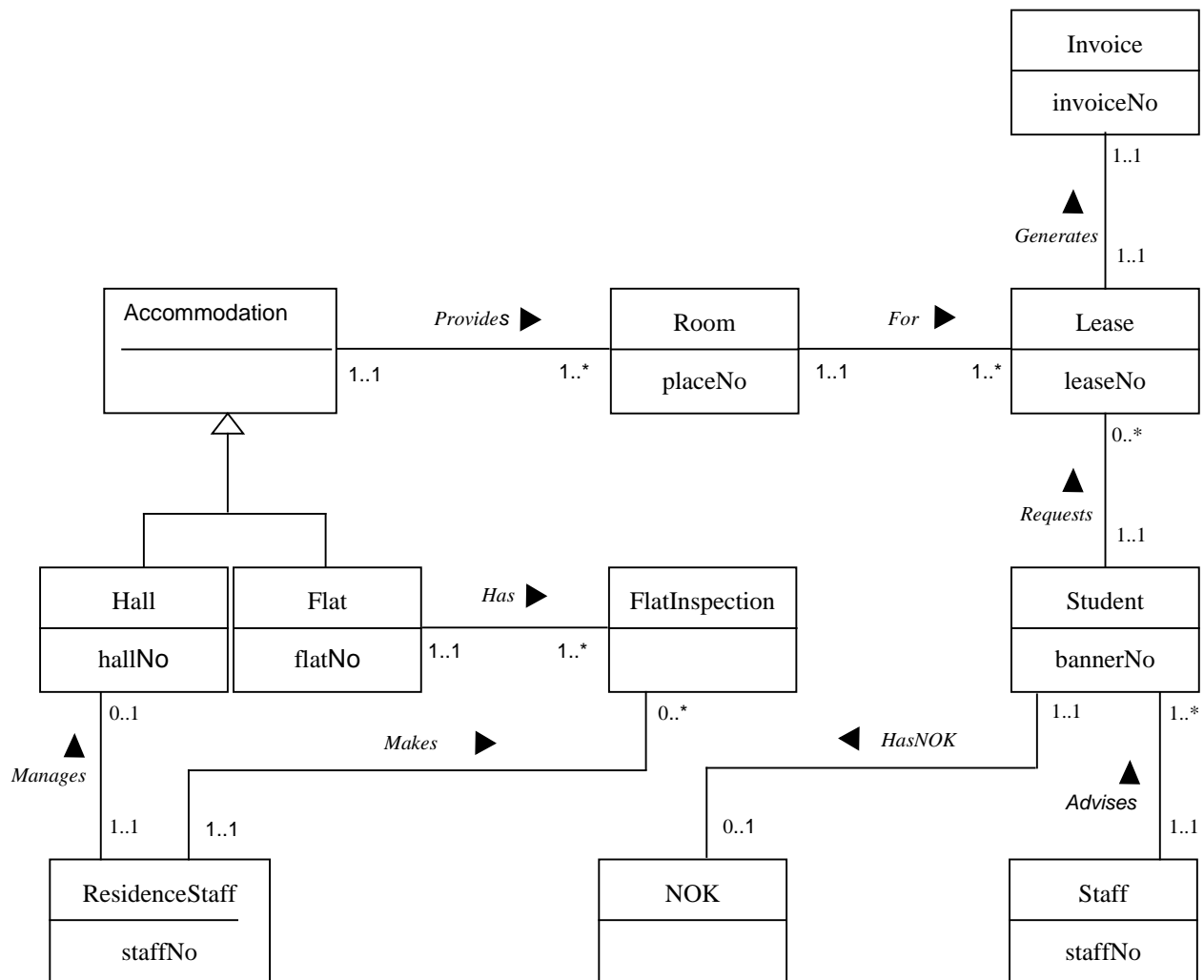# University Accommodation Case Study

ER diagram

Entities and attributes:

1. Table name: **Student**

It has attributes banner number, first name and last name of student, address of student as street, city and postcode, mobile phone number as phone, email address, date of birth as dob, gender, nationality, category of student (like first-year undergraduate, postgraduate), status (waiting or placed), major subject of student, minor subject of student, advisor assigned, place number of room student is placed at, special needs of student and additional comments.

Banner number is mandatory.
First name and last name of student can not be null.
Address of student (street, city, postcode) can not be null.

Mobile phone number is optional.
Email is mandatory.
Date of birth is mandatory.
Gender is mandatory.
Nationality is mandatory.
Category is mandatory.
Status is mandatory.
Major is mandatory.
Minor is optional.
Advisor is optional.
Place number is optional.
Special needs is optional.
Additional comments is optional.

Below is database version of attributes.

Student (bannerNo, fName, lName, street, city, postcode, phone, email, dob, gender, nationality, category, status, major, minor, advisor, placeNo, specialNeeds, comment)

Primary key: bannerNo
Foreign key: placeNo references Room(placeNo)
Foreign key: advisor references Staff(staffNo)

Constraints used:
Email of each student is unique.
Mobile phone number is unique for each student.
Gender is either male (M) or female (F).
Status is either 'placed' or 'waiting'.

2. Table name: **Staff**
A member of staff is assigned as advisor to a student. It is assumed sometimes a student can be without any advisor for certain period.

The attributes of this table are staff number, full name of staff , position, name of department, internal phone number, email address, room number.

Staff number is mandatory.
Full name of staff is mandatory.
Position is mandatory.
Name of department is mandatory.
Internal telephone number is mandatory.
Email is mandatory.
Room number is mandatory.

Database version of attributes:
Staff (staffNo, name, position, department, telNo, email, roomNo)

Primary key: staffNo

Constraints used:
Email address of each staff is unique.

3. Table name: **Hall**

Its attributes are:
Hall number (mandatory)
Name (mandatory)
Address (mandatory)
Telephone number (mandatory)
Hall manager (optional)

Database version of attributes:
Hall (hallNo, name, address, telNo, manager)

Primary Key: hallNo
Foreign Key: manager references ResidenceStaff(staffNo)

Constraints used:
Hall name uniquely identify each hall.
Telephone number is unique.

4. Table name: **Flat**

Its attributes are:
Flat number (mandatory)
Address (mandatory)
Number of rooms (mandatory)

Database version of attributes:
Flat (flatNo, address, noOfRooms)

Primary key: flatNo

5. Table name: **Room**

Its attributes are:
Place number (mandatory)
Room number (mandatory)
Monthly rent (mandatory)
Hall number
Flat number
(Either hall number or flat number is required; both cannot be null at same time and both cannot be present at same time; one must be null and other have some value)
.
Database version of attributes:

Room (placeNo, roomNo, rentRate, hallNo, flatNo)

Primary key: placeNo
Foreign key: flatNo references Flat(flatNo)
Foreign key: hallNo references Hall(hallNo)

Constraints used:
A room is uniquely identified by place number, so it can belong to either hall or flat but not both at same time.

6. Table name: **Lease**
Its attributes are:
Lease number (mandatory)
Duration of lease in numbers of semester (mandatory, at least 1 and less than 3)
Banner number of student (mandatory)
Place number (mandatory)
Date student wishes to enter (mandatory)
Date student wishes to leave (optional)

Database version of attributes:
Lease (leaseNo, bannerNo, placeNo, duration, dateEnter, dateLeave)

Primary key: leaseNo
Foreign key: bannerNo references Student(bannerNo)
Foreign key: placeNo references Room(placeNo)

Constraints used:
Lease duration is at least 1 and at most 3. 3 means it also covers summer semester.

7. Table name: **Invoice**
Its attributes are:
Invoice number (mandatory)
Lease number (optional)
Semester (mandatory)
Payment due (mandatory)
First reminder date (optional)
Second reminder date (optional)
Date on which invoice was paid (optional)
Method of payment (optional)

Database version of attributes:
Invoice (invoiceNo, leaseNo, semester, paymentDue, reminderDate1, reminderDate2, datePaid, paymentMethod)

Primary key: invoiceNo
Foreign key: leaseNo references Room(leaseNo)

Constraints used:

Semester value ranges from 1-3.
Second reminder date should be after first reminder date.

8. Table name: **FlatInspection**
Its attributes are:
Flat number (mandatory)
Inspection date (mandatory)
Staff number, number of staff that carried out inspection (mandatory)
Is condition of flat satisfactory (mandatory)
Comments (optional)

Database version of attributes:
FlatInspection (flatNo, inspectionDate, inspectStaffNo, conditionSatisfactory, comments)

Primary key: (flatNo, inspectionDate)
Foreign key: flatNo references Flat(flatNo)
Foreign key: inspectStaffNo references ResidenceStaff(staffNo)

Constraints used:
Value for domain condition of apartment satisfactory or not is yes or no.

9. Table name: **ResidenceStaff**
Its attributes are:
Staff number (mandatory)
First name of staff (mandatory)
Last name of staff (mandatory)
Date of birth (mandatory)
Email address (mandatory)
Street address (mandatory)
City (mandatory)
Postcode (mandatory)
Gender (mandatory)
Position (mandatory)
Location (mandatory)

Database version of attributes:
ResidenceStaff (staffNo, fName, lName, DOB, email, street, city, postcode, gender, position, location)

Primary key: staffNo

Constraints used:
Email address is unique.
Gender is either male (M) or female (F).

10. Table name: **NOK**
It stores information about next of kin of student. Its attributes are:
Banner number of student (mandatory)

Name of next of kin (mandatory)
Relationship (mandatory)
Street address (mandatory)
City (mandatory)
Postcode (mandatory)
Telephone number (mandatory)

Database version of attributes:
NOK (bannerNo, name, relationship, street, city, postcode, telNo)

Primary key: bannerNo
Foreign key: bannerNo references Student(bannerNo)