Name

Hw1

* Try to answer all the questions using what you have learned in class

Some questions are marked as bonus. You do not have to answer these questions to get full points for the assignment. However, you can get bonus points for these questions!

*•*

**Question 3.1.1 (60 Points)**

Build a conceptional model for a **Material Resource Planning,** for a manufacturer**.** The solution should be presented as an **ER-diagram**. Base your design on the following requirements.

The database should record information about Dealers, Location, Model, Series, Employee, Parts, Warehouse, supplier.

*•*

A **Dealer** identified by their *account number*, has also *name*, *Address*, *phoneNo* and *email* address on file. A **location**  that include the discriminator *locationNumber*, and *manager.*

*•*

* + **Dealer** may provide *Feedback* for each transaction they have placed (optional) for car **model**. For every transaction, a **Dealer** has to make a *Payment*. Each time a dealer buy car model (s) it forms a transaction.

A **Model** is identified by the combination of *name* and *year, manufacturer, type.* A **Serie** is associated with a **model** have a discriminator *name*, *transmissionTyp*e, *traction*, seatMaterial

*•*

Each model is made by constitute of different quantities of **Parts,** that include *partNumber, name, material and certification, leadTime*

*•*

* Different parts are sold by different **supplier** at different prices, the supplier information are *name, country, tier.*
* The **warehouse** includes storage their *city, size, environment,* the list of parts inventory.

*•*

* An **Employee** is uniquely identified by the *employeeId*. For an **Employee** we record a sale transaction performed for **dealer** and salary, bonus. Bonus each employee derived from number of closed deals.

*•*

*Employee*

*employeeID*

*salary*

*bonus* ()

payment

feedback their *account number*, has also *name*, *Address*, *phoneNo* and *email*

transaction

*Model*

*name*

*year, manufacturer, type*

Booking

bookingNumber

date

period

Text

Payment

paymentMethod

amount

quantities their *account number*, has also *name*, *Address*, *phoneNo* and *email*

quantities their *account number*, has also *name*, *Address*, *phoneNo* and *email*

Series

*name*, *transmission*

*traction*, *seatMaterial*

supplier

*name, country,*

*tier*

includes

part

*partNumber*

*name*

*material*

*certification leadTime*

stores

warehouse

city

size

environment

location

locationNumber

manager

Ser\_mod

*Dealer*

*accountnbr* *name*, *Address*, *phoneNo email*

salary

have

supplies

**Assumption (other assumption may be valid)**

* A **Dealer** can have one or more **location.** A location is association with one dealer. Each dealer should have location and some location may become vacant if the dealer closed. So totality on side. Other assumptions are valid, such as totality on both side or partial participation on both.

*•*

Each model has one or multiple series and a series is part of a model.

* Transaction can be a tenary if we are interested in tracking which dealer bought which series (or model) and which employee is in charge. Otherwise, you can have 2 binary relationship. Multiple transaction can be established, an employee is in charge of one series and one dealer (multiple employee incharge is also valid), with multiple series. Some employees may not be successful to close any deal, some series may not be bough (is also realistic to say every series have been purchased) and can be emYou can have multiple t
* Each model is made by constitute of different quantities of **Parts,** the same part can be included in the many series (or models), each part has to be associated with a model, and a model should have a part in it.

*•*

* A supplier can supply different parts and some parts are supplied by different supplier. Some suppliers may stop supplying any part and some parts may become discontinues and not being supplied.
* The **warehouse** stores many parts, and the same parts can be stored in many warehouses. Also, some warehousemay be empty, and part may be shipped directly to the unit and doesn’t need storage, which mean partial participation on both sides. Other assumptions are ok, too.

**Part 3.2 Translation of ER into Relational Model (Total: 40 point)**

**Question 3.2.1 (40 Points)**

Take the following ER-model and translate it into a relational schema using the rules presented in class. Present the relational schema. Present the results of the following intermediate steps in this order:

1. Translate strong entities + unnest composite attributes

2. Translate weak entities

3. Translated multi-valued attributes

4. Translate relationships

The database should record information about, Employee, Parts, Warehouse, supplier

The database should record information about, Warehouse, supplier.

*•*

* **Dealer** (*accountnumber*, *name*, *Address*, *phoneNo, email*) Rule 1
* **Model (** *name* , *year, manufacturer, type* ) Rule 1
* **Series (** *name* , *year,* *name, country, tier)* Rule 2
* **location**  ( *account number, locationNumber*, *manager* ) Rule 2

*•*

* **Employee** ( *employeeId*, salary) Rule 1

*•*

* **Parts** ( *partNumber, name, material, certification, leadTime*) Rule 1
* **Supplier** (*name, country, tier*) Rule 1 name is considered a PK because typically you can’t have many company with the same name.

**Transaction** ( *name* , *year,* *name, accountnumber, employeeID, feedback, payment)*

* **Supplies** ( *name, partNumber*) Rule 5
* **Includes (***partNumber, name* , *year,* *name,* quantities*)* Rule 5
* **Stores** (*, name* , *year,* *name,* quantities*)* Rule 5