Count Of Bushels 48 Prototype Database

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NN: 48

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Abstract

The Count of Bushels 48(COB48) is a prototype database that is designed to implement the COB project, with a specific focus on capturing and managing harvest yield information for corn and soybeans in Indiana. As the appointed Data Architect (DA) for COB48 I am tasked to create a comprehensive database that records and organizes data related to farming in the regions of Indiana specializing in corn and soybean cultivation.

Keywords: Indiana, Corn, Soybeans, Bushels, Yield, Database, Table, Normalization

Count Of Bushels 48 Prototype Database

Introduction

As the appointed Data Architect (DA), the task at hand involves the design and implementation of a prototype database geared towards capturing and managing information regarding harvest yields of corn and soybeans of different varieties. Count of Bushels 48 prototype database aims to accurately Implement this project, its motivation, methodologies, and all the business rules to maintain detailed records, and provide a comprehensive solution to monitor and analyze harvest yields across the regions of Indiana. Through extensive data collection, analyzing functional dependency, and through multiple design Iterations of the logical and physical data model Count of Bushels 48 is now fully implemented.

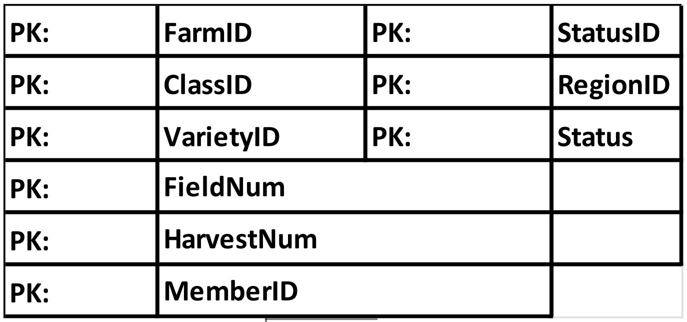
Gathering Data

Before beginning the design process, of the Count of Bushels 48(COB48) prototype database, the initial step involved a collaborative effort led by Project Manager Bob Bureaucrat and regional managers Sam Supervisor, Mary Manager, and Fred Foreman to elaborate on the farming operations and procedures used to collect the data. A sample table was also provided by Bob Bureaucrat. The table contains the data that has been collected across all the regions. Through further Q and A, a codex was provided detailing the codes and their meaning. Now, having collected all the column names, their properties, and their relationship relative to each other the next step is to determine any functional dependency between these columns.

Functional Dependencies

After gathering the necessary data, the next step in the design process is determining functional dependencies. Functional dependencies are essential concepts in database design, serving as a cornerstone for ensuring data integrity and normalization. In the context of the Count of Bushels (COB48) prototype database, functional dependencies refer to the relationships between attributes or columns within the dataset. After collecting all relevant column names, their properties, and understanding their interrelationships, the next pivotal step involves discerning any functional dependencies among these columns. This process aims to identify how changes in one attribute may influence another, providing a basis for maintaining consistency and avoiding data anomalies. By recognizing and formalizing these dependencies, the COB 48 Prototype Database aims to establish a robust database structure that adheres to the principles of normalization and optimally organizes data, contributing to the overall efficiency and reliability of the agricultural database system.

Normalization



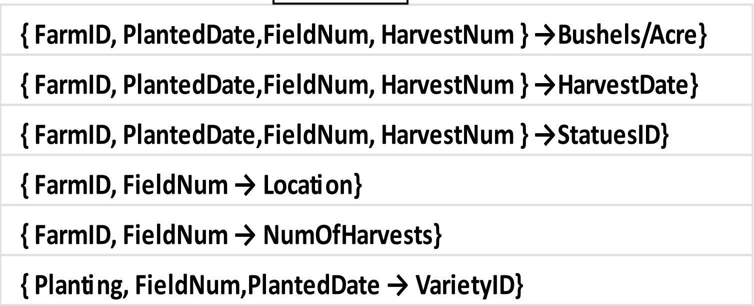
PK:	FarmID	PK:	StatusID
PK:	ClassID	PK:	RegionID
PK:	VarietyID	PK:	Status
PK:	FieldNum		
PK:	HarvestNum		
PK:	MemberID		

Figure.A.

The normalization process involves organizing a relational database to minimize redundancy and dependency, thereby enhancing data integrity and efficiency. First Normal Form(1NF) ensures that each table has a primary key. As you can (Figure. A.) identifies all the primary keys. Additionally, it eliminates repeating groups and ensures atomicity of columns while addressing multi-valued attributes by creating separate tables.

Second Normal Form

Figure B

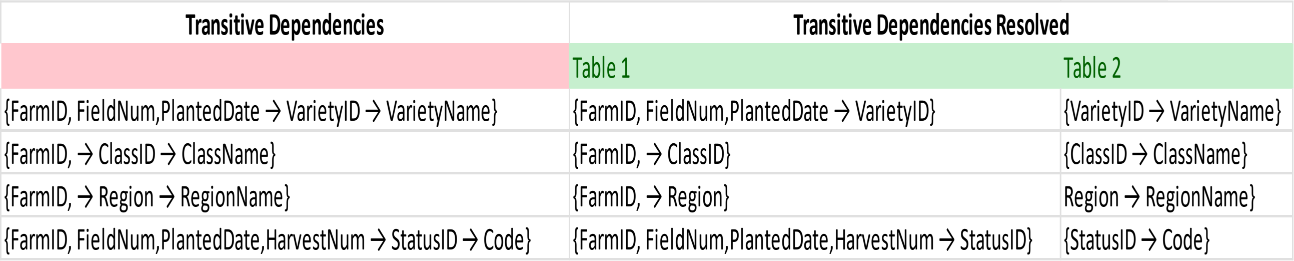


{ FarmID, PlantedDate,FieldNum, HarvestNum } →Bushels/Acre}
{ FarmID, PlantedDate,FieldNum, HarvestNum } →HarvestDate}
{ FarmID, PlantedDate,FieldNum, HarvestNum } →StatuesID}
{ FarmID, FieldNum → Location}
{ FarmID, FieldNum → NumOfHarvests}
{ Planting, FieldNum,PlantedDate → VarietyID}

The Second Normal Form(2NF) can only be reached if the requirements of 1NF are meet. 2NF remove partial dependencies by separating columns that depend on only part of the primary key which helps facilitate tables with composite primary keys. The significance of this process becomes evident in scenarios where complex relationships exist between various attributes, such as those exemplified by composite primary keys, as illustrated in Figure B.

Third Normal Form

Figure C



Transitive Dependencies	Transitive Dependencies Resolved	
	Table 1	Table 2
{FarmID, FieldNum,PlantedDate → VarietyID → VarietyName}	{FarmID, FieldNum,PlantedDate → VarietyID}	{VarietyID → VarietyName}
{FarmID, → ClassID → ClassName}	{FarmID, → ClassID}	{ClassID → ClassName}
{FarmID, → Region → RegionName}	{FarmID, → Region}	Region → RegionName}
{FarmID, FieldNum,PlantedDate,HarvestNum → StatusID → Code}	{FarmID, FieldNum,PlantedDate,HarvestNum → StatusID}	{StatusID → Code}

The progression towards a well-structured and normalized database continues with the Third Normal Form (3NF), building upon the foundations laid by 2NF. In 3NF transitive dependencies must be eliminated by removing columns that depend on non-primary keys. So, each non-primary attribute should be functionally dependent on the primary key. Figure C exemplifies this principle through the creation of two distinct tables, each with its primary or composite key, effectively eliminating transitive properties and establishing a more robust and coherent database structure. Additionally, It also defines the unique, irreducible Candidate keys for the next step in the normalization process.

Boyce–Codd Normal Form

The Boyce-Codd Normal Form (BCNF) introduces additional constraints beyond the general definition of the Third Normal Form (3NF). BCNF consider all candidate keys in a relation, ensuring that the table satisfies the prerequisites of 3NF. To be in BCNF, the table must already adhere to the requirements of the 3rd Normal Form and every functional dependency in a given relation should serve as a super-key. In this case, the design process is in BCNF because 3NF has already removed all the redundancies.

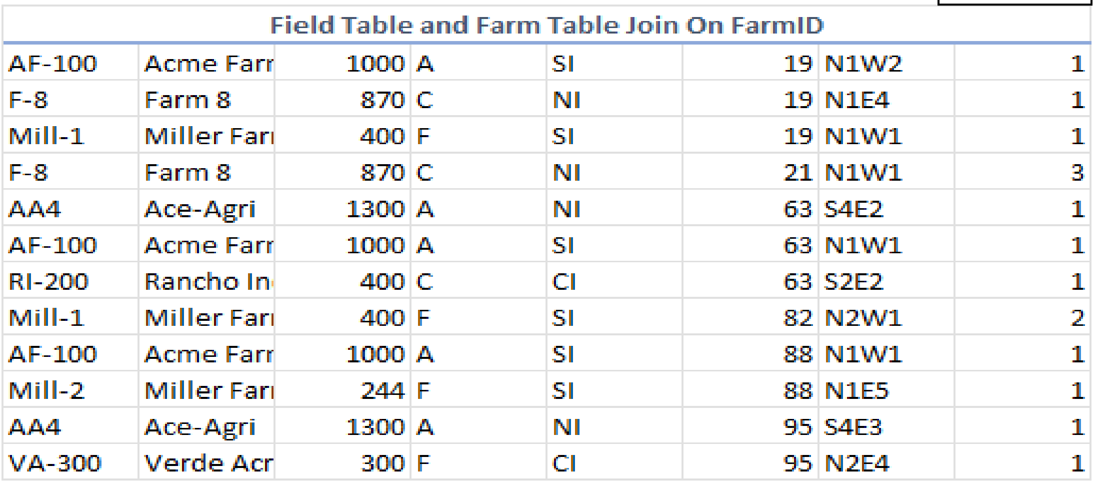
Fourth Normal Form

Since 3NF is satisfied and BCNF was not violated, 4NF ensures no table produces Multi-valued Dependencies (MVD), a condition that, if present, can introduce unnecessary redundancies and potentially lead to inconsistent data. To resolve MVD the table must be broken down into two separate tables, aligning with the principles of 4NF to enhance data integrity and eliminate redundancy. This meticulous process ensures that the database maintains a refined structure, free from irregularities that could compromise its efficiency and reliability. After comparing multiple tables no two tables had any Multi-valued Dependency.

Fifth Normal Form

The Fifth Normal Form (5NF) represents the highest level of normalization in database design, aiming to address intricate relationships and dependencies within the data. A relation achieves 5NF when it is in Fourth Normal Form (4NF) and eliminates any join dependencies**.** When a table is decomposed into It must have lossless join property. So, when tables are joined again no spurious or extra tuples are generated.

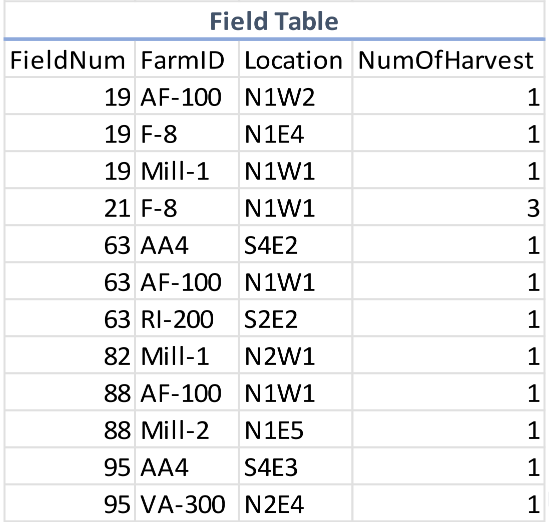
Figure D



Field Table and Farm Table Join On FarmID

AF-100	Acme Farr	1000	A	SI	19	N1W2	1
F-8	Farm 8	870	C	NI	19	N1E4	1
Mill-1	Miller Far	400	F	SI	19	N1W1	1
F-8	Farm 8	870	C	NI	21	N1W1	3
AA4	Ace-Agri	1300	A	NI	63	S4E2	1
AF-100	Acme Farr	1000	A	SI	63	N1W1	1
RI-200	Rancho In	400	C	CI	63	S2E2	1
Mill-1	Miller Far	400	F	SI	82	N2W1	2
AF-100	Acme Farr	1000	A	SI	88	N1W1	1
Mill-2	Miller Far	244	F	SI	88	N1E5	1
AA4	Ace-Agri	1300	A	NI	95	S4E3	1
VA-300	Verde Acr	300	F	CI	95	N2E4	1

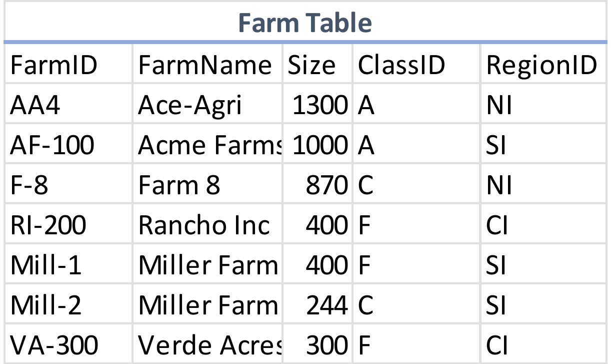
Figure D shows combinations of the Field table and Farm table. By decomposing the table in figure D into two table the lossless join property can tested If less or more tuples are generated during the decomposition then loss join property is violated.



Field Table

FieldNum	FarmID	Location	NumOfHarvest
19	AF-100	N1W2	1
19	F-8	N1E4	1
19	Mill-1	N1W1	1
21	F-8	N1W1	3
63	AA4	S4E2	1
63	AF-100	N1W1	1
63	RI-200	S2E2	1
82	Mill-1	N2W1	1
88	AF-100	N1W1	1
88	Mill-2	N1E5	1
95	AA4	S4E3	1
95	VA-300	N2E4	1

Figure E



Farm Table

FarmID	FarmName	Size	ClassID	RegionID
AA4	Ace-Agri	1300	A	NI
AF-100	Acme Farms	1000	A	SI
F-8	Farm 8	870	C	NI
RI-200	Rancho Inc	400	F	CI
Mill-1	Miller Farm	400	F	SI
Mill-2	Miller Farm	244	C	SI
VA-300	Verde Acres	300	F	CI

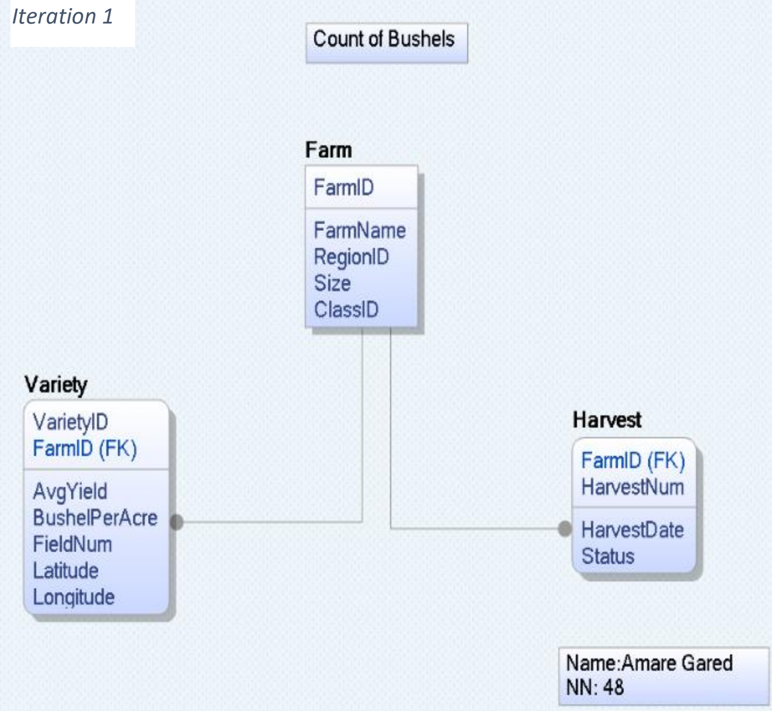
Figure F

Once Figure D is decomposed the results Field Table and Farm Table in Figure E and Figure F show that no data was lost during the joining the decomposition of the tables.

LDM/PDM Design

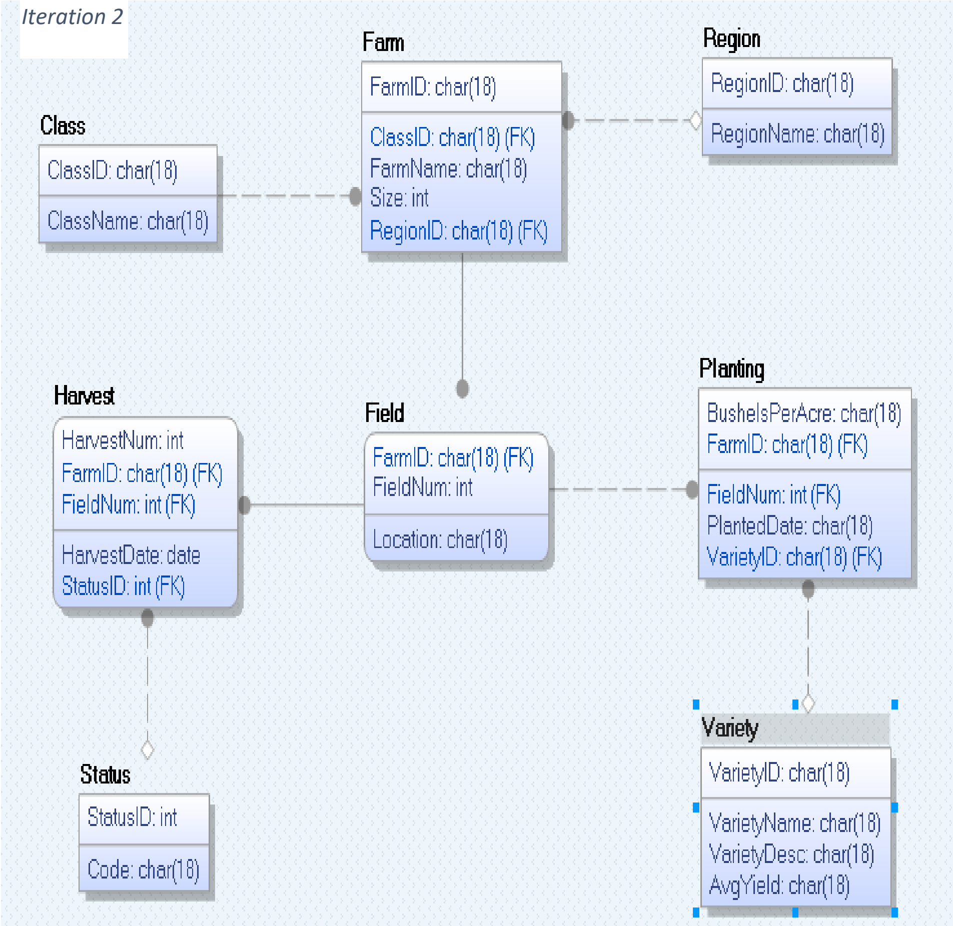
After entering 5NF the task of designing the Logical Data Model (LDM) and Physical Data Model (PDM) for relation begins. On the first iteration I had three tables called Farm, Variety, and Harvest.

Iteration 1



Iteration 1 was an overly simplified Logical Data Model and violated the no primary key as an attribute of another primary key constraint. In order to improve on this iteration I needed more tables and alter all the attributes within the entities. So, I start by revising the functional dependencies of VarietyID, RegionID, and ClassID; I came to a conclusion that their must be a separate table for primary key VarietyID, RegionID, and ClassID as theyare primary keys with their own attributes. In addition to these alterations, new data concerning the planting of crops was introduced to be included into the current design.

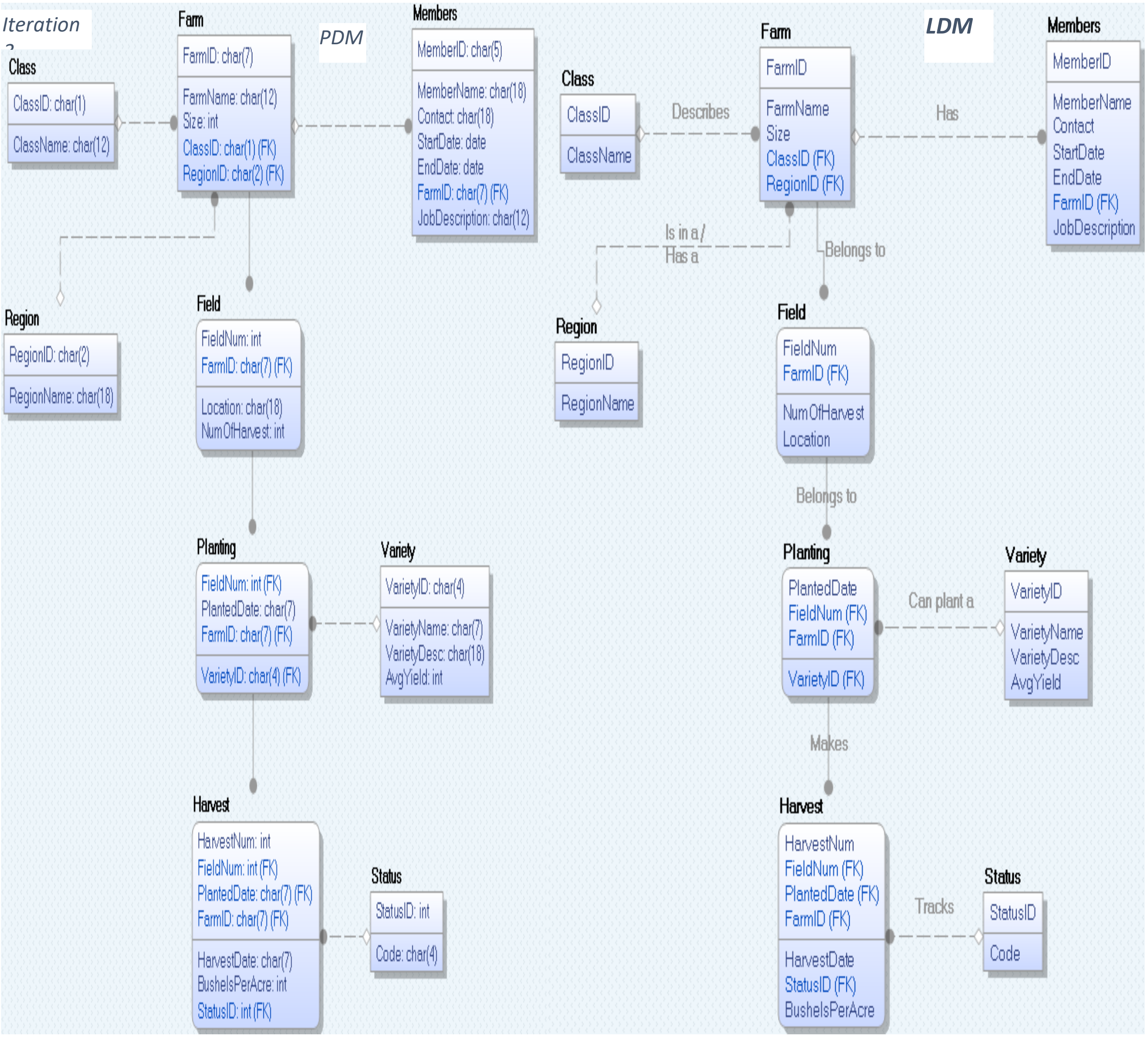
Iteration Two



On the second Iteration many changes were made including the addition of five new table. And an improved parent to child relationship between Class and Farm, Region and Farm, Status and Haverst, and Variety and Planting. But the relationship between Harvest, Field, and Planting entities is not an accurate representation of enterprise statement. To better understand this relationship between Harvest, Field, and Planting. I did further analysis of the enterprise statement, business rules, and universal relation. After the analysis, their relationship was clear. A field can exist without a plant, but plant can't also exit without the field and without plants there can be no harvest. It is using this logic that the third iteration of the LDM/PDM of COB48 was improved.

Iteration Three

On the third iteration of the LDM/PDM design new data was introduced to be implemented into the exiting design. This new data focused on the members of the farm. Members such as owners of the farm, regional managers, project manager, and harvesters. Iteration 3 shows a side-by-side image of the LDM and PDM of COB48. In this Iteration a new table called members is introduced with the primary key of MemberID and its six new attributes. Along with the new table the relationship between entities

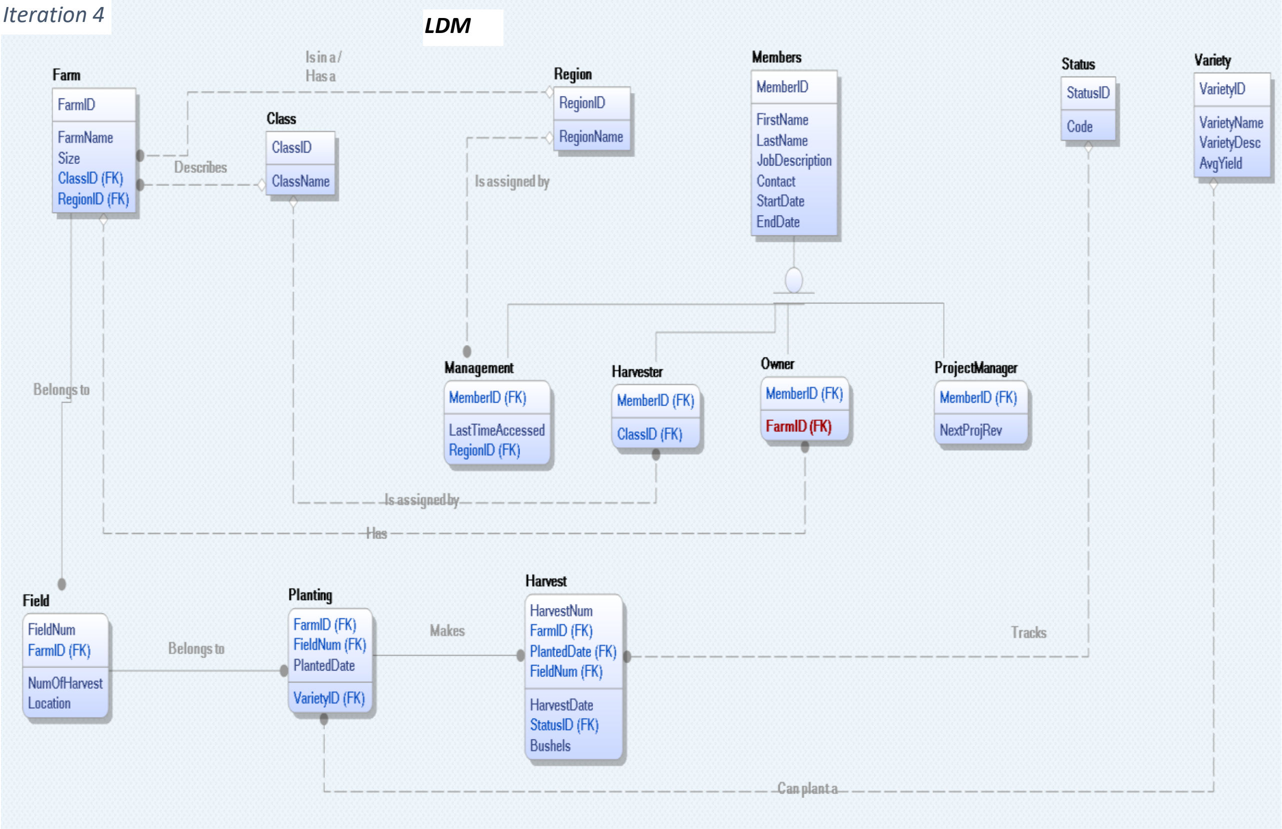


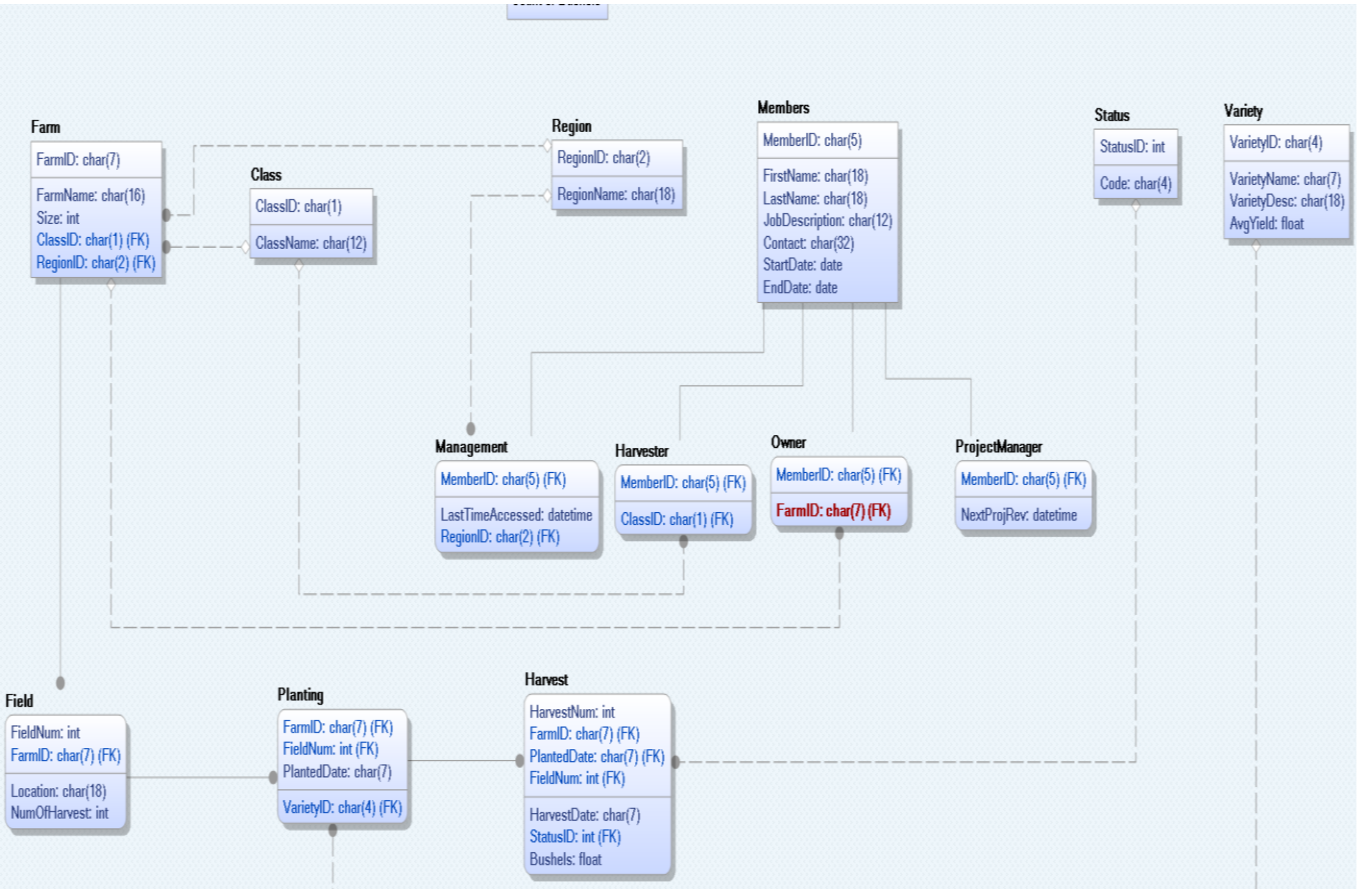
was revised and improved with the addition of LDM verb phrases. On the PDM, the datatype for all properties of each entity was declared and length of type CHAR was also declared. But this iteration did not properly implement the enterprise statement that organized members based roles and ownership. Iteration 3 also fails to implement subtypes and a supertype to organize such members and because Members table was incorrectly implanted this diagram is missing four additional table and two attributes. It also fails to arrange independent entities at the top of the diagram. Along with incorrect order of attribute in the Harvest table. BushelsPerAcre is the last attribute in the LDM Harvest table but second to last on PDM Harvest table. For the next Iteration, subtypes and supertypes along with the two missing attributes must be implemented to further improve the members table and move independent entities to the top of the diagram while maintaining the same attribute order between LDM and PDM.

Final Iteration

On the final Iteration a supertype and subtypes were implemented using the Members entity. The Members entity became the supertype with Management, Harvester, Owner, and ProjecManager as subtype. Additionally, new relationships were also established between Management and Region since Management determines which region they manage. Two other relationships were established. One between Harvester and Class. Another between Owner and Farm. Iteration 4 illustrates most up to LDM model with supertypes, subtypes, 4 new tables, two new attributes named LastTimeAccessed and NextProjRev, attributes in the proper order between LDM and PDM, and independent entities on top of the diagram.

Iteration 4





Query- What is the largest yield observed for corn Variety BC39?

```
VarietyName Largest_Yield_For_BC39 Code
----------- ---------------------- ----
Corn        205.5                  OK

(1 row affected)
```

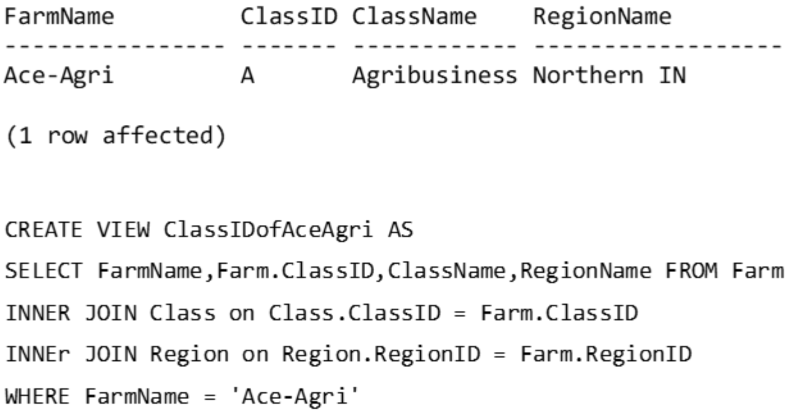
```
CREATE VIEW LargestYield4BC39 AS
SELECT VarietyName, MAX(Harvest.Bushels) AS Largest_Yield_For_BC39,Code
FROM Harvest
INNER JOIN Status on Status.StatusID = Harvest.StatusID
INNER JOIN Planting ON Planting.FarmID = Harvest.FarmID
INNER JOIN Variety on Variety.VarietyID = Planting.VarietyID
AND Planting.FieldNum = Harvest.FieldNum
AND Planting.VarietyID = 'BC39' AND Code ='OK'
GROUP BY VarietyName,Code;
```

Query- For Each Field list all of its yield values in chronological order

```
RowNum               FieldNum    Bushels                HarvestDate
-------------------- ----------- ---------------------- -----------
1                    82          0                      NULL
2                    19          48                     2019/08
3                    63          46                     2019/09
4                    88          54                     2019/09
5                    19          0                      2019/09
6                    82          204                    2019/09
7                    95          175                    2019/09
8                    21          46                     2019/10
9                    19          44                     2019/10
10                   95          190                    2019/10
11                   88          170                    2019/10
12                   63          170                    2020/06
13                   21          140                    2020/08
14                   21          43                     2020/09
15                   63          205.5                  2020/09
16                   63          175                    2020/09

(16 rows affected)
```

```
CREATE VIEW YieldValuesInChronOrder AS
SELECT ROW_NUMBER() OVER(ORDER BY HarvestDate) As RowNum, Field.FieldNum, Bushels,HarvestDate
FROM Field
INNER JOIN Harvest ON Harvest.FieldNum = Field.FieldNum
AND Harvest.FarmID = Field.FarmID
```

Query- What is the classification for the Aci-Agri Farm?



```
FarmName         ClassID ClassName    RegionName
---------------- ------- ------------ ------------------
Ace-Agri         A       Agribusiness Northern IN

(1 row affected)
```

```
CREATE VIEW ClassIDofAceAgri AS
SELECT FarmName,Farm.ClassID,ClassName,RegionName FROM Farm
INNER JOIN Class on Class.ClassID = Farm.ClassID
INNEr JOIN Region on Region.RegionID = Farm.RegionID
WHERE FarmName = 'Ace-Agri'
```

Query-List the yields that are with 5 bushels of their average yield?

```
VarietyID AvgYield               Bushels                StatuesName ClassName
RegionName
--------- ---------------------- ---------------------- ----------- ------------ --------
----------
P98C      180                    175                    OK          Agribusiness Northern
IN
BS81      50                     46                     OK          Co-Op        Northern
IN
P81Y      45                     44                     OK          Agribusiness Southern
IN
BC39      200                    204                    OK          Farmer Owned Southern
IN
BS81      50                     54                     OK          Farmer Owned Southern
IN
BS4N      43.5                   48                     OK          Farmer Owned Southern
IN
BS4N      43.5                   46                     OK          Agribusiness Northern
IN
BC28      180                    175                    OK          Co-Op        Central
IN

(8 rows affected)
```

Query-List the yield values in the southern Indiana recorded in August and October 2019?

```
VarietyID Bushels                HarvestDate ClassName    RegionName         StatusName
--------- ---------------------- ----------- ------------ ------------------ ----------
P81Y      44                     2019/10     Agribusiness Southern IN        OK
BC39      204                    2019/09     Farmer Owned Southern IN        OK
BS81      54                     2019/09     Farmer Owned Southern IN        OK
BS4N      48                     2019/08     Farmer Owned Southern IN        OK
BC39      170                    2019/10     Agribusiness Southern IN        OK

(5 rows affected)
```

```
CREATE VIEW southINYieldBetweenAugOct2019 AS
SELECT Planting.VarietyID,Bushels,HarvestDate, ClassName,RegionName,code
FROM Harvest
INNER JOIN Farm ON Harvest.FarmID = Farm.FarmID
INNER JOIN Status on Status.StatusID = Harvest.StatusID
INNER JOIN Planting on Planting.FarmID = Harvest.FarmID AND Planting.FieldNum =
Harvest.FieldNum AND Planting.PlantedDate = Harvest.PlantedDate
INNER JOIN Variety on Variety.VarietyID = Planting.VarietyID
INNER JOIN Region on Region.RegionID = Farm.RegionID AND Farm.RegionID = 'SI'
INNER JOIN Class on Class.ClassID = Farm.ClassID
AND HarvestDate BETWEEN '2019/08' AND '2019/10';
```

Query-how many times has each field been harvested?

```
FarmID  FieldNum    NumOfHarvest VarietyName
------- ----------- ------------ -----------
F-8     19          1            Corn
Mill-1  19          1            Soybean
AA4     63          1            Soybean
AA4     95          1            Corn
F-8     21          3            Soybean
Mill-1  82          2            Corn
Mill-2  88          1            Soybean
VA-300  95          1            Corn
AF-100  19          1            Soybean
AF-100  88          1            Corn
AF-100  63          1            Corn
F-8     21          3            Soybean
F-8     21          3            Soybean
RI-200  63          1            Corn
AF-100  63          1            Corn
Mill-1  82          2            Corn

(16 rows affected)
```

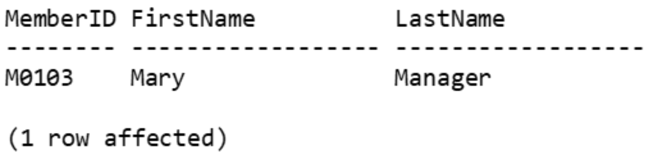
```
CREATE VIEW NumOfHarvestPerField AS
SELECT FarmID,FieldNum,NumOfHarvest FROM Field
```

Query-where is Ace-Agri farm located in how big is it?

```
FarmName         ClassID ClassName    RegionName
---------------- ------- ------------ ------------------
Ace-Agri         A       Agribusiness Northern IN

(1 row affected)
```

```
CREATE VIEW ClassIDofAceAgri AS
SELECT FarmName,Farm.ClassID,ClassName,RegionName FROM Farm
INNER JOIN Class on Class.ClassID = Farm.ClassID
INNEr JOIN Region on Region.RegionID = Farm.RegionID
WHERE FarmName = 'Ace-Agri'
```

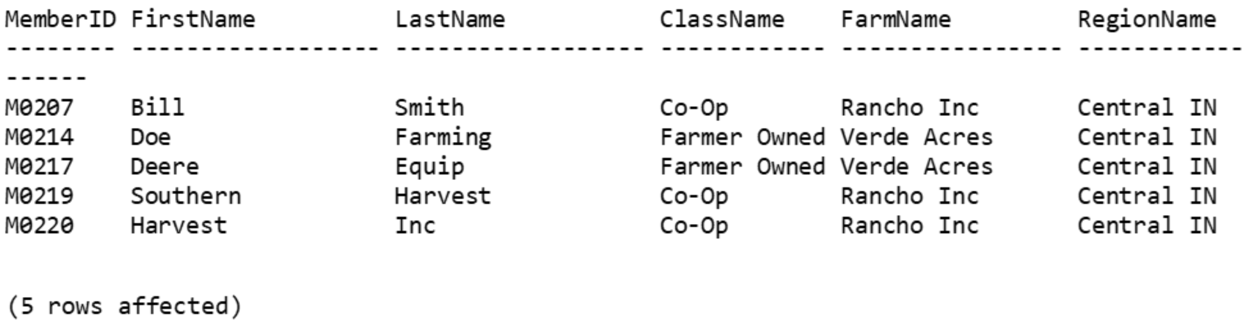
Query-Who manages southern Indiana region?



```
MemberID FirstName          LastName
-------- ------------------ ------------------
M0103    Mary               Manager

(1 row affected)
```

```
CREATE VIEW WhoManagesSI AS
Select Management.MemberID, FirstName,LastName From Management
INNER JOIN Members on Management.MemberID = Members.MemberID
AND Management.RegionID = 'SI';
```

Query-Who has access data on central IN yield?



```
MemberID FirstName          LastName           ClassName    FarmName         RegionName
-------- ------------------ ------------------ ------------ ---------------- ------------
------
M0207    Bill               Smith              Co-Op        Rancho Inc       Central IN
M0214    Doe                Farming            Farmer Owned Verde Acres      Central IN
M0217    Deere              Equip              Farmer Owned Verde Acres      Central IN
M0219    Southern           Harvest            Co-Op        Rancho Inc       Central IN
M0220    Harvest            Inc                Co-Op        Rancho Inc       Central IN

(5 rows affected)
```

```
CREATE VIEW AccessToCentINyieldData AS
Select Harvester.MemberID, FirstName,LastName, ClassName,FarmName,RegionName From Harvester
INNER JOIN Members on Harvester.MemberID = Members.MemberID
INNER JOIN Farm on Farm.ClassID = Harvester.ClassID
INNER JOIN Class on Class.ClassID = Harvester.ClassID
INNER JOIN Region on Farm.RegionID = Region.RegionID
AND Farm.RegionID = 'CI';
```

Query-Who has access data on central IN yield?

```
MemberID FirstName          LastName           ClassName    FarmName         RegionName
-------- ------------------ ------------------ ------------ ---------------- ------------
------
M0207    Bill               Smith              Co-Op        Rancho Inc       Central IN
M0214    Doe                Farming            Farmer Owned Verde Acres      Central IN
M0217    Deere              Equip              Farmer Owned Verde Acres      Central IN
M0219    Southern           Harvest            Co-Op        Rancho Inc       Central IN
M0220    Harvest            Inc                Co-Op        Rancho Inc       Central IN

(5 rows affected)
```

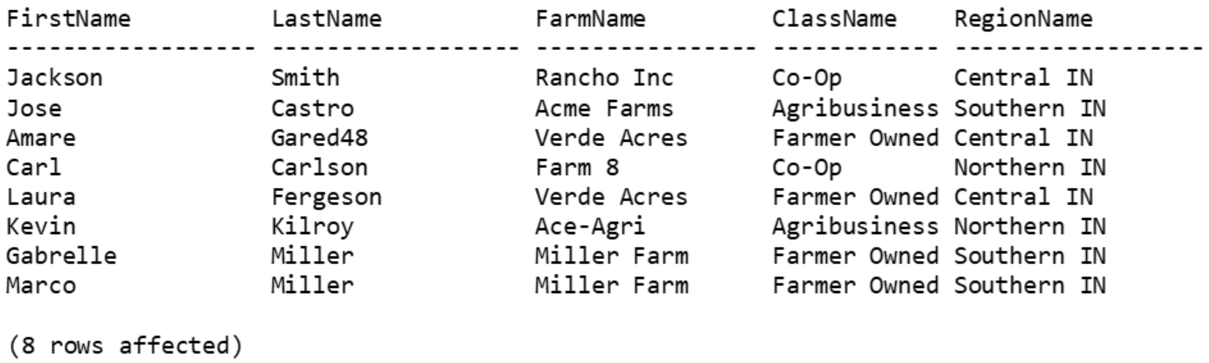
```
CREATE VIEW AccessToCentINyieldData AS
Select Harvester.MemberID, FirstName,LastName, ClassName,FarmName,RegionName From Harvester
INNER JOIN Members on Harvester.MemberID = Members.MemberID
INNER JOIN Farm on Farm.ClassID = Harvester.ClassID
INNER JOIN Class on Class.ClassID = Harvester.ClassID
INNER JOIN Region on Farm.RegionID = Region.RegionID
AND Farm.RegionID = 'CI';
```

Query-List the classification ID description and harvesters member ID and name and order by classification?

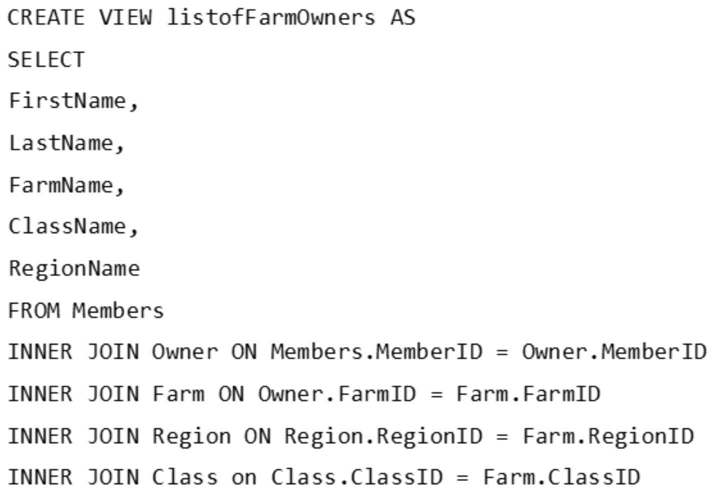
```
rowNum2              MemberID FirstName          LastName           JobDescription
ClassID ClassName
-------------------- -------- ------------------ ------------------ ---------------------
----------- ------- ------------
1                    M0201    ABC                Combine            Harvester
A       Agribusiness
2                    M0207    Bill               Smith              Harvester
C       Co-Op
3                    M0219    Southern           Harvest            Harvester
C       Co-Op
4                    M0220    Harvest            Inc                Harvester
C       Co-Op
5                    M0214    Doe                Farming            Harvester
F       Farmer Owned
6                    M0217    Deere              Equip              Harvester
F       Farmer Owned

(6 rows affected)
```

```
CREATE VIEW HarvClassIDJobDescMemIDNameViewer AS
SELECT ROW_NUMBER() OVER (ORDER BY Harvester.ClassID ASC) AS rowNum2,
Harvester.MemberID,
FirstName,
LastName,
JobDescription,
Harvester.ClassID,
ClassName
FROM Harvester
    INNER JOIN Members ON Harvester.MemberID = Members.MemberID
INNER JOIN Class On CLass.ClassID = Harvester.ClassID
```

Query-listed the owners of each farm?

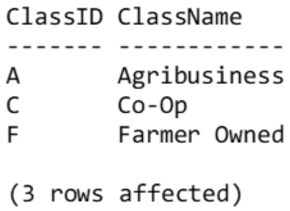


```
FirstName          LastName           FarmName         ClassName    RegionName
------------------ ------------------ ---------------- ------------ ------------------
Jackson            Smith              Rancho Inc       Co-Op        Central IN
Jose               Castro             Acme Farms       Agribusiness Southern IN
Amare              Gared48            Verde Acres      Farmer Owned Central IN
Carl               Carlson            Farm 8           Co-Op        Northern IN
Laura              Fergeson           Verde Acres      Farmer Owned Central IN
Kevin              Kilroy             Ace-Agri         Agribusiness Northern IN
Gabrelle           Miller             Miller Farm      Farmer Owned Southern IN
Marco              Miller             Miller Farm      Farmer Owned Southern IN

(8 rows affected)
```

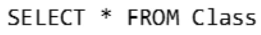


```
CREATE VIEW listofFarmOwners AS
SELECT
FirstName,
LastName,
FarmName,
ClassName,
RegionName
FROM Members
INNER JOIN Owner ON Members.MemberID = Owner.MemberID
INNER JOIN Farm ON Owner.FarmID = Farm.FarmID
INNER JOIN Region ON Region.RegionID = Farm.RegionID
INNER JOIN Class on Class.ClassID = Farm.ClassID
```

View Class Table



```
ClassID ClassName
------- ------------
A       Agribusiness
C       Co-Op
F       Farmer Owned

(3 rows affected)
```



```
SELECT * FROM Class
```

View Region Table

```
RegionID RegionName
-------- ------------------
CI       Central IN
NI       Northern IN
SI       Southern IN

(3 rows affected)
```

```
SELECT * FROM Region;
```

View Farm Table

```
FarmID  FarmName         Size        ClassID RegionID
------- ---------------- ----------- ------- --------
AA4     Ace-Agri         1300        A       NI
AF-100  Acme Farms       1000        A       SI
F-8     Farm 8           870         C       NI
Mill-1  Miller Farm      400         F       SI
Mill-2  Miller Farm      244         F       SI
RI-200  Rancho Inc       400         C       CI
VA-300  Verde Acres      300         F       CI

(7 rows affected)
```

```
SELECT * FROM Farm
```

View Variety Table

```
VarietyID VarietyName VarietyDesc        AvgYield
--------- ----------- ------------------ ----------------------
BC28      Corn        Stress Tolerant    180
BC39      Corn        Top Yield          200
BS4N      Soybean     Excellent Yield    43.5
BS81      Soybean     Top Yield          50
P81Y      Soybean     Good with Low Iron 45
P98C      Corn        Hybrid Corn        180

(6 rows affected)
```

```
CREATE VIEW ViewVarietyTable AS SELECT * FROM Variety;
```

View Field Table

```
FieldNum    FarmID  Location           NumOfHarvest
----------- ------- ------------------ ------------
19          AF-100  N1W2               1
19          F-8     N1E4               1
19          Mill-1  N1W1               1
21          F-8     N1W1               3
63          AA4     S4E2               1
63          AF-100  N1W1               1
63          RI-200  S2E2               1
82          Mill-1  N2W1               2
88          AF-100  N1W1               1
88          Mill-2  N1E5               1
95          AA4     S4E3               1
95          VA-300  N2E4               1

(12 rows affected)
```

```
CREATE VIEW ViewFieldTable AS
SELECT * FROM Field;
```

View Planting Table

```
PlantedDate FarmID  FieldNum    VarietyID
----------- ------- ----------- ---------
2019/04     F-8     19          P98C
2019/05     Mill-1  19          BS4N
2019/06     AA4     63          BS4N
2019/06     AA4     95          P98C
2019/06     F-8     21          BS81
2019/06     Mill-1  82          BC39
2019/06     Mill-2  88          BS81
2019/06     VA-300  95          BC39
2019/07     AF-100  19          P81Y
2019/07     AF-100  88          BC39
2020/04     AF-100  63          P98C
2020/05     F-8     21          BS81
2020/06     F-8     21          BS81
2020/06     RI-200  63          BC28
2020/07     AF-100  63          BC39
2020/07     Mill-1  82          BC39

(16 rows affected)
```

```
CREATE VIEW ViewPlantingTable AS
SELECT * FROM Planting;
```

View Harvest Table

```
HarvestNum  FieldNum    FarmID  PlantedDate HarvestDate StatusID    Bushels
----------- ----------- ------- ----------- ----------- ----------- ---------------------
-
15          21          F-8     2020/05     2020/08     1           140
20          95          AA4     2019/06     2019/09     1           175
25          21          F-8     2020/06     2020/09     1           43
35          21          F-8     2019/06     2019/10     1           46
42          82          Mill-1  2020/07     NULL        0           0
43          19          AF-100  2019/07     2019/10     1           44
45          95          VA-300  2019/06     2019/10     1           190
46          19          F-8     2019/04     2019/09     0           0
46          82          Mill-1  2019/06     2019/09     1           204
54          63          AF-100  2020/07     2020/09     1           205.5
57          88          Mill-2  2019/06     2019/09     1           54
66          63          AF-100  2020/04     2020/06     1           170
77          19          Mill-1  2019/05     2019/08     1           48
80          63          AA4     2019/06     2019/09     1           46
80          88          AF-100  2019/07     2019/10     1           170
98          63          RI-200  2020/06     2020/09     1           175

(16 rows affected)
```

View Members Table

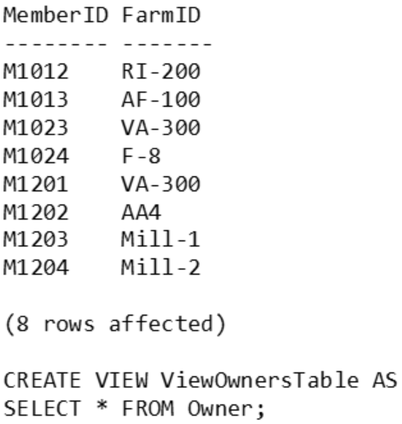
```
MemberID FirstName          LastName           JobDescription                 Contact                        StartDate  EndDate
-------- ------------------ ------------------ ------------------------------ ------------------------------ ---------- ----------
M0000    Bob                Bureaucrat         Project Manager                NULL                           NULL       NULL
M0101    Sam                Supervisor         Regional Manager               NULL                           NULL       NULL
M0102    Fred               Foreman            Regional Manager               NULL                           NULL       NULL
M0103    Mary               Manager            Regional Manager               NULL                           NULL       NULL
M0201    ABC                Combine            Harvester                      AC@COB.net                     2016-08-15 NULL
M0207    Bill               Smith              Harvester                      BS@COB.net                     2016-08-15 NULL
M0214    Doe                Farming            Harvester                      DF@COB.net                     2016-08-15 NULL
M0217    Deere              Equip              Harvester                      DE@COB.net                     2016-08-15 NULL
M0219    Southern           Harvest            Harvester                      SE@COB.net                     2016-08-15 NULL
M0220    Harvest            Inc                Harvester                      HI@COB.net                     2016-08-15 2020-10-14
M1012    Jackson            Smith              Owner                          NULL                           2016-06-01 2020-07-23
M1013    Jose               Castro             Owner                          555-1212                       2016-06-01 NULL
M1023    Amare              Gared48            Owner                          U@REDD.net                     2016-06-15 NULL
M1024    Carl               Carlson            Owner                          CC@REDD.net                    2016-06-20 NULL
M1201    Laura              Fergeson           Owner                          LF@REDD.net                    2016-08-20 NULL
M1202    Kevin              Kilroy             Owner                          NULL                           2016-08-20 NULL
M1203    Gabrelle           Miller             Owner                          P.O. Box 333                   2016-06-20 NULL
M1204    Marco              Miller             Owner                          P.O. Box 333                   2016-08-25 NULL

(18 rows affected)
```

```
CREATE VIEW ViewMembersTable AS

SELECT * FROM Members;
```

View Management Table

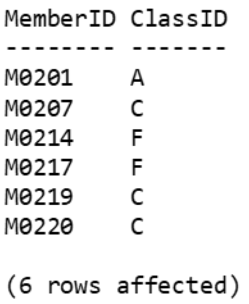
```
MemberID LastTimeAccessed        RegionID
-------- ----------------------- --------
M0101    NULL                    CI
M0102    NULL                    NI
M0103    NULL                    SI

(3 rows affected)


CREATE VIEW ViewManagementTable AS SELECT * FROM Management;
```

View Owner Table

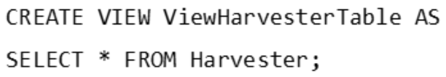


```
MemberID FarmID
-------- -------
M1012    RI-200
M1013    AF-100
M1023    VA-300
M1024    F-8
M1201    VA-300
M1202    AA4
M1203    Mill-1
M1204    Mill-2

(8 rows affected)

CREATE VIEW ViewOwnersTable AS
SELECT * FROM Owner;
```

View Harvester Table

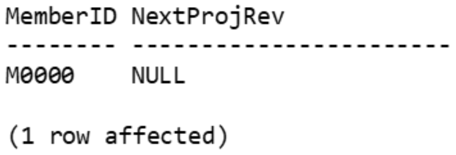


```
MemberID ClassID
-------- -------
M0201    A
M0207    C
M0214    F
M0217    F
M0219    C
M0220    C

(6 rows affected)
```

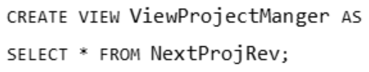


```
CREATE VIEW ViewHarvesterTable AS
SELECT * FROM Harvester;
```

View Project Manager Table



```
MemberID NextProjRev
-------- -----------------------
M0000    NULL

(1 row affected)
```



```
CREATE VIEW ViewProjectManger AS
SELECT * FROM NextProjRev;
```

View Status Table

```
StatusID    Code
----------- ----
0           LATE
1           OK

(2 rows affected)
CREATE VIEW ViewStatusTable AS SELECT * FROM Status;
```

Functional Dependency Chart

	PlantDate	EndDate	StartDate	Job Description	Contact	LastName	FirstName	Members	code	Status	HarvestNumber	HarvestDate	PlantDate	Location	FieldNum	Bushels/Acre	AvgYield	ClassName	ClassID	Size	FarmID	FarmName	RegionName	RegionID	VarietyDesc	VarietyName	VarietyID
VarietyID								🟩			🟩					🟩	🟩				🟩				🟩	🟩	🟩
VarietyName								🟩			🟩					🟩	🟩				🟩				🟩	🟩	🟩
VarietyDesc								🟩			🟩					🟩	🟩				🟩				🟩	🟩	🟩
RegionID								🟩			🟩										🟩		🟩	🟩			
RegionName								🟩			🟩										🟩		🟩	🟩			
FarmName								🟩			🟩					🟩	🟩			🟩	🟩	🟩					
FarmID								🟩			🟩					🟩	🟩			🟩	🟩	🟩					
Size								🟩			🟩					🟩				🟩	🟩						
ClassID								🟩			🟩					🟩		🟩	🟩		🟩						
ClassName								🟩			🟩					🟩		🟩	🟩		🟩						
AvgYield								🟩			🟩					🟩	🟩								🟩	🟩	🟩
Bushels/Acre								🟩			🟩					🟩											
FieldNum								🟩			🟩					🟩					🟩						
Location								🟩			🟩					🟩											
PlantDate								🟩				🟩	🟩														
HarvestDate								🟩			🟩	🟩				🟩											
HarvestNumber								🟩			🟩	🟩	🟩			🟩					🟩						
Status								🟩	🟩	🟩	🟩					🟩											
code								🟩	🟩	🟩	🟩					🟩											
Membe		🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟩
FirstName						🟩	🟩																				
LastName						🟩	🟩																				
Contact					🟩																						
Job Des				🟩																							
StartDa		🟩	🟩																								
EndDat		🟩	🟩																								
PlantDa	🟩																										

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```
CREATE TABLE Members
(
MemberID             char(5)  NOT NULL ,
FirstName            char(18)  NULL ,
LastName             char(18)  NULL ,
JobDescription       char(12)  NULL ,
Contact              char(32)  NULL ,
StartDate            date  NULL ,
EndDate              date  NULL ,
PRIMARY KEY  CLUSTERED (MemberID ASC)
)
go

CREATE TABLE ProjectManager
(
MemberID             char(5)  NOT NULL ,
NextProjRev          datetime  NULL ,
PRIMARY KEY  CLUSTERED (MemberID ASC),
 FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
)
go

CREATE TABLE Class
(
ClassID              char(1)  NOT NULL ,
ClassName            char(12)  NULL ,
PRIMARY KEY  CLUSTERED (ClassID ASC)
)
go

CREATE TABLE Region
(
RegionID             char(2)  NOT NULL ,
RegionName           char(18)  NULL ,
PRIMARY KEY  CLUSTERED (RegionID ASC)
)
go

CREATE TABLE Farm
(
FarmID               char(7)  NOT NULL ,
FarmName             char(16)  NULL ,
Size                 int  NULL ,
ClassID              char(1)  NULL ,
RegionID             char(2)  NULL ,
PRIMARY KEY  CLUSTERED (FarmID ASC),
 FOREIGN KEY (ClassID) REFERENCES Class(ClassID),
 FOREIGN KEY (RegionID) REFERENCES Region(RegionID)
)
go

CREATE TABLE Owner
(
MemberID             char(5)  NOT NULL ,
FarmID               char(7)  NULL ,
PRIMARY KEY  CLUSTERED (MemberID ASC),
 FOREIGN KEY (FarmID) REFERENCES Farm(FarmID),
 FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
)
go

CREATE TABLE Management
(
MemberID             char(5)  NOT NULL ,
LastTimeAccessed     datetime  NULL ,
RegionID             char(2)  NULL ,
PRIMARY KEY  CLUSTERED (MemberID ASC),
 FOREIGN KEY (RegionID) REFERENCES Region(RegionID),
 FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
)
go

CREATE TABLE Harvester
(
MemberID             char(5)  NOT NULL ,
ClassID              char(1)  NULL ,
PRIMARY KEY  CLUSTERED (MemberID ASC),
 FOREIGN KEY (ClassID) REFERENCES Class(ClassID),
 FOREIGN KEY (MemberID) REFERENCES Members(MemberID)
)
go

CREATE TABLE Status
(
StatusID             int  NOT NULL ,
Code                 char(4)  NULL ,
PRIMARY KEY  CLUSTERED (StatusID ASC)
)
go

CREATE TABLE Variety
(
VarietyID            char(4)  NOT NULL ,
VarietyName          char(7)  NULL ,
VarietyDesc          char(18)  NULL ,
AvgYield             float  NULL ,
PRIMARY KEY  CLUSTERED (VarietyID ASC)
)
```

```
go

CREATE TABLE Field
(
FieldNum             int  NOT NULL ,
FarmID               char(7)  NOT NULL ,
Location             char(18)  NULL ,
NumOfHarvest         int  NULL ,
PRIMARY KEY  CLUSTERED (FieldNum ASC,FarmID ASC),
 FOREIGN KEY (FarmID) REFERENCES Farm(FarmID)
)
go

CREATE TABLE Planting
(
FarmID               char(7)  NOT NULL ,
FieldNum             int  NOT NULL ,
PlantedDate          char(7)  NOT NULL ,
VarietyID            char(4)  NULL ,
PRIMARY KEY  CLUSTERED (FarmID ASC,FieldNum ASC,PlantedDate ASC),
 FOREIGN KEY (VarietyID) REFERENCES Variety(VarietyID),
 FOREIGN KEY (FieldNum,FarmID) REFERENCES Field(FieldNum,FarmID)
)
go

CREATE TABLE Harvest
(
HarvestNum           int  NOT NULL ,
FarmID               char(7)  NOT NULL ,
PlantedDate          char(7)  NOT NULL ,
FieldNum             int  NOT NULL ,
HarvestDate          char(7)  NULL ,
StatusID             int  NULL ,
Bushels              float  NULL ,
PRIMARY KEY  CLUSTERED (HarvestNum ASC,FarmID ASC,PlantedDate ASC,FieldNum
ASC),
 FOREIGN KEY (StatusID) REFERENCES Status(StatusID),
 FOREIGN KEY (FarmID,FieldNum,PlantedDate) REFERENCES
Planting(FarmID,FieldNum,PlantedDate)
)
Go
```

Insert Data Into Class Table

```
      INSERT INTO Class (ClassID, ClassName) VALUES ('A', 'Agribusiness');
      INSERT INTO Class (ClassID, ClassName) VALUES ('F', 'Farmer Owned');
      INSERT INTO Class (ClassID, ClassName) VALUES ('C', 'Co-Op');
```

Insert Data Into Region Table

```
      INSERT INTO Region (RegionID, RegionName) VALUES ('CI', 'Central IN');
      INSERT INTO Region (RegionID, RegionName) VALUES ('NI', 'Northern IN');
      INSERT INTO Region (RegionID, RegionName) VALUES ('SI', 'Southern IN');
```

Insert Data Into Status Table

```
      INSERT INTO Status (StatusID, Code) VALUES (1, 'OK');
      INSERT INTO Status (StatusID, Code) VALUES (0, 'LATE');
```

Insert Data Into Variety Table

```
      INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
      VALUES('BC39', 'Corn', 'Top Yield', 200);
      INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
      VALUES('BS81', 'Soybean', 'Top Yield', 50);
      INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
      VALUES('P98C', 'Corn', 'Hybrid Corn', 180);
      INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
      VALUES('BC28', 'Corn', 'Stress Tolerant', 180);
```

```
    INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
    VALUES('BS4N', 'Soybean', 'Excellent Yield', 43.5)
    INSERT INTO Variety (VarietyID, VarietyName, VarietyDesc, AvgYield)
    VALUES('P81Y', 'Soybean', 'Good with Low Iron', 45);
```

Insert Data Into Farm Table

```
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('F-8', 'Farm 8', 870, 'C', 'NI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('AA4', 'Ace-Agri', 1300, 'A', 'NI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('Mill-1', 'Miller Farm', 400, 'F', 'SI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('AF-100', 'Acme Farms', 1000, 'A', 'SI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('VA-300', 'Verde Acres', 300, 'F', 'CI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('Mill-2', 'Miller Farm', 244, 'F', 'SI');
    INSERT INTO Farm (FarmID, FarmName, Size, ClassID, RegionID)
    VALUES ('RI-200', 'Rancho Inc', 400, 'C', 'CI');
```

Insert Data Into Field Table

```
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (21, 'F-8', 'N1W1', 3);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (19, 'F-8', 'N1E4', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (95, 'AA4', 'S4E3', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (63, 'AA4', 'S4E2', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (82, 'Mill-1', 'N2W1', 2);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (19, 'Mill-1', 'N1W1', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (88, 'Mill-2', 'N1E5', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (19, 'AF-100', 'N1W2', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (63, 'AF-100', 'N1W1', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (88, 'AF-100', 'N1W1', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (95, 'VA-300', 'N2E4', 1);
    INSERT INTO Field (FieldNum, FarmID, Location, NumOfHarvest)
    VALUES (63, 'RI-200', 'S2E2', 1);
```

Insert Data Into Planting Table

```
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2020/05', 'F-8', 21, 'BS81');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2019/06', 'AA4', 95, 'P98C');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2020/06', 'F-8', 21, 'BS81');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2020/07', 'Mill-1', 82, 'BC39');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2019/07', 'AF-100', 19, 'P81Y');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2019/06', 'VA-300', 95, 'BC39');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2019/06', 'Mill-1', 82, 'BC39');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
    VALUES ('2020/07', 'AF-100', 63, 'BC39');
    INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
```

```
      VALUES ('2019/06', 'Mill-2', 88, 'BS81');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2020/04', 'AF-100', 63, 'P98C');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2019/05', 'Mill-1', 19, 'BS4N');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2019/06', 'AA4', 63, 'BS4N');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2020/06', 'RI-200', 63, 'BC28');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2019/06', 'F-8', 21, 'BS81');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2019/04', 'F-8', 19, 'P98C');
      INSERT INTO Planting (PlantedDate, FarmID, FieldNum, VarietyID)
      VALUES ('2019/07', 'AF-100', 88, 'BC39');
```

Insert Data Into Harvest Table

```
      INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate,
HarvestDate, StatusID, Bushels)
VALUES (15, 21, 'F-8', '2020/05', '2020/08', 1, 140);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (20, 95, 'AA4', '2019/06', '2019/09', 1, 175);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (25, 21, 'F-8', '2020/06', '2020/09', 1, 43);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (42, 82, 'Mill-1', '2020/07', NULL, 0, 0);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (43, 19, 'AF-100', '2019/07', '2019/10', 1, 44);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
```

```
VALUES (45, 95, 'VA-300', '2019/06', '2019/10', 1, 190);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (46, 82, 'Mill-1', '2019/06', '2019/09', 1, 204);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (54, 63, 'AF-100', '2020/07', '2020/09', 1, 205.5);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (57, 88, 'Mill-2', '2019/06', '2019/09', 1, 54);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (66, 63, 'AF-100', '2020/04', '2020/06', 1, 170);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (77, 19, 'Mill-1', '2019/05', '2019/08', 1, 48);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (80, 63, 'AA4', '2019/06', '2019/09', 1, 46);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (98, 63, 'RI-200', '2020/06', '2020/09', 1, 175);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (35, 21, 'F-8', '2019/06', '2019/10', 1, 46);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (46, 19, 'F-8', '2019/04', '2019/09', 0, 0);
INSERT INTO Harvest (HarvestNum, FieldNum, FarmID, PlantedDate, HarvestDate,
StatusID, Bushels)
VALUES (80, 88, 'AF-100', '2019/07', '2019/10', 1, 170);
```

Insert Data Into Members Table

```
--project manager
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0000','Bob','Bureaucrat','Project Manager', NULL, NULL, NULL);
--Regional Manager
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0101','Sam','Supervisor','Regional Manager', NULL, NULL, NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0102','Fred','Foreman','Regional Manager', NULL, NULL, NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0103','Mary','Manager','Regional Manager', NULL, NULL, NULL);
--Harvesters
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0201','ABC','Combine','Harvester','AC@COB.net' , '2016-08-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0207','Bill','Smith','Harvester','BS@COB.net' , '2016-08-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0214','Doe','Farming','Harvester','DF@COB.net' , '2016-08-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0217','Deere','Equip','Harvester','DE@COB.net' , '2016-08-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M0219','Southern','Harvest','Harvester','SE@COB.net' , '2016-08-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
```

```
('M0220','Harvest','Inc','Harvester','HI@COB.net' , '2016-08-15', '2020-10-
14');
--Ownner
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1024','Carl','Carlson','Owner','CC@REDD.net' , '2016-06-20', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1202','Kevin','Kilroy','Owner',NULL , '2016-08-20', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1203','Gabrelle','Miller','Owner','P.O. Box 333' , '2016-06-20', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1013','Jose','Castro','Owner','555-1212', '2016-06-01', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1023','Amare','Gared48','Owner','U@REDD.net' , '2016-06-15', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1204','Marco','Miller','Owner','P.O. Box 333' , '2016-08-25', NULL);
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1012','Jackson','Smith','Owner',NULL , '2016-06-01', '2020-07-23');
INSERT INTO Members
(MemberID,FirstName,LastName,JobDescription,Contact,StartDate,EndDate) VALUES
('M1201','Laura','Fergeson','Owner','LF@REDD.net' , '2016-08-20', NULL);
```

Insert Data Into Owner Table

```
      INSERT INTO Owner(MemberID,FarmID) VALUES ('M1012','RI-200');
      INSERT INTO Owner(MemberID,FarmID) VALUES ('M1013','AF-100');
      INSERT INTO Owner(MemberID,FarmID) VALUES ('M1023','VA-300');
      INSERT INTO Owner(MemberID,FarmID) VALUES ('M1024','F-8');
```

```
INSERT INTO Owner(MemberID,FarmID) VALUES ('M1201','VA-300');
INSERT INTO Owner(MemberID,FarmID) VALUES ('M1202','AA4');
INSERT INTO Owner(MemberID,FarmID) VALUES ('M1203','Mill-1');
INSERT INTO Owner(MemberID,FarmID) VALUES ('M1204','Mill-2');
```

Insert Data Into Management Table

```
INSERT INTO Management(MemberID,LastTimeAccessed,RegionID)
VALUES ('M0101',NULL,'CI');
INSERT INTO Management(MemberID,LastTimeAccessed,RegionID)
VALUES ('M0102',NULL,'NI');
INSERT INTO Management(MemberID,LastTimeAccessed,RegionID)
VALUES ('M0103',NULL,'SI');
```

Insert Data Into Harvester Table

```
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0201','A');
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0207','C');
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0214','F');
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0217','F');
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0219','C');
INSERT INTO Harvester(MemberID,ClassID) VALUES ('M0220','C');
```

Insert Data Into Project Manager Table

```
INSERT INTO ProjectManager(MemberID,NextProjRev)
VALUES ('M0000',NULL);
```