Use queries to complete each of the following exercise. Your query should produce only the result set that answers the question. Remember, you don’t need to answer the question – just provide a query or series of queries that would allow the question to be answered.

To begin, open the CedarInvasion.mdb database. Then open and inspect the cedar seedling data stored in the SeedlingStatus table. To see more information about the fields switch to Design View by clicking the View dropdown in the top left of the Access window. You may want to switch back to Table View as you begin writing queries.

1. How many unique sampling points exist in the SeedlingStatus table (note each sample point has more than one record, so this problem can’t be solved by simply counting the number of records)? You may either use a subquery, or write two separate queries (saving the first query and referencing it in the second query).

SELECT Count(SamplePointID) AS SampleCount

FROM (SELECT DISTINCT SamplePointID

FROM SeedlingStatus);

1. Which sampling points from the SeedlingStatus table are missing some data in the SoilProperties table? Note that the SoilProperties table contains some points that are not included in the SeedlingStatus table, and you don’t want to include those points. Your query should return a result set that allows you to see which data are missing for each point.

SELECT SeedlingStatus.SamplePointID, pH, Pottasium, Phosphate, PercentSand, PercentClay, PercentSilt, Diameter

FROM SoilProperties INNER JOIN SeedlingStatus

ON SoilProperties.SamplePointID = SeedlingStatus.SamplePointID

WHERE (pH IS NULL) OR (Phosphate is NULL) OR (PercentSand is NULL) OR (PercentClay IS NULL) OR (PercentSilt IS NULL);

1. How many seedlings increased in diameter from spring to fall? (Beware the null values!)

SELECT COUNT (Fall.SamplePointID) AS SpidCount

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

WHERE (Fall.Diameter <> "NA") AND (Spring.Diameter <> "NA") AND (Fall.Diameter - Spring.Diameter) > 0;

Total Sample: 1917.

1. Do all of the sampling points have data for both spring and fall? If not, which sampling points are missing?

SELECT Fall.SamplePointID, Fall.Diameter AS FallDia, Spring.Diameter AS SpDia

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

WHERE (Fall.Diameter = "NA") OR (Spring.Diameter = "NA");

Total missing count = 8.

1. How much did the diameter and height of each seedling change from spring to fall? To solve this problem, subtract the diameter in spring from the diameter in fall. Do the same for change in height.

**Diameter Difference:**

SELECT (Fall.SamplePointID) AS SpidCount, Fall.Diameter AS FallDia, Spring.Diameter AS SpDia, ROUND ((Fall.Diameter - Spring.Diameter), 3) AS DiaDiff

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, "NA") AS Diameter

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

WHERE (Fall.Diameter <> "NA") AND (Spring.Diameter <> "NA") AND (Fall.Diameter - Spring.Diameter) > 0;

**Height Difference:**

SELECT (Fall.SamplePointID) AS SpidCount, Fall.Height AS FallHt, Spring.Height AS SpHt, ROUND ((Fall.Height - Spring.Height), 3) AS HtDiff

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

WHERE (Fall.Height <> "NA") AND (Spring.Height <> "NA") AND (Fall.Height - Spring.Height) > 0;

1. What is the average increase in height for all seedlings?

SELECT ROUND (AVG (Fall.Height - Spring.Height), 3) AS HtDiff

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

WHERE (Fall.Height <> "NA") AND (Spring.Height <> "NA") AND (Fall.Height - Spring.Height) > 0;

Average Height: 51.213

1. The table includes a column for survival rate with potential values of 0, 1, 2, 3, and 4. Using the Fall survival rating, what was the average increase in diameter for seedlings with each survival rate? (Consider all seedlings, not just those that increased in diameter.)

SELECT Fall.Survival, (ROUND (AVG (Fall.Diameter), 3)) AS FallDia, (ROUND (AVG (Spring.Diameter), 3)) AS SpDia, (ROUND (AVG (Fall.Diameter - Spring.Diameter), 3)) AS DiaDiff

FROM

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter, SeedlingStatus.SurvivalRating AS Survival

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "fall") AS Fall)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter, SeedlingStatus.SurvivalRating AS Survival

FROM SeedlingStatus

WHERE SeedlingStatus.Season = "spring") AS Spring)

ON Fall.SamplePointID = Spring.SamplePointID

GROUP BY Fall.Survival;

1. What was the soil pH for each sampling site where the seedling diameter decreased from spring to fall? (To answer this question, you will need to embed a subquery within a subquery. Develop the query from the inside out.)

SELECT SpF.Sample, SpF.SpDia, SpF.FallDia, DiaDiff, Soil.pH

FROM (SELECT SoilProperties.SamplePointID AS Sample, SoilProperties.pH FROM SoilProperties) AS Soil

INNER JOIN

(SELECT Spring.Sample, Spring.Diameter AS SpDia, Fall.Diameter AS FallDia, ROUND ((Spring.Diameter - Fall.Diameter), 3) AS DiaDiff

FROM ((SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, 0) AS Diameter

FROM SeedlingStatus WHERE SeedlingStatus.Season = "spring") AS Spring)

INNER JOIN

((SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, 0) AS Diameter

FROM SeedlingStatus WHERE SeedlingStatus.Season = "fall") AS Fall)

ON Spring.Sample = Fall.Sample) AS SpF

ON SpF.Sample = Soil.Sample

WHERE (SpF.SpDia - SpF.FallDia) > 0;

Total Sample = 716.

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| Most important learning from this homework: Break down each part of the problem into small pieces and work each pieces separately not matter how many queries you have to create. You can decode any big problem of data query.  **Code Compilation:**  **Q1:**  SELECT Count(SamplePointID) AS SampleCount  FROM (SELECT DISTINCT SamplePointID  FROM SeedlingStatus);  **Q2:**  SELECT SeedlingStatus.SamplePointID, pH, Pottasium, Phosphate, PercentSand, PercentClay, PercentSilt, Diameter  FROM SoilProperties INNER JOIN SeedlingStatus  ON SoilProperties.SamplePointID = SeedlingStatus.SamplePointID  WHERE (pH IS NULL) OR (Phosphate is NULL) OR (PercentSand is NULL) OR (PercentClay IS NULL) OR (PercentSilt IS NULL);  **Q3:**  **Bryan’s Code:**  SELECT COUNT(Fall.SamplePointID)  FROM  (SELECT SamplePointID, Diameter  FROM SeedlingStatus  WHERE (Season = "Fall") AND (Diameter IS NOT NULL)) AS Fall  INNER JOIN  (SELECT SamplePointID, Diameter  FROM SeedlingStatus  WHERE (Season = "Spring") AND (Diameter IS NOT NULL)) as Spring  ON  Fall.SamplePointID = Spring.SamplePointID  WHERE Spring.Diameter < Fall.Diameter;  **Bijesh Code:**  SELECT COUNT (Fall.SamplePointID) AS SpidCount  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE ROUND ((Fall.Diameter - Spring.Diameter), 3) > 0;  **OR**  SELECT COUNT (Fall.SamplePointID) AS SpidCount  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Diameter <> "NA") AND (Spring.Diameter <> "NA") AND (Fall.Diameter - Spring.Diameter) > 0;  **Q4:**  SELECT COUNT (Fall.SamplePointID) AS SpidCount  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Diameter = "NA") OR (Spring.Diameter = "NA");  Total Missing: 8  Which are missing?  SELECT Fall.SamplePointID, Fall.Diameter AS FallDia, Spring.Diameter AS SpDia  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Diameter = "NA") OR (Spring.Diameter = "NA");  **Q5:**  **Diameter Difference:**  SELECT (Fall.SamplePointID) AS SpidCount, Fall.Diameter AS FallDia, Spring.Diameter AS SpDia, ROUND ((Fall.Diameter - Spring.Diameter), 3) AS DiaDiff  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, "NA") AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Diameter <> "NA") AND (Spring.Diameter <> "NA") AND (Fall.Diameter - Spring.Diameter) > 0;  **Height Difference:**  SELECT (Fall.SamplePointID) AS SpidCount, Fall.Height AS FallHt, Spring.Height AS SpHt, ROUND ((Fall.Height - Spring.Height), 3) AS HtDiff  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Height <> "NA") AND (Spring.Height <> "NA") AND (Fall.Height - Spring.Height) > 0;  **Q6:**  SELECT ROUND (AVG (Fall.Height - Spring.Height), 3) AS HtDiff  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, NZ (SeedlingStatus.Height, "NA") AS Height  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  WHERE (Fall.Height <> "NA") AND (Spring.Height <> "NA") AND (Fall.Height - Spring.Height) > 0;  **Q7:**  SELECT Fall.Survival, (ROUND (AVG (Fall.Diameter), 3)) AS FallDia, (ROUND (AVG (Spring.Diameter), 3)) AS SpDia, (ROUND (AVG (Fall.Diameter - Spring.Diameter), 3)) AS DiaDiff  FROM  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter, SeedlingStatus.SurvivalRating AS Survival  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "fall") AS Fall)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID, SeedlingStatus.Season, SeedlingStatus.Diameter, SeedlingStatus.SurvivalRating AS Survival  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring") AS Spring)  ON Fall.SamplePointID = Spring.SamplePointID  GROUP BY Fall.Survival;  **Q8:**  Query for Table Spring:  SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, 0) AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "spring";  Query for Table Fall:  SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ(SeedlingStatus.Diameter, 0) AS Diameter  FROM SeedlingStatus  WHERE SeedlingStatus.Season = "Fall";  Query for Table Soil  SELECT SoilProperties.SamplePointID AS Sample, SoilProperties.pH  FROM SoilProperties;  Query for Table Spring and Fall (SpF)  SELECT Spring.Sample, Spring.Diameter AS SpDia, Fall.Diameter AS FallDia, ROUND((Spring.Diameter - Fall.Diameter), 3) AS DiaDiff  FROM Spring INNER JOIN Fall ON Spring.Sample = Fall.Sample;  Query for Final Result:  SELECT SpF.Sample, SpF.SpDia, SpF.FallDia, Soil.pH  FROM SpF INNER JOIN Soil ON SpF.Sample=Soil.Sample  WHERE ROUND((SpF.SpDia - SpF.FallDia), 3) > 0;  Joint Query:  SELECT SpF.Sample, SpF.SpDia, SpF.FallDia, DiaDiff, Soil.pH  FROM (SELECT SoilProperties.SamplePointID AS Sample, SoilProperties.pH FROM SoilProperties) AS Soil  INNER JOIN  (SELECT Spring.Sample, Spring.Diameter AS SpDia, Fall.Diameter AS FallDia, ROUND ((Spring.Diameter - Fall.Diameter), 3) AS DiaDiff  FROM ((SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, 0) AS Diameter  FROM SeedlingStatus WHERE SeedlingStatus.Season = "spring") AS Spring)  INNER JOIN  ((SELECT SeedlingStatus.SamplePointID AS Sample, SeedlingStatus.Season, NZ (SeedlingStatus.Diameter, 0) AS Diameter  FROM SeedlingStatus WHERE SeedlingStatus.Season = "Fall") AS Fall) ON Spring.Sample = Fall.Sample) AS SpF  ON SpF.Sample=Soil.Sample  WHERE (SpF.SpDia - SpF.FallDia) > 0; |