

Example of reverse engineering from relational schema to EER model. Notice that underline means primary key and * means foreign key. The relational schema is listed below :

Relation Patient (HKID, Patient_name)
 Relation Borrower (*Borrower_no, Borrower_name)
 Relation Borrow (*Borrower_no, *Folder_no)
 Relation Medical_rec (Medical_rec_no, Create_date, Sub_type, *Folder_no)
 Relation Ward_rec (*Medical_rec_no, Ward_no, Admission_date, Discharge_date)
 Relation Outpatient_rec (*Medical_rec_no, OPD_no, Specialty)
 Relation AE_record (*Medical_rec_no, AE_no)
 Relation Department (Borrower_no, Department_name)
 Relation Doctor (Borrower_no, Doctor_name)
 Relation Other-hospital (Borrower_no, Hospital_name)
 Relation Record_folder (Folder_no, location, *HKID)
 Relation Loan_history (*Borrower_no, *Folder_no, Loan_date)
 Relation Insurance_cover (Insurance_nm, *HKID)

ID: Borrower.Borrower_no \subseteq (Department.Borrower_no \cup Doctor.Borrower_no \cup Other.Hospital.Borrower_no)

ID: Borrow.Borrower_no \subseteq Borrower.Borrower_no

ID: Borrow.Folder_no \subseteq Record_folder.Folder_no

ID: Loan_history.Borrower_no \subseteq Borrower.Borrower_no

The data contained in the database is as follows:

Table Doctor

| Borrower no | Doctor name |
|-------------|-------------|
| 1 | Bloor |
| 2 | Smith |
| 3 | Kim |
| 4 | Chitson |
| 5. | Navathe |

Table Department

| Borrower no | Department name |
|-------------|-----------------|
| 11 | X-Ray |
| 12 | Infant |
| 13 | Chest |
| 14 | Skin |
| 15 | Therapy |

Table Other_hospital

| Borrow no | Hospital name |
|-----------|-----------------|
| 21 | Mac Neal |
| 22 | Riveredge |
| 23 | Stone Town |
| 24 | North Community |
| 25 | Golden Park |

Table Borrower

| Borrower no | Borrower name |
|-------------|---------------|
| 1 | Bloor |
| 2 | Smith |
| 3 | Kim |
| 11 | X-Ray |
| 12 | Infant |
| 14 | Skin |
| 21 | Mac Neal |
| 22 | Riveredge |
| 25 | Golden Park |

Table Record folder

| Folder no | Location | HKID |
|-----------|-----------------|----------|
| F_21 | Hong Kong | E3766849 |
| F_22 | Kowloon | E8018229 |
| F_23 | New Territories | E6077888 |

Table Patient

| HKID | Patient name |
|----------|--------------|
| E3766849 | Smith |
| E8018229 | Bloor |
| E6077888 | Kim |

Table Insurance_cover

| Insurance no | HKID |
|--------------|----------|
| I_1 | E3766849 |
| I_2 | E8018229 |

Table AE_Record

| Medical_rec no | AE no |
|----------------|-------|
| M_352001 | AE_1 |
| M_362001 | AE_2 |

Table Loan_history

| Borrower_no | Folder_no | Loan_date |
|-------------|-----------|-------------|
| 1 | F_21 | Jan-10-2000 |
| 1 | F_21 | Jan-10-2001 |
| 2 | F_22 | Sep-29-1999 |
| 11 | F_21 | Jun-12-1999 |
| 12 | F_22 | Jan-7-2000 |
| 14 | F_23 | Jan-11-2000 |
| 21 | F_21 | Feb-1-2001 |
| 22 | F_21 | Mar-03-2001 |

Table Medical_rec

| Medical_rec_no | Create_date | Sub_type | Folder_no |
|----------------|-------------|----------|-----------|
| M_311999 | Jan-1-1999 | W | F_21 |
| M_322000 | Feb-2-2000 | O | F_21 |
| M_331998 | Nov-10-1998 | W | F_22 |
| M_341999 | Dec-20-1999 | O | F_22 |
| M_352001 | Jan-15-2001 | O | F_21 |
| M_362001 | Feb-01-2001 | O | F_21 |
| M_382001 | Feb-22-2001 | O | F_23 |

Table Ward_rec

| Medical_rec_no | Ward_no | Admission_date | Discharge_date |
|----------------|---------|----------------|----------------|
| M_311999 | W_41 | Jan-1-1999 | Mar-20-1999 |
| M_322000 | W_43 | Nov-12-1998 | Dec-14-1998 |

Table Outpatient_rec

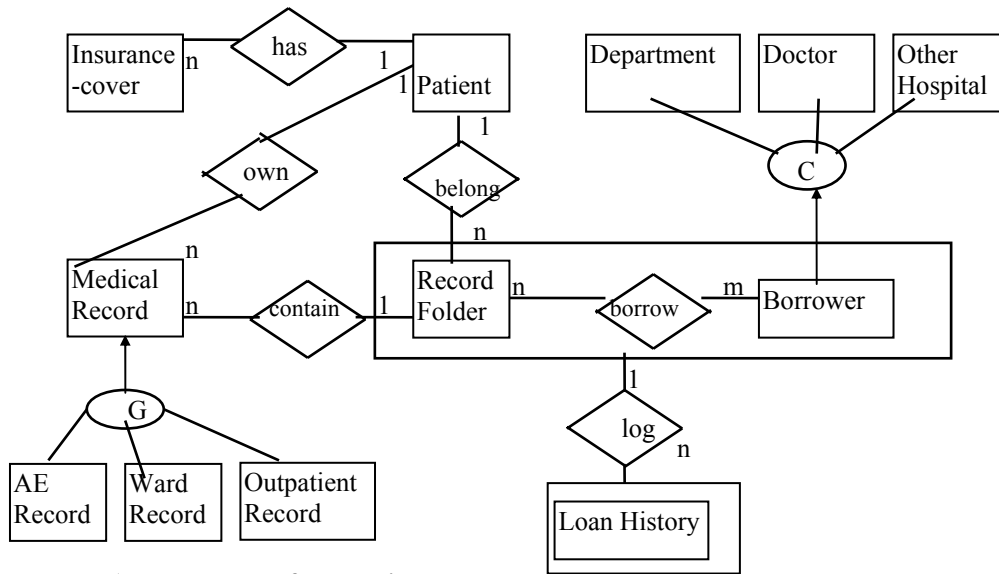
| Medical_rec_no | OPD_no | Specialty |
|----------------|--------|------------|
| M_331998 | O_51 | Heart |
| M_341999 | O_52 | Ophthalmic |
| M_382001 | O_53 | Therapy |

Table Borrow

| Borrower_no | Folder_no |
|-------------|-----------|
| 1 | F_21 |
| 1 | F_22 |
| 2 | F_22 |
| 3 | F_23 |
| 11 | F_21 |
| 12 | F_22 |
| 14 | F_23 |
| 21 | F_21 |
| 22 | F_21 |
| 25 | F_23 |

Step 1. Schema Translation from the Relational Database to the semantic metadata

After capturing data semantics, we get an overview of the EER model as shown in the following Figure where C = categorization and G = disjoint generalization.



An EER model for Hospital Database System with delete and create method