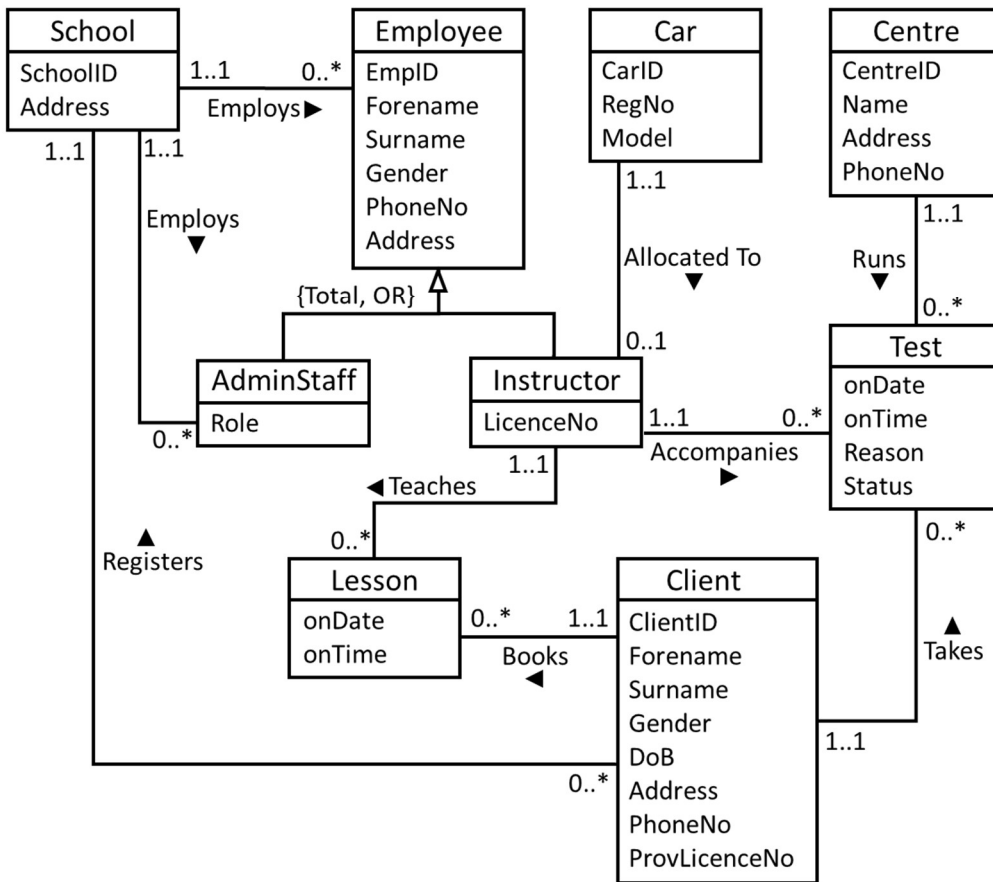


CO532 Assessment 3

Here is one solution to Assessment 2

Conceptual Data Model



Assumptions

- An Instructor always has an allocated Car
- A car may or may not be allocated to an Instructor
- A Client may not have booked a Lesson yet
- A Client may not have taken a Test yet
- A School may not have employed anyone yet
- A Centre may not have run a Test yet
- An Instructor may not have accompanied a Client to a Test yet
- An Instructor may not have taught a Lesson yet

Relational Schema

Primary keys are underlined and foreign keys are in italic. No foreign keys are allowed to be null.

Centre(CentreID, Name, Address, PhoneNo)

Car(CarID, RegNo, Model)

School(SchoolID, Address)

AdminStaff(EmpID, Forename, Surname, Gender, PhoneNo, Address, Role, *SchoolID*)

Instructor(EmpID, Forename, Surname, Gender, PhoneNo, Address, LicenceNo, *SchoolID*, *CarID*)

Client(ClientID, Forename, Surname, Gender, DoB, PhoneNo, Address, ProvLicenceNo)

Lesson(OnDate, OnTime, *ClientID*, *EmpID*)

Test(OnDate, OnTime, *ClientID*, *EmpID*, *CentreID*, Status, Reason)

Constraints

Unique Constraints:

- Car - (RegNo)
- Instructor - (LicenceNo)
- Client - (ProvLicenceNo)
- Lesson - (OnDate, OnTime, EmplID)
- Test - (OnDate, OnTime, EmplID)

Domain Constraints:

- Gender: {'M','F','O'}
- Status: {'Not Taken', 'Passed', 'Failed'}

Not Null Attributes:

- All Attributes should be not null, except Test.Reason which must be nullable
- All foreign keys must be not null because a foreign key value is required in all cases, which can be seen by the 1..1 in the relevant association multiplicities.

TASK 1 (40%)

From the above information, implement the database tables in PostgreSQL, choosing sensible data types for each column. Ensure you maintain entity integrity and referential integrity. Implement all the above domain constraints and unique columns. Add the not null constraints to attributes. Ensure your data types and constraints allow for sensible data to be added to the database in the future.

Insert the following data into the tables. Do not add any data except this.

Centre

CentreID	Name	Address	PhoneNo
1	Canterbury	12 Meryl Street	+44 1227-968-5287
2	Whitstable	5 The Strand, Whitstable	01227457012
3	Faversham	1 High Street	01795 865129

Car

CarID	RegNo	Model
124	BD51 SMR	VW Polo
653	WS62 QWE	Ford Focus
912	FD52 TGF	VW Polo
167	FD52 YTR	VW Polo

School

SchoolID	Address
1	12 Whitechapel, Canterbury
2	9 Middle Wall, Whitstable

AdminStaff

EmpID	Forename	Surname	Gender	PhoneNo	Address	Role	SchoolID
1006	Fred	Grimes	M	012275435665	27 Cherry Street	assistant	2
1009	Jill	Joffries	F	+44776618645	27 Cherry Street	manager	1
1019	Justine	Joffries	F	(01227) 812035	19 Creosote Road	assistant	1

Instructor

EmpID	Forename	Surname	Gender	PhoneNo	Address	LicenceNo	SchoolID	CarID
2009	James	Joffries	M	012275435665	27 Cherry Street	FTR76398	1	124
2011	Jim	Adams	M	065490125674	4 The Vale	TGY98555a	2	912
2013	Trinny	Vair	F	0044587208725	17 High Street, Chartham	YHF7665467	1	653

Client

ClientID	Forename	Surname	Gender	DoB	PhoneN0	Address	ProvlicenceNo
1	Andy	Twill	M	1998-02-01	0044678412349876	27 Cherry Street, CT4 7NF	TYH7890
2	Sue	Adams	F	1989-06-14	0841-234-876	45 Eggy Lane	CIO67891
3	Jean	Adams	F	2001-11-19	01227765329	4 Harkness Lane, Canterbury	RTY678923

Lesson

OnDate	OnTime	ClientID	EmpID
2017-06-24	10:00:00	1	2011
2019-06-07	10:00:00	2	2009
2017-07-12	14:00:00	1	2011
2017-08-19	16:00:00	1	2011
2020-08-17	16:00:00	2	2011
2020-08-01	14:00:00	1	2009

Test

OnDate	OnTime	ClientID	EmpID	CentreID	Status	Reason
2018-03-01	11:00:00	1	2009	2	Passed	null
2019-08-13	13:00:00	2	2011	3	Failed	Lack of Observation
2019-10-21	11:00:00	2	2011	2	Failed	Speeding
2020-08-19	10:00:00	2	2009	2	Not Taken	null

TASK 2 (10% Each query)

Answer each of the below with a single PostgreSQL query. For queries that return information, return only the data specified and use only the information provided in the question: the queries must utilize the information given, do not hard code ids or other information that is not explicitly given. Ensure the queries will work with any future data, not just the data given.

- 2.1) List the date, time and instructor surname for all lessons with instructors who live on Cherry Street.
- 2.2) Output the status and the count of each status for tests taken by female clients, if the count is greater than zero.
- 2.3) Output the employee ID, forename and surname of all employees with surname 'Joffries', both AdminStaff and Instructors.
- 2.4) Give the school address, school ID, forename and surname of all instructors who do not currently have a lesson in the database.
- 2.5) For all tests at the 'Whitstable' centre, given the centre name, date, time, test status, client forename, client surname, school address for the accompanying Instructor and car model for the accompanying instructor. Sort alphabetically A to Z by client surname then client forename.
- 2.6) Change all Lessons on or after 12/06/2020 with the Instructor James Joffries to be with the instructor Jim Adams.

Submitting

Submit via Moodle. The deadline is given there.

Submit one file in plain text format. It must have a .txt extension.

In the file you should provide:

- The PostgreSQL commands that you used to create the tables (in the order you created them).
- The PostgreSQL commands that you used to insert the data (in the order you inserted the data).
- The PostgreSQL commands to run the queries.

Code that does not work will get 0 marks. Any non-executable text must be in comments, for example, either on lines starting with "--" or between java-like /* ... */ blocks. Put a comment indicating the question number before each query from Task 2 (e.g. "-- 2.1").

Late submissions will get 0 marks.

I will not be available on the day of submission for questions, make sure you get any queries to me before then.

Peter Rodgers

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