

Database Management Systems Laboratory Experiments Phase 1

Subject : An implementation of ER Diagram and relational scheme

Due Date : 20.03.2022

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Introduction / Aim:

The aim of this phase is to understand and implement a Relational Database Model.

Problem:

This is the first phase of the final project that consists of four phases. In this phase, you are expected to outline the database model based on your project you have chosen from course website¹.

While you are designing your database, be aware your database has:

- more than one weak entity sets.
- more than one **one-to-one**, **exactly-one**, **one-to-many**, and **many-to-many** relations.
- at least one subclass.
- more than one "descriptive attributes"² in its relations.
- no redundant attributes in its tables which are particularly used to construct a key.
- evolvable characteristic, which provides adaptability towards the occurrence of conditional changes.

You should carefully define all entity sets-tables and relations among them which are essential in any database model. After determination of entity sets/relations, you should draw *ER model* and *relational scheme* with all the details.

Note that, an entity set has one or more attributes that uniquely identify itself, those are called as *primary*, *foreign*, or *super* key. In your ER model and relational scheme these attributes should be clearly stated.

Reporting:

Your reports should cover these subjects:

- Project definition.

¹<http://vtlab.cs.hacettepe.edu.tr/Proje.html>

²an attribute that does not belong any entity set but an existing relation.

- Project's main functions.
- The role of all entity sets and relations in the project.

Submit Format:

→ <student id.zip>
 → diagram /*.png (jpg,jpeg,... etc)
 → scheme /*.png (jpg,jpeg,... etc)
 → report/*.pdf

Notes

- You tell us your project with your own words and attach your ER Diagram which related to your project.
- Do not miss the deadline. Late submissions will be accepted until 3 days after the deadline. And it will be graded with a penalty.
- Save all your work until the assignment is graded.
- The assignment must be original, **individual** work. **Duplicate or very similar assignments are both going to be considered as cheating.**
- Your ER Diagram must be included 20-25 entities (tables).
- You can ask your questions via e-mail (*ahmetalkilinc,n20137895[at]cs.hacettepe.edu.tr*) or Piazza.
- Report language must be in **English**.
- You will submit your work from <https://evdekal.hacettepe.edu.tr> with the file hierarchy as above.

The ER diagram for the 'Proje' database includes the following tables and attributes:

- depo_sayim**: depo_sayim_pk NN (PK), tarih NN
- tedarik_firma**: firma_pk NN (PFK)
- firma**: firma_pk NN (PK), ad NN, adres NN, vergi_dairesi NN, vergi_no NN
- musteri_sektor**: firma_pk NN (PFK), sektor_pk NN (FK), sektor_pk NN (FK), ad NN
- musteri**: firma_pk NN (PFK)
- depo_sayim_malzeme**: depo_sayim_pk NN (PFK), malzeme_pk NN (FK)
- malzeme**: malzeme_pk NN (PK), ad NN, miz_kod NN
- urun_agaci**: malzeme_pk NN (PFK), urun_pk NN (PFK), miktar
- urun**: urun_pk NN (PK), ad NN
- proje_malzeme_kullanim**: proje_malzeme_kullanim_pk NN (PK), proje_pk NN (FK), malzeme_pk NN (FK), miktar
- proje_malzeme_gereksinim**: proje_pk NN (PFK), malzeme_pk NN (PFK), miktar
- proje_plan**: proje_pk NN (PFK), urun_pk NN (PFK), miktar
- proje_sonuc**: proje_sonuc_pk NN (PK), proje_pk NN (FK), urun_pk NN (FK), urun_seri no NN
- urun_bakim**: urun_bakim_pk NN (PK), urun_pk NN (FK), proje_sonuc_pk NN (FK), personel_pk NN (FK), aciklama NN, tarih NN
- isci**: personel_pk NN (PFK), proje_pk NN (FK)
- personel**: personel_pk NN (PK), ad NN, sicil_no NN
- departman**: departman_pk NN (PK), ad NN
- idari_personel**: personel_pk NN (PFK), departman_pk NN (FK)
- isci_eski_proje**: isci_eski_proje_pk NN (PK), personel_pk NN (FK), proje_pk NN (FK), tarih
- muhendis_proje**: muhendis_proje_pk NN (PK), personel_pk NN (FK), proje_pk NN (FK), tarih NN, aktif NN
- proje**: proje_pk NN (PK), firma_pk NN (FK), proje_no

Relationships are indicated by lines with crow's foot notation:

- Relationship3**: depo_sayim to depo_sayim_malzeme (1:M)
- Relationship5**: malzeme to proje_malzeme_kullanim (1:M)
- Relationship7**: malzeme to urun_agaci (1:M)
- Relationship11**: tedarik_firma to firma (1:M)
- Relationship13**: proje to proje_sonuc (1:M)
- Relationship14**: urun to proje_plan (1:M)
- Relationship15**: proje to proje_malzeme_kullanim (1:M)
- Relationship16**: proje to proje_malzeme_gereksinim (1:M)
- Relationship17**: proje to proje_sonuc (1:M)
- Relationship18**: urun_bakim to proje_sonuc (1:M)
- Relationship19**: proje to proje_malzeme_kullanim (1:M)
- Relationship23**: personel to idari_personel (1:M)
- Relationship27**: proje to isci_eski_proje (1:M)
- Relationship28**: isci to muhendis_proje (1:M)
- Relationship29**: muhendis_proje to proje (1:M)
- Relationship31**: proje to isci_eski_proje (1:M)

Books(book_id,book_name,author_name)