

Introduction to Scientific Databases

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Lecture 6: SQL

Consider the following Relational schema

Patient(SSN, NAME, AGE)
Hospital(NAME_H, POSTCODE, COUNTRY)
Medical_Doctor(SSN_D, NAME_D, POSITION)
Drug(DRUG_ID, DRUG_NAME)
Drug_Dosage_Form(DRUG_ID^{FKDrug}, FORM, ROUTE, STRENGTH)
Attend(SSN^{FKPatient}, NAME_H^{FKHospital})
Work(NAME_H^{FKHospital}, SSN_D^{FKMedical_Doctor})
Treat(SSN^{FKPatient}, SSN_D^{FKMedical_Doctor})
Prescribe(SSN_D^{FKMedical_Doctor}, SSN^{FKPatient}, DRUG_ID^{FKDrug_Dosage_Form}, FORM^{FKDrug_Dosage_Form},
ROUTE^{FKDrug_Dosage_Form}, STRENGTH^{FKDrug_Dosage_Form}, StartDate, NumberDays, TimesPerDay)
With the following instances:

Medical_Doctor

<u>SSN_D</u>	NAME_D	POSITION
5553322	Claudia Lange	Research
6662233	Christoph Wagner	Professor
8882223	Cybel Wigner	Professor
9933228	John Smith	Resident

Hospital

<u>NAME_H</u>	POSTCODE	COUNTRY
KBonn	53117	Germany
UniHMadrid	35006	Spain
UniHRome	68000	Italy

Patient

<u>SSN</u>	NAME	AGE
9993373	Christoph Smith	65
8883331	Henry Paths	70
4443331	Peter Wigner	29
5552221	John Lange	39
2233322	Christine Ullman	80

Treat

<u>SSN</u>	<u>SSN_D</u>
9993373	5553322
8883331	5553322
4443331	5553322
5552221	7744411
2233322	9933228

Work

<u>SSN_D</u>	<u>NAME_H</u>
5553322	KBonn
6662233	UniHMadrid
8882223	KBonn
9933228	KBonn

Attend

<u>SSN</u>	<u>NAME_H</u>
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9993373	KBonn
8883331	KBonn
4443331	KBonn
5552221	KBonn
2233322	KBonn

Drug_Dosage_Form

<u>DRUG_ID</u>	<u>FORM</u>	<u>ROUTE</u>	<u>STRENGTH</u>
DB00361	Solution	Parenteral	10mg
DB00361	Injection	Intravenous	10mg
DB00361	Capsule	Oral	20mg
DB00338	Tablet	Oral	40mg
DB00515	Injection	Intravenous	10mg

Drug

<u>DRUG_ID</u>	<u>DRUG_NAME</u>
DB00361	Vinorelbin
DB00338	Omeprazole
DB00515	Cisplatin

Prescribe

<u>SSN</u>	<u>SSN_D</u>	<u>DRUG_ID</u>	<u>FORM</u>	<u>ROUTE</u>	<u>STRENGTH</u>
9993373	5553322	DB00361	Solution	Parenteral	10mg
8883331	5553322	DB00361	Solution	Parenteral	10mg

4443331	5553322	DB00361	Capsule	Oral	20mg
5552221	7744411	DB00361	Capsule	Oral	20mg
2233322	9933228	DB00338	Tablet	Oral	40mg

Assignments:

A. Define the SQL instructions to create the Relational schema and to insert the instances into a relational database. Try to download and install MYSQL in your computer and create the corresponding database.

B. Represent in SQL the following statements:

- 1) The name and age of the patients who attend hospitals in Germany or Spain.
- 2) The name and age of the patients who attend hospitals in Germany where researchers or professors work.
- 3) The SSN of the medical doctors who treat patients older than 50 years old.
- 4) The name and SSN of the medical doctors who are researchers and work in hospitals in Germany.
- 5) The name of the drugs prescribed to the patients treated by doctors who work in hospitals in Germany.
- 6) The name of the drugs that the patients who attend hospitals in Spain have taken.
- 7) The SSN of the medical doctors who treat patients between 65 and 80 years old.
- 8) The name and SSN of the medical doctors who are neither researchers nor professors,
- 9) The number of patients who receive each prescribed drug.
- 10) The forms of drugs that are not prescribed to any patient.