1. Identify entity types with brief description

Manager : All managerial staff

Instructor : All instructor staff

Senior Instructor : All senior instructor staff

Administrative Staff : All administrative staff

Client : All clients

Office : All offices

Lesson : All scheduled lessons

Test : All scheduled driving tests

Car : All registered cars

1. Identify relationship types with brief description, attributes and multiplicity

Office (1 ... 1) Has (1 … 1) Manager

One office has one manager.

Managers may also be senior instructors.

Office (1 ... 1) Has (1 … \*) Instructor

One office has several instructors.

Office (1 ... 1) Has (1 … \*) Senior Instructors

One office has several senior instructors.

Office (1 ... 1) Has (1 … \*) Administrative Staff

One office has several administrative staff.

Client ( 1 … \*) Registers at (1 … \*) Office

A client can register at one office.

Client (1 … 1) Books (0 … \*) Lesson

Attribute: lessonDate

A client can book one or a block of lessons.

Client (1 … 1) Books (0 … \*) Test

Attribute: testDate

A client schedules one driving test.

Instructor (1 … 1) Interviews (1 … \*) Client

One instructor can interview many clients.

Instructor (1 … 1) Records progress of (1 … \*) Client

An instructor records the progress of each client after a lesson.

Instructor (1 … 1) Teaches (1 …\*) Lessons

Instructor (1 … 1) Records mileage of (1 … \*) Lesson

An instructor records the mileage used during the lesson.

Instructor (1 ... 1) Has (1…1) Car

An instructor must have one registered car.

1. Describe entity types in detail

Attributes: Composite, Multi-valued, Derived, Optional

Default: Simple, Single-Value, Not derived, Required

Primary key and alternate keys for entity types

Manager

StaffNo

OfficeNo

MangName: Composite (first, middle, last)

TelephoneNo

Primary key: StaffNo

Alternate keys: MangName

Instructor

StaffNo

OfficeNo

CarNo

InstName: Composite (first, middle, last)

TelephoneNo

InstGender

InstBirthday: Composite (year, month, day)

Primary key: StaffNo

Alternate keys: InstName

Senior Instructor

StaffNo

OfficeNo

CarNo

SeniorName: Composite (first, middle, last)

TelephoneNo

SeniorGender

SeniorBirthday: Composite (year, month, day)

Primary key: StaffNo

Alternate keys: SeniorName

Administrative Staff

StaffNo

OfficeNo

AdminName: Composite (first, middle, last)

TelephoneNo

Primary key: StaffNo

Alternate keys: AdminName

Client

ClientNo

OfficeNo

InstructorNo

ClientName: Composite (first, middle, last)

TelephoneNo: Multi-value

ClientGender

Primary key: ClientNo

Alternate keys: ClientName

Office

OfficeNo

Address: Composite (Street, City, State, ZipCode)

Primary key: OfficeNo

Alternate keys: Address

Lesson

lessonNo

lessonDate: Composite (year, month, day)

lessonTime

ClientNo

StaffNo

Miles

Primary key: lessonNo

Test

testNo

testDate: Composite (year, month, day)

ClientNo

PracticeScore

TheoreticalScore

Primary key: testNo

Car

CarNo

StaffNo

Faults

Primary key: CarNo

1. Using UML to Draw the E-R diagram

