

Database Design

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Project : Group 14

Group 14

1. A company has one or more locations referred to as "Plant" (Plant-ID). Several plants are uniquely assigned to the same company code (CC-ID) .
 - ❖ We created 2 entities: "Plant" and "Company Code".
 - ❖ "Plant" has the primary key [Plant-ID] and "Company Code" has the primary key [CC-ID]. The relation name between them is AssignedTo and it's a 1:N relation.
2. Plants can have several storage locations (S-loc-#) in which the manufactured and purchased items are stocked, a storage location, however, can only be assigned to one plant.
 - ❖ We created a new entity: "Storage Location".
 - ❖ "Storage Location" has the primary key [S-loc-#] and an attribute "Item"
 - ❖ The relation name between "Storage Location" and "Plant" is AllocatedTo and it's a 1:N relation.

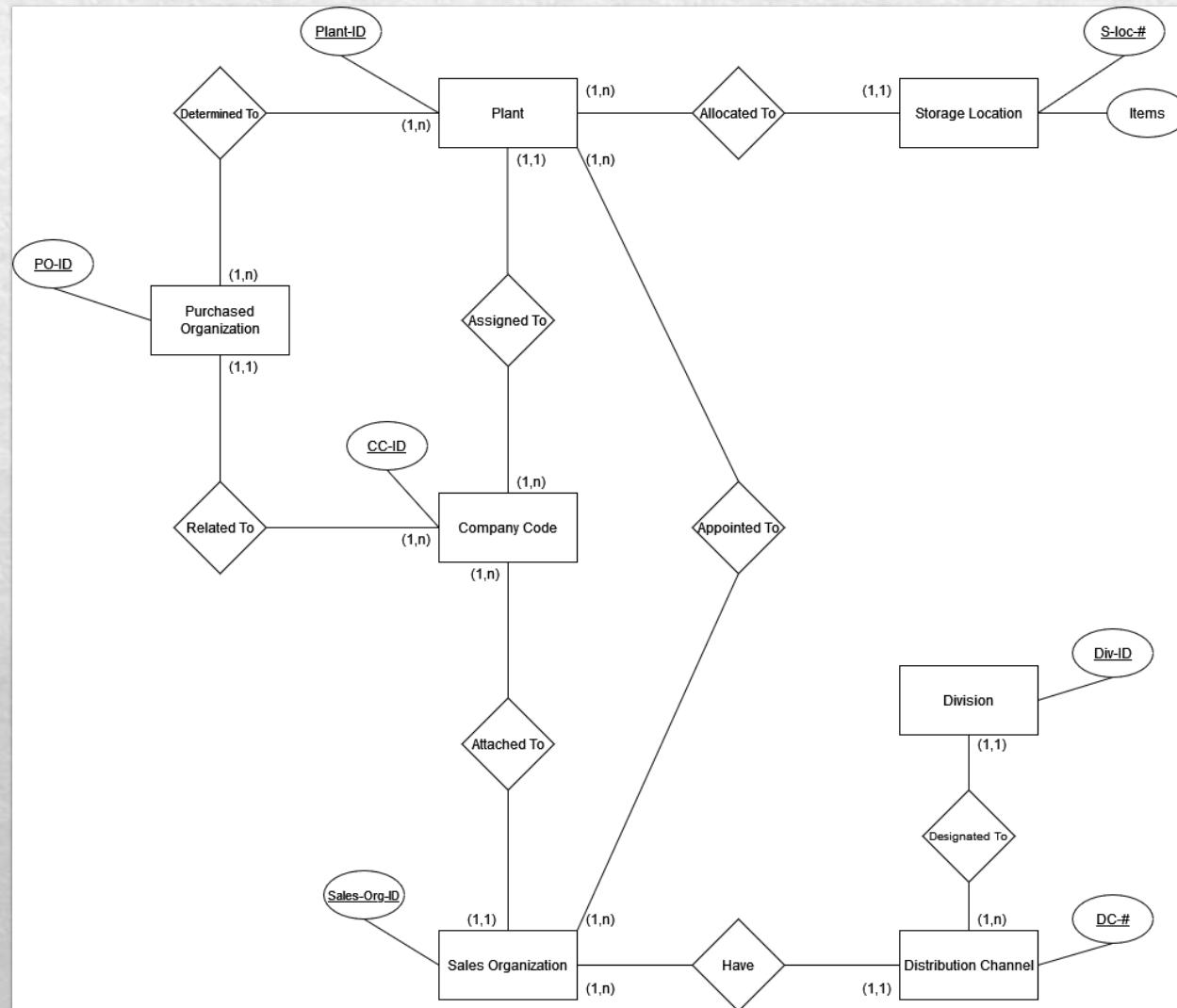
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3. A purchase organization (PO-ID) can be assigned to several plants and a plant to several purchase organizations. A company code is related to one or more purchase organizations, the latter is uniquely related to a company code.
 - ❖ We created a new entity: "Purchase Organization".
 - ❖ "Purchase Organization" has the primary key [PO-ID].
 - ❖ The relation name between "Purchase Organization" and "Plant" is DeterminedTo and it's a N:M relation.
 - ❖ The relation name between "Purchase Organization" and "Company Code" is RelatedTo and it's a 1:N relation.
4. A distribution channel (DC-) can be assigned to several divisions (Div-ID), whereas a division is uniquely assigned to a distribution channel.
 - ❖ We created 2 entities: "Distribution Channel" and "Division".
 - ❖ "Distribution Channel" has the primary key [DC-] and "Division" has the primary key [Div-ID].
 - ❖ The relation name between them is DesignatedTo and it's a 1:N relation.

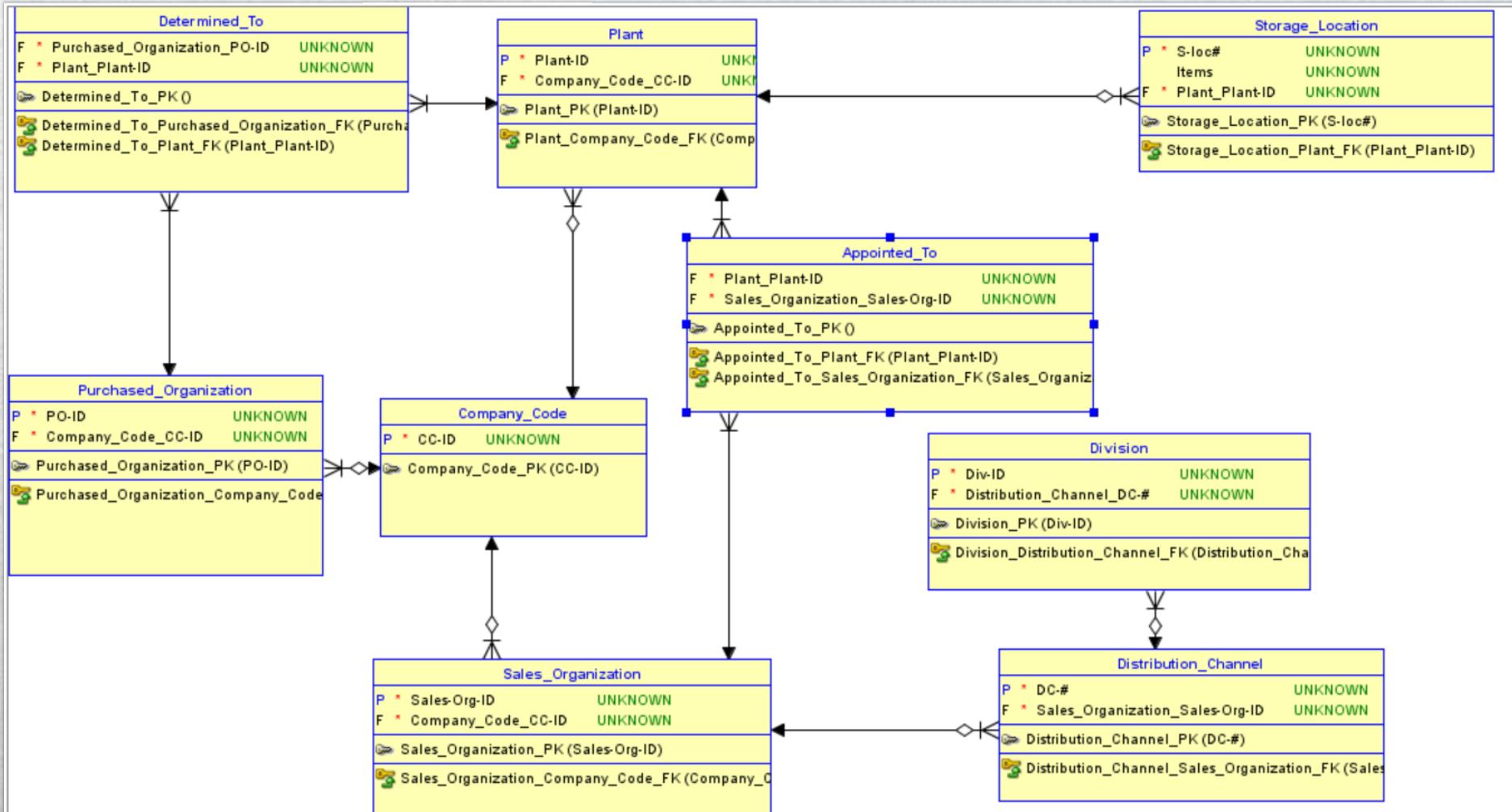
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5. A sales organization (Sales-Org-ID) can have several distribution channels, whereas a distribution channel is uniquely assigned to a sales organization.
 - ❖ We created a new entity: “Sales Organization”.
 - ❖ “Sales Organization” has the primary key [Sales-Org-ID].
 - ❖ The relation name between “Sales Organization” and “Distribution Channel” is have and it’s a 1:N relation.
6. A company code can have several sales organizations. Sales organizations are assigned to one company code only and several plants. Plants can also be assigned to several sales organizations.
 - ❖ The relation name between “Sales Organization” and “Company Code” is AttachedTo and it’s a 1:N relation.
 - ❖ The relation name between “Sales Organization” and “Plant” is AppointedTo and it’s a N:M relation.

Conceptual Model



Relational Model



Physical Model

Company Code

	CC_ID
▶	1
2	
3	
4	
5	
6	
7	
8	
*	NULL

Plant

	Plant_ID	CC_ID
▶	2	2
4		3
6		5
8		6
10		8
*	NULL	NULL

Storage Location

	S_loc	Plant_ID	Items
▶	1	2	Cell
2		6	Tablets
3		8	KIT_MAT
4		10	PADS
5		4	TOYS
*	NULL	NULL	NULL

Purchased Organization

	PO_ID	CC_ID
▶	101	2
102		4
103		6
104		7
105		8
*	NULL	NULL

Sales Organization

	Sales_Org_ID	CC_ID
▶	11	1
15		2
12		3
16		4
17		5
13		6
14		8
*	NULL	NULL

Division

	Div_ID	DC_
▶	41	32
42		35
*	NULL	NULL

Distribution Channel

	DC_	Sales_Org_ID
▶	32	11
33		13
34		15
35		17
*	NULL	NULL

Appointed To

	Plant_ID	Sales_Org_ID
▶	2	11
2		12
2		13
4		13
6		13
6		15
8		15
8		11
8		14
4		17

Determined To

	Plant_ID	PO_ID
▶	2	101
2		102
6		103
8		103
8		104
8		105
6		105

MySQL Display

- 1 • `select * from determinedto;`
- 2 • `select * from appointedto;`
- 3 • `select * from plant;`
- 4 • `select * from companycode;`
- 5 • `select * from purchasedorganization;`
- 6 • `select * from division;`
- 7 • `select * from distributionchannel;`
- 8 • `select * from storagelocation;`
- 9 • `select * from salesorganization;`

Physical Model – MySql

Creating the tables:

- ◊ Create table CompanyCode(CC_ID int not null, primary key(CC_ID));
- ◊ create table Plant(Plant_ID int not null, CC_ID int not null, primary key(Plant_ID), foreign key (CC_ID) references CompanyCode(CC_ID));
- ◊ create table StorageLocation(S_loc int not null, Plant_ID int not null, Items varchar(50) null, primary key(S_loc), foreign key (Plant_ID) references Plant(Plant_ID));
- ◊ create table PurchasedOrganization(PO_ID int not null, CC_ID int not null, primary key(PO_ID), foreign key (CC_ID) references CompanyCode(CC_ID));
- ◊ create table SalesOrganization(Sales_Org_ID int not null, CC_ID int not null, primary key(Sales_Org_ID), foreign key (CC_ID) references CompanyCode(CC_ID));
- ◊ create table DistributionChannel(DC_ int not null, Sales_Org_ID int not null, primary key(DC_), foreign key (Sales_Org_ID) references salesorganization(Sales_Org_ID));
- ◊ create table Division(Div_ID int not null, DC_ int not null, primary key(Div_ID), foreign key (DC_) references distributionchannel(DC_));
- ◊ create table AppointedTo(Plant_ID int not null, Sales_Org_ID int not null, foreign key(Plant_ID) references plant(Plant_ID), foreign key (Sales_Org_ID) references salesorganization(Sales_Org_ID));
- ◊ create table DeterminedTo(Plant_ID int not null, PO_ID int not null, foreign key(Plant_ID) references plant(Plant_ID), foreign key (PO_ID) references purchasedorganization(PO_ID));

Physical Model – MySql

Inserting into the tables (only showing 1 example for each table) :

- ❖ insert into companycode(CC_ID)values(1);
- ❖ insert into plant(Plant_ID, CC_ID)values(2, 2);
- ❖ insert into storagelocation(S_loc, Plant_ID, Items)values(1, 2,'Cell');
- ❖ insert into salesorganization(Sales_Org_ID, CC_ID)values(11, 1);
- ❖ insert into distributionchannel(DC_, Sales_Org_ID)values(32, 11);
- ❖ insert into division(Div_ID, DC_)values(41, 32);
- ❖ insert into appointedto(Plant_ID,Sales_Org_ID)values(2, 11);
- ❖ insert into purchasedorganization(PO_ID,CC_ID)values(101,2);
- ❖ insert into determinedto(Plant_ID, PO_ID)values(2,101);