

B

Other Case Studies

Objectives

In this appendix you will learn:

- The *University Accommodation Office* case study, which describes the data and transaction requirements of a university accommodation office.
- The *EasyDrive School of Motoring* case study, which describes the data and transaction requirements of a driving school.
- The *Wellmeadows Hospital* case study, which describes the data and transaction requirements of a hospital.

This appendix describes the *University Accommodation Office* case study in Section B.1, The *EasyDrive School of Motoring* in Section B.2, and the *Wellmeadows Hospital* case study in Section B.3.

B.1 The University Accommodation Office Case Study

The director of the *University Accommodation Office* requires you to design a database to assist with the administration of the office. The requirements collection and analysis phase of the database design process has provided the following data requirements specification for the *University Accommodation Office* database followed by examples of query transactions that should be supported by the database.

B.1.1 Data Requirements

Students

The data stored for each full-time student includes: the banner number, name (first and last name), home address (street, city, postcode), mobile phone number, email, date of birth, gender, category of student (for example, first-year undergraduate, postgraduate), nationality, special needs, any additional comments, current status (placed/waiting), major, and minor.

The student information stored relates to those currently renting a room and those on the waiting list. Students may rent a room in a hall of residence or student apartment.

When a student joins the university, he or she is assigned to a member of staff who acts as his or her Adviser. The Adviser is responsible for monitoring the student's welfare and academic progression throughout his or her time at the university. The data held on a student's Adviser includes full name, position, name of department, internal telephone number, email, and room number.

Halls of residence

Each hall of residence has a name, address, telephone number, and a hall manager who supervises the operation of the hall. The halls provide only single rooms, which have a room number, place number, and monthly rent rate.

The place number uniquely identifies each room in all halls controlled by the Residence Office and is used when renting a room to a student.

Student flats

The Residence Office also offers student apartments. These are fully furnished and provide single-room accommodation for groups of three, four, or five students. The information held on student apartments includes an apartment number, address, and the number of single bedrooms available in each apartment. The flat number uniquely identifies each apartment.

Each bedroom in an apartment has a monthly rent rate, room number, and a place number. The place number uniquely identifies each room available in all student apartments and is used when renting a room to a student.

Leases

A student may rent a room in a hall or student apartment for various periods of time. New lease agreements are negotiated at the start of each academic year, with a minimum rental period of one semester and a maximum rental period of one year, which includes semesters 1 and 2 and the summer semester. Each individual lease agreement between a student and the Residence Office is uniquely identified using a lease number.

The data stored on each lease includes the lease number, duration of the lease (given as semesters), student's name and banner number, place number, room number, address details of the hall or student apartment, and the date the student wishes to enter the room, and the date the student wishes to leave the room (if known).

Invoices

At the start of each semester, each student is sent an invoice for the following rental period. Each invoice has a unique invoice number.

The data stored on each invoice includes the invoice number, lease number, semester, payment due, student's full name and banner number, place number, room number, and the address of the hall or apartment. Additional data is also held regarding the payment of the invoice and includes the date the invoice was paid.

the method of payment (check, cash, Visa, and so on), the date the first and second reminder was sent (if necessary).

Student apartment inspections

Student apartments are inspected by staff on a regular basis to ensure that the accommodation is well maintained. The information recorded for each inspection is the name of the member of staff who carried out the inspection, the date of inspection, an indication of whether the property was found to be in a satisfactory condition (yes or no), and any additional comments.

Residence staff

Some information is also held on members of staff of the Residence Office and includes the staff number, name (first and last name), email, home address (street, city, postcode), date of birth, gender, position (for example, Hall Manager, Administrative Assistant, Cleaner) and location (for example, Residence Office or Hall).

Courses

The Residence Office also stores a limited amount of information on the courses offered by the university, including the course number, course title (including year), course instructor, instructor's on-campus telephone number, email, room number, and department name. Each student is also associated with a single programme of studies.

Next-of-kin

Whenever possible, information on a student's next-of-kin is stored, which includes the name, relationship, address (street, city, postcode), and contact telephone number.

B.1.2 Query Transactions (Sample)

Listed here are some examples of query transactions that should be supported by the *University Accommodation Office database system*:

- (a) Present a report listing the Manager's name and telephone number for each hall of residence.
- (b) Present a report listing the names and banner numbers of students with the details of their lease agreements.
- (c) Display the details of lease agreements that include the summer semester.
- (d) Display the details of the total rent paid by a given student.
- (e) Present a report on students who have not paid their invoices by a given date.
- (f) Display the details of apartment inspections where the property was found to be in an unsatisfactory condition.
- (g) Present a report of the names and banner numbers of students with their room number and place number in a particular hall of residence.
- (h) Present a report listing the details of all students currently on the waiting list for accommodation; that is, who were not placed.
- (i) Display the total number of students in each student category.

- (j) Present a report of the names and banner numbers for all students who have not supplied details of their next-of-kin.
- (k) Display the name and internal telephone number of the Adviser for a particular student.
- (l) Display the minimum, maximum, and average monthly rent for rooms in residence halls.
- (m) Display the total number of places in each residence hall.
- (n) Display the staff number, name, age, and current location of all members of the residence staff who are over 60 years old today.

B.2 The EasyDrive School of Motoring Case Study

The *EasyDrive School of Motoring* was established in Glasgow in 1992. Since then, the school has grown steadily and now has several offices in most of the main cities of Scotland. However, the school is now so large that more and more administrative staff are being employed to cope with the ever-increasing amount of paperwork. Furthermore, the communication and sharing of information between offices, even in the same city, is poor. The Director of the school, Dave MacLeod, feels that too many mistakes are being made and that the success of the school will be short-lived if he does not do something to remedy the situation. He knows that a database could help in part to solve the problem and has approached you and your team to help in creating a database system to support the running of the *EasyDrive School of Motoring*. The Director has provided the following brief description of how the *EasyDrive School of Motoring* operates.

B.2.1 Data Requirements

Each office has a Manager (who tends to also be a Senior Instructor), several Senior Instructors, Instructors, and administrative staff. The Manager is responsible for the day-to-day running of the office. Clients must first register at an office, which includes completion of an application form, which records their personal details. Before the first lesson, a client is requested to attend an interview with an Instructor to assess the needs of the client and to ensure that the client holds a valid provisional driving license. A client is free to ask for a particular Instructor or to request that an Instructor be changed at any stage throughout the process of learning to drive. After the interview, the first lesson is booked. A client may request individual lessons or book a block of lessons for a reduced fee. An individual lesson is for one hour, which begins and ends at the office. A lesson is with a particular Instructor in a particular car at a given time. Lessons can start as early as 8:00 a.m. and as late as 8:00 p.m. After each lesson, the Instructor records the progress made by the client and notes the mileage used during the lesson. The school has a pool of cars, which are adapted for the purposes of teaching. Each Instructor is allocated to a particular car. As well as teaching, the Instructors are free to use the cars for personal use. The cars are inspected at regular intervals for faults. Once ready, a client applies for a driving test date. To obtain a full driving license, the client must pass both the driving and written parts of the test. It is the