

## RELATIONAL REPRESENTATIONS

1

MEMBER (M-Id, Name, Address, Since, Recommender)  
ENGINEER (E-Id, Name, Grade, Car-Id)  
REPAIR (Date, Reg-No, M-Id, E-Id, Fault, Repair, Cost, Surcharge)

2

DEPARTMENT (Dept-Code, Dept-Name, Manager-Id)  
PROJECT (Project-Id, Title, Start-Date, Due-Date, Cost, PManager-Id)  
EMPLOYEE (Employee-Id, Name, Job-Title, Dept-Code)  
SKILLS (Employee-Id, Skill-Name, Proficiency)  
TEAM (Employee-Id, Employee-Role, Project-Id)

3

INCOME (Amount, Pay-Date, Source-Type, Source-Id, Car-Reg#)  
EXPEND (Amount, Pay-Date, Destination-Type, Destination-Id, Car-Reg#)  
CAR (Reg#, Make, Model, Prod-Year, Engine-Size, Fuel-Type,  
Passenger#, Price, Purchase-Date, Rent-Price, Insurance#, ...)  
RENTAL (Rent#, Reg#, Date-Out, Date-In, Customer-Driver#, Deposit)  
REPAIR (Rep#, Reg#, Date-Out, Date-Back, Garage-Id, *other details*)  
CUSTOMER (Customer-Driver#, Status, Name, Address, Telephone, CredCard#)  
GARAGE (Garage-Id, Garage-Name, Address, Pay-Arrangements, *other details*)

If INCOME.Source-Type = '**Rental**' then INCOME.Source-Id is defined on the same domain as the RENTAL.Rent#, otherwise INCOME.Source-Id is set to be equal to the relevant document identifier. Similarly, EXPEND.Destination-Id is equal to either some REPAIR.Rep# or to the relevant payment request identifier.

4

WARD (Ward-Name, Capacity, Building-Name, ...)  
PATIENT (Patient-Id, GP-Id, Doctor-Id, Admission-Reason, Admission-Date)  
PERSONAL-DETAILS (Patient-Id, Name, Address, Birth-Date, NHS#,...)  
TREATMENT (Patient-Id, *treatment details*, Doctor-Id, Start-Date)  
DOCTOR (Doctor-Id, Name, Specialism-Code, Position, ...)  
SPECIALISM (Specialism-Code, *descriptive details*)  
DIAGNOSIS (Patient-Id, Doctor-Id, Date, *diagnosis details*)  
RESULTS (Patient-Id, Test-Code, Date-Taken, *details*)  
TEST-TYPE (Test-Code, *descriptive details*)