BY srcStateName;
```

Output	

srcStateName	TotalFarmersCovered	TotalPremiumAmount
JAMMU AND KASHMIR	52842	2472.040069580078
HIMACHAL PRADESH	64766	530.0900039672852
UTTARAKHAND	19726	668.5700073242188
HARYANA	665511	26875.559646606445
RAJASTHAN	1666703	114021.20956420898

Q7. Calculate the average insured land area (InsuredLandArea) for each year (srcYear).

Input	

```
SELECT
    srcYear,
    AVG(InsuredLandArea) AS AvgInsuredLandArea
FROM farmersinsurancedata
GROUP BY srcYear
ORDER BY srcYear;
```

Output	

srcYear	AvgInsuredLandArea
2018	38.235249986316866
2019	40.162162148120686
2020	48.35194718522074
2021	39.29111637346095

Q8. Calculate the total number of farmers covered (TotalFarmersCovered) for each district (srcDistrictName) where Insurance units is greater than 0.

Input

```
SELECT
    srcDistrictName,
    SUM(TotalFarmersCovered) AS TotalFarmersCovered
FROM farmersinsurancedata
WHERE InsuranceUnits > 0
GROUP BY srcDistrictName
ORDER BY TotalFarmersCovered DESC;
```

Output

srcDistrictName	TotalFarmersCovered
Bid	1430532
Latur	1184066
Nanded	739712
Osmanabad	700623
Jalna	666086
Ujjain	630787

Q9. For each state (srcStateName), calculate the total premium amounts (FarmersPremiumAmount, StatePremiumAmount, GOVPremiumAmount) and the total number of farmers covered (TotalFarmersCovered). Only include records where the sum insured (SumInsured) is greater than 500,000 (remember to check for scaling).

Input

```
SELECT
    srcStateName,
    SUM(FarmersPremiumAmount) AS TotalFarmersPremium,
    SUM(StatePremiumAmount) AS TotalStatePremium,
    SUM(GOVPremiumAmount) AS TotalGovPremium,
    SUM(TotalFarmersCovered) AS TotalFarmersCovered
FROM farmersinsurancedata
WHERE SumInsured > 500000
GROUP BY srcStateName
ORDER BY TotalFarmersCovered DESC;
```

Output

Q10. Retrieve the top 5 districts (srcDistrictName) with the highest TotalPopulation in the year 2020.

Input

```
SELECT
    srcDistrictName,
    TotalPopulation
FROM farmersinsurancedata
WHERE srcYear = 2020
ORDER BY TotalPopulation DESC
LIMIT 5;
```

Output

srcDistrictName	TotalPopulation
Pune	9429408
Thane	8070032
Jaipur	6626178
Nashik	6107187
Allahabad	5954391

Q11. Retrieve the srcStateName, srcDistrictName, and SumInsured for the 10 districts with the lowest non-zero FarmersPremiumAmount, ordered by insured sum and then the FarmersPremiumAmount.

Input

```
SELECT
    srcStateName,
    srcDistrictName,
    SumInsured,
    FarmersPremiumAmount
FROM farmersinsurancedata
WHERE FarmersPremiumAmount > 0
ORDER BY SumInsured ASC, FarmersPremiumAmount ASC
LIMIT 10;
```

Output

srcStateName	srcDistrictName	SumInsured	FarmersPremiumAmount
KARNATAKA	Kalaburgi	0.0044	0.0001
KARNATAKA	Kolar	0.0048	0.0001
KARNATAKA	Davangere	0.0051	0.0001
KARNATAKA	Ballari	0.0052	0.0001
KARNATAKA	Mandya	0.0056	0.0001

Q12. Retrieve the top 3 states (srcStateName) along with the year (srcYear) where the ratio of insured farmers (TotalFarmersCovered) to the total population (TotalPopulation) is highest. Sort the results by the ratio in descending order.

Input

```
SELECT
    srcStateName,
    srcYear,
    (SUM(TotalFarmersCovered) * 1.0 / SUM(TotalPopulation)) AS InsuredFarmersRatio
FROM farmersinsurancedata
WHERE TotalPopulation > 0  -- To avoid division by zero
GROUP BY srcStateName, srcYear
ORDER BY InsuredFarmersRatio DESC
LIMIT 3;
```

Output	srcStateName	srcYear	InsuredFarmersRatio
	CHHATTISGARH	2021	0.04981
	TRIPURA	2020	0.04683
	TRIPURA	2021	0.04637

Q13. Create StateShortName by retrieving the first 3 characters of the srcStateName for each unique state.

Input

```
SELECT
    DISTINCT srcStateName,
    LEFT(srcStateName, 3) AS StateShortName
FROM farmersinsurancedata;
```

Output

srcStateName	StateShortName
JAMMU AND KASHMIR	JAM
HIMACHAL PRADESH	HIM
UTTARAKHAND	UTT
HARYANA	HAR
GUJARAT	GUJ

Q14. Retrieve the srcDistrictName where the district name starts with 'B'.

Input

```
SELECT DISTINCT srcDistrictName
FROM farmersinsurancedata
WHERE srcDistrictName LIKE 'B%';
```

Output

srcDistrictName
Bilaspur
Bageshwar
Bhiwani
Banswara
Baran

Q15. Retrieve the srcStateName and srcDistrictName where the district name contains the word 'pur' at the end.

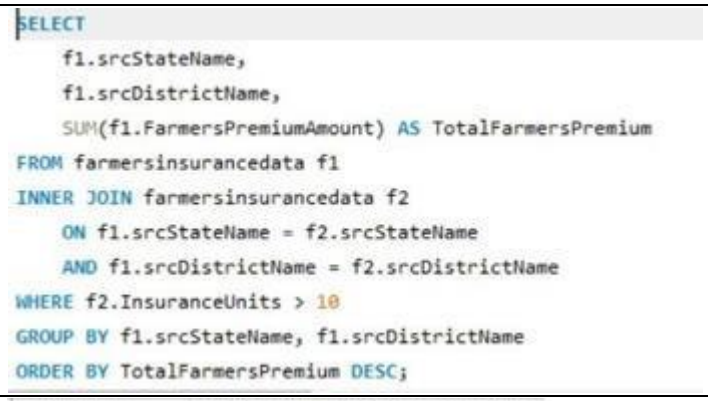
Input

```
SELECT DISTINCT srcStateName, srcDistrictName
FROM farmersinsurancedata
WHERE srcDistrictName LIKE '%pur';
```

Output

srcStateName	srcDistrictName
JAMMU AND KASHMIR	Udhampur
HIMACHAL PRADESH	Bilaspur
HIMACHAL PRADESH	Hamirpur
RAJASTHAN	Bharatpur
RAJASTHAN	Dhaulpur

Q16. Perform an INNER JOIN between the srcStateName and srcDistrictName columns to retrieve the aggregated FarmersPremiumAmount for districts where the district's Insurance units for an individual year are greater than 10.

Input	
Output	

srcStateName	srcDistrictName	TotalFarmersPremium
MAHARASHTRA	Bid	58115.43896484375
MADHYA PRADESH	Ujjain	49540.92138671875
MAHARASHTRA	Latur	46801.279296875
MADHYA PRADESH	Rajgarh	37879.83984375
MADHYA PRADESH	Sehore	37013.95947265625

Q17. Write a query that retrieves srcStateName, srcDistrictName, Year, TotalPopulation for each district and the the highest recorded FarmersPremiumAmount for that district over all available years Return only those districts where the highest FarmersPremiumAmount exceeds 20 crores.

Input	
Output	This query will return no results as dataset does not contain FarmersPremiumAmount values anywhere near 20 crores

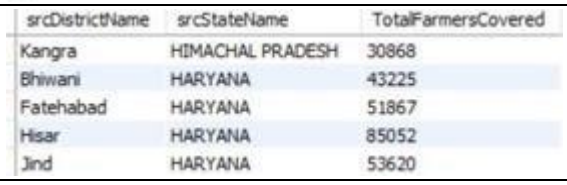
Q18. Perform a LEFT JOIN to combine the total population statistics with the farmers' data (TotalFarmersCovered, SumInsured) for each district and state. Return the total premium amount (FarmersPremiumAmount) and the average population count for each district aggregated over the years, where the total FarmersPremiumAmount is greater than 100 crores. Sort the results by total farmers' premium amount, highest first.

Input	<pre>SELECT
	    f.srcStateName,
	    f.srcDistrictName,
	    SUM(f.FarmersPremiumAmount) AS TotalFarmersPremiumAmount,
	    AVG(f.TotalPopulation) AS AvgPopulation
	FROM FarmersInsuranceData f
	LEFT JOIN (
	    SELECT srcStateName, srcDistrictName, TotalPopulation
	    FROM FarmersInsuranceData
	) p ON f.srcStateName = p.srcStateName AND f.srcDistrictName = p.srcDistrictName
	GROUP BY f.srcStateName, f.srcDistrictName
	HAVING SUM(f.FarmersPremiumAmount) > 1000000000 -- 100 Crores
	ORDER BY TotalFarmersPremiumAmount DESC;</pre>

Output	This query will return no results as no districts meet the 100 crore threshold

Q19. Write a query to find the districts (srcDistrictName) where the TotalFarmersCovered is greater than the average TotalFarmersCovered across all records.

Input	<pre>SELECT DISTINCT srcDistrictName, srcStateName, TotalFarmersCovered
	FROM farmersinsurancedata
	WHERE TotalFarmersCovered > (
	    SELECT AVG(TotalFarmersCovered) FROM farmersinsurancedata
	);</pre>

Output	

srcDistrictName	srcStateName	TotalFarmersCovered
Kangra	HIMACHAL PRADESH	30868
Bhiwani	HARYANA	43225
Fatehabad	HARYANA	51867
Hisar	HARYANA	85052
Jind	HARYANA	53620

Q20. Write a query to find the srcStateName where the SumInsured is higher than the SumInsured of the district with the highest FarmersPremiumAmount.

Input	<pre>SELECT DISTINCT srcStateName
	FROM FarmersInsuranceData
	WHERE SumInsured > (
	    SELECT SumInsured
	    FROM FarmersInsuranceData
	    WHERE FarmersPremiumAmount = (SELECT MAX(FarmersPremiumAmount) FROM FarmersInsuranceD
	    LIMIT 1
	);</pre>

Output	From the dataset, the highest FarmersPremiumAmount is ₹7244.42 (for the district Bid, Maharashtra), and its SumInsured is ₹275,019. Since the SumInsured threshold is very low, it's highly likely that many states do not exceed this value, which is why the query returned no results.

Q21. Write a query to find the srcDistrictName where the FarmersPremiumAmount is higher than the average FarmersPremiumAmount of the state that has the highest TotalPopulation.

Input

```
SELECT DISTINCT srcDistrictName, srcStateName, FarmersPremiumAmount
FROM farmersinsurancedata
WHERE FarmersPremiumAmount > (
    -- Subquery to get the average FarmersPremiumAmount of the state with the highest Tota
    SELECT AVG(FarmersPremiumAmount)
    FROM farmersinsurancedata
    WHERE srcStateName = (
        -- Subquery to get the state with the highest TotalPopulation
        SELECT srcStateName
        FROM farmersinsurancedata
        ORDER BY TotalPopulation DESC
        LIMIT 1
```

Output

srcDistrictName	srcStateName	FarmersPremiumAmount
Bhiwani	HARYANA	702.08
Fatehabad	HARYANA	1001.75
Hisar	HARYANA	1355.27
Jind	HARYANA	895.54
Kaithal	HARYANA	636.37

Q22. Use the ROW_NUMBER() function to assign a row number to each record in the dataset ordered by total farmers covered in descending order.

Input

```
SELECT
    ROW_NUMBER() OVER (ORDER BY TotalFarmersCovered DESC) AS RowNum,
    srcStateName,
    srcDistrictName,
    srcYear,
    TotalFarmersCovered
FROM farmersinsurancedata;
```

Output

RowNum	srcStateName	srcDistrictName	srcYear	TotalFarmersCovered
1	MAHARASHTRA	Bid	2019	548572
2	MAHARASHTRA	Nanded	2021	426801
3	MAHARASHTRA	Latur	2019	407452
4	MAHARASHTRA	Bid	2018	387806
5	MAHARASHTRA	Latur	2021	367746

Q23. Use the RANK() function to rank the districts (srcDistrictName) based on the SumInsured (descending) and partition by alphabetical srcStateName.

Input

```
SELECT
    srcStateName,
    srcDistrictName,
    SumInsured,
    RANK() OVER (PARTITION BY srcStateName ORDER BY SumInsured DESC) AS RankInState
FROM farmersinsurancedata
ORDER BY srcStateName ASC, RankInState;
```

Output

srcStateName	srcDistrictName	SumInsured	RankInState
ANDHRA PRADESH	Kurnool	191969	1
ANDHRA PRADESH	Y.S.R.	177442	2
ANDHRA PRADESH	Srikakulam	149882	3
ANDHRA PRADESH	Prakasam	115235	4
ANDHRA PRADESH	Krishna	110285	5

Q24. Use the SUM() window function to calculate a cumulative sum of FarmersPremiumAmount for each district (srcDistrictName), ordered ascending by the srcYear, partitioned by srcStateName.

Input

```
SELECT
    srcStateName,
    srcDistrictName,
    srcYear,
    FarmersPremiumAmount,
    SUM(FarmersPremiumAmount) OVER (
        PARTITION BY srcStateName, srcDistrictName
        ORDER BY srcYear ASC
    ) AS CumulativePremium
FROM farmersinsurancedata
ORDER BY srcStateName, srcDistrictName, srcYear;
```

Output

srcStateName	srcDistrictName	srcYear	FarmersPremiumAmount	CumulativePremium
ANDHRA PRADESH	Anantapur	2018	541.83	541.8300170898438
ANDHRA PRADESH	Anantapur	2019	0.189	542.019017085433
ANDHRA PRADESH	Chittoor	2018	99.65	99.6500015258789
ANDHRA PRADESH	Chittoor	2019	0.4411	100.09110152721405
ANDHRA PRADESH	East Godavari	2018	102.6	102.5999984741211

Q25. Create a table 'districts' with DistrictCode as the primary key and columns for DistrictName and StateCode. Create another table 'states' with StateCode as primary key and column for StateName.

Input

```
CREATE TABLE states (
    StateCode VARCHAR(10) PRIMARY KEY,  -- Unique code for each state
    StateName VARCHAR(255) NOT NULL     -- Name of the state
);

-- Creating the 'districts' table
CREATE TABLE districts (
    DistrictCode VARCHAR(10) PRIMARY KEY,  -- Unique code for each district
    DistrictName VARCHAR(255) NOT NULL,    -- Name of the district
    StateCode VARCHAR(10) NOT NULL,        -- Foreign key referencing 'states' table
    FOREIGN KEY (StateCode) REFERENCES states(StateCode) ON DELETE CASCADE
```

Output

	Time	Action	Message
75	22:11:33	SELECT srcStateName, srcDistrictName, srcYear, FarmersPre...	1820 row(s) returned
76	22:15:30	CREATE TABLE states (StateCode VARCHAR(10) PRIMARY KEY, -- ...	0 row(s) affected
77	22:15:31	CREATE TABLE districts (DistrictCode VARCHAR(10) PRIMARY KEY, ...	0 row(s) affected

Q26. Add a foreign key constraint to the districts table that references the StateCode column from a states table.

Input

```
ALTER TABLE districts
ADD CONSTRAINT fk_statecode
FOREIGN KEY (StateCode)
REFERENCES states(StateCode)
ON DELETE CASCADE;
```

Q27. Update the FarmersPremiumAmount to 500.0 for the record where rowID is 1.

Input

```
UPDATE farmersinsurancedata
SET FarmersPremiumAmount = 500.0
WHERE rowID = 1;
```

Q28. Update the Year to '2021' for all records where srcStateName is 'HIMACHAL PRADESH'.

Input	UPDATE farmersinsurancedata SET srcYear = 2021 WHERE srcStateName = 'HIMACHAL PRADESH';

Q29. Delete all records where the TotalFarmersCovered is less than 10000 and Year is 2020.

Input	DELETE FROM farmersinsurancedata WHERE TotalFarmersCovered < 10000 AND srcYear = 2020;