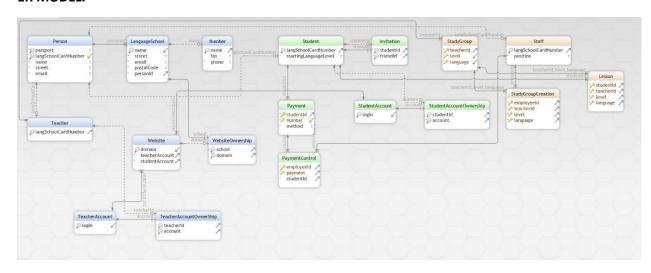
## **ROMAN DANILCHENKO - DBS - CP3**

## **ER MODEL.**



```
DATABASE CREATION.
CREATE TABLE Person(
      passport VARCHAR(20) NOT NULL UNIQUE,
      langSchoolCardNumber CHAR(8) PRIMARY KEY,
      name VARCHAR(20) NOT NULL,
      street VARCHAR(50) NOT NULL,
      email VARCHAR(50) NOT NULL,
 CONSTRAINT person_ch_passport CHECK (passport NOT LIKE '%[^A-Z0-9]%'),
 CONSTRAINT person_ch_email CHECK (email LIKE '_%@_%.__%')
);
CREATE TABLE LanguageSchool(
      name VARCHAR(30) PRIMARY KEY,
      street VARCHAR(50) NOT NULL,
      email VARCHAR(50) NOT NULL,
      postalCode CHAR(5) NOT NULL,
      personId CHAR(8) NOT NULL,
 CONSTRAINT languageSchool_ch_email CHECK (email LIKE '_%@_%.__%'),
      CONSTRAINT languageSchool_fk_personId FOREIGN KEY (personId)
      REFERENCES Person(langSchoolCardNumber)
      ON UPDATE CASCADE
```

```
ON DELETE CASCADE
);
CREATE TABLE Number(
      name VARCHAR(30) PRIMARY KEY,
      fax VARCHAR(30),
      phone VARCHAR(20) NOT NULL,
  CONSTRAINT number_ch_phone CHECK (phone not like '%[^0-9]%'),
      CONSTRAINT number_fk_name FOREIGN KEY (name)
      REFERENCES LanguageSchool(name)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
CREATE TABLE Teacher(
      langSchoolCardNumber CHAR(8) PRIMARY KEY,
      CONSTRAINT teacher_fk_langSchoolCardNumber FOREIGN KEY (langSchoolCardNumber)
      REFERENCES Person(langSchoolCardNumber)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
CREATE TABLE TeacherAccount(
      login VARCHAR(25) PRIMARY KEY
);
CREATE TABLE TeacherAccountOwnerShip(
      teacherId CHAR(8) PRIMARY KEY,
      account VARCHAR(25) NOT NULL UNIQUE,
      CONSTRAINT teacherAccountOwnerShip_fk_teacherId FOREIGN KEY (teacherId)
      REFERENCES Teacher(langSchoolCardNumber)
      ON UPDATE CASCADE
```

```
ON DELETE CASCADE,
       CONSTRAINT teacherAccountOwnerShip_fk_account FOREIGN KEY (account)
       REFERENCES TeacherAccount(login)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE Student(
       langSchoolCardNumber CHAR(8) PRIMARY KEY,
       startingLanguageLevel CHAR(2) NOT NULL,
       CONSTRAINT student_fk_langSchoolCardNumber FOREIGN KEY (langSchoolCardNumber)
       REFERENCES Person(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE Invitation(
       studentId CHAR(8) PRIMARY KEY,
       friendId CHAR(8) NOT NULL UNIQUE,
       CONSTRAINT invitation_fk_studentId FOREIGN KEY (studentId)
       REFERENCES Student(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE,
       CONSTRAINT invitation_fk_friendId FOREIGN KEY (friendId)
       REFERENCES Student(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE StudentAccount(
       login VARCHAR(25) PRIMARY KEY
);
```

```
CREATE TABLE StudentAccountOwnership(
      studentid CHAR(8) PRIMARY KEY,
      account VARCHAR(25) NOT NULL UNIQUE,
      CONSTRAINT studentAccountOwnership_fk_studentId FOREIGN KEY (studentId)
       REFERENCES Student(langSchoolCardNumber)
      ON UPDATE CASCADE
      ON DELETE CASCADE,
      CONSTRAINT studentAccountOwnership_fk_account FOREIGN KEY (account)
       REFERENCES StudentAccount(login)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
CREATE TABLE Staff(
      langSchoolCardNumber CHAR(8) PRIMARY KEY,
      position VARCHAR(15) NOT NULL,
      CONSTRAINT staff_fk_langSchoolCardNumber FOREIGN KEY (langSchoolCardNumber)
      REFERENCES Person(langSchoolCardNumber)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
CREATE TABLE Payment(
      studentId CHAR(8) NOT NULL,
      number CHAR(15) NOT NULL,
      method VARCHAR(6) NOT NULL,
      PRIMARY KEY(studentId, number),
      CONSTRAINT payment_fk_studentid FOREIGN KEY (studentid)
       REFERENCES Student(langSchoolCardNumber)
      ON UPDATE CASCADE
      ON DELETE CASCADE
```

```
CREATE TABLE PaymentControl(
       employeeld CHAR(8) NOT NULL,
       payment CHAR(15) NOT NULL,
       studentId CHAR(8) NOT NULL,
       PRIMARY KEY (employeeId, payment),
       CONSTRAINT paymentControl_fk_employeeId FOREIGN KEY (employeeId)
       REFERENCES Staff(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE,
       CONSTRAINT paymentControl_fk_payment FOREIGN KEY (studentId, payment)
       REFERENCES Payment(studentId, number)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE StudyGroup (
       teacherId CHAR(8) NOT NULL,
       level CHAR(2) NOT NULL,
       language VARCHAR(10) NOT NULL,
       PRIMARY KEY(teacherId, level, language),
       CONSTRAINT group_fk_teacherId FOREIGN KEY (teacherId)
       REFERENCES Teacher(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE StudyGroupCreation(
       employeeld VARCHAR(8) NOT NULL,
       teacherId VARCHAR(8) NOT NULL,
```

level CHAR(2) NOT NULL,

);

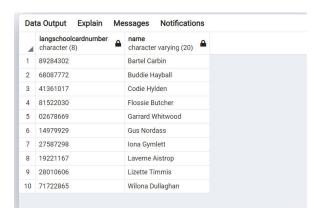
```
language VARCHAR(10) NOT NULL,
       PRIMARY KEY(employeeId, teacherId, level, language),
       CONSTRAINT studyGroupCreation_fk_employee FOREIGN KEY (employeeId)
       REFERENCES Staff(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE,
       CONSTRAINT studyGroupCreation_fk_teacher_level_lang FOREIGN KEY (teacherId, level,
language)
       REFERENCES StudyGroup(teacherId, level, language)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE Lesson(
       studentid VARCHAR(8) NOT NULL,
       teacherId VARCHAR(8) NOT NULL,
       level CHAR(2) NOT NULL,
       language VARCHAR(10) NOT NULL,
       PRIMARY KEY(studentid, teacherid, level, language),
       CONSTRAINT lesson_fk_studentId FOREIGN KEY (studentId)
       REFERENCES Student(langSchoolCardNumber)
       ON UPDATE CASCADE
       ON DELETE CASCADE,
       CONSTRAINT lesson_fk_teacher_level_lang FOREIGN KEY (teacherId, level, language)
       REFERENCES StudyGroup(teacherId, level, language)
       ON UPDATE CASCADE
       ON DELETE CASCADE
);
CREATE TABLE Website(
       domain VARCHAR(50) PRIMARY KEY,
       teacherAccount VARCHAR(25) NOT NULL,
       studentAccount VARCHAR(25) NOT NULL,
```

```
CONSTRAINT website_fk_teacherAccount FOREIGN KEY (teacherAccount)
       REFERENCES TeacherAccount(login)
      ON UPDATE CASCADE
      ON DELETE CASCADE,
      CONSTRAINT website_fk_studentAccount FOREIGN KEY (studentAccount)
       REFERENCES StudentAccount(login)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
CREATE TABLE WebsiteOwnership(
      school VARCHAR(30) NOT NULL UNIQUE,
      domain VARCHAR(50) PRIMARY KEY,
      CONSTRAINT websiteOwnership_fk_school FOREIGN KEY (school)
       REFERENCES LanguageSchool(name)
      ON UPDATE CASCADE
      ON DELETE CASCADE,
      CONSTRAINT websiteOwnership_fk_domain FOREIGN KEY (domain)
      REFERENCES Website(domain)
      ON UPDATE CASCADE
      ON DELETE CASCADE
);
```

## **DATA QUERIES.**

1) All teachers' names in ascending order (by name);

```
SELECT Teacher.*, Person.name
FROM Teacher
LEFT JOIN Person ON
(Teacher.langSchoolCardNumber = Person.langSchoolCardNumber)
ORDER BY name;
```



2) Data of students who study French language on B1 level

```
SELECT Person.name, Person.street, Person.email
FROM Person
WHERE
Person.langSchoolCardNumber in (
SELECT Student.langSchoolCardNumber
FROM Student
INNER JOIN Lesson ON (Student.langSchoolCardNumber = Lesson.studentId)
WHERE (Lesson.level = 'B1') AND (Lesson.language = 'French')
);
```



3) Number of groups each teacher teaches. SELECT StudyGroup.teacherid, COUNT(StudyGroup.level) FROM StudyGroup GROUP BY StudyGroup.teacherid;

4	teacherid character (8)	bigint.	
	27587298	4	
2	41361017	1	
3	89284302	1	
4	68087772	1	
5	19221167	2	
6	14979929	1	
7	02678669	4	
8	81522030	1	
9	71722865	2	
10	28010606	1	

4) Data of people whose name does not start with 'A'.

SELECT Person.\*

FROM Person

**EXCEPT** 

SELECT Person.\*

FROM Person

WHERE (Person.name LIKE 'A%')

4	passport character varying (20)	langschoolcardnumber character (8)	name character varying (20)	street character varying (50)	email character varying (50)
1	925855502	68087772	Buddie Hayball	74249 Tennyson Crossing	bhayball5@jimdo.com
2	673123041	14979929	Gus Nordass	608 Rigney Way	gnordass0@psu.edu
3	542423519	82829705	Claudian Wallbrook	8135 Blaine Trail	cwallbrooke@auda.org.au
4	696800118	71722865	Wilona Dullaghan	5835 Dixon Plaza	wdullaghan6@columbia.edu
5	546433334	81522030	Flossie Butcher	495 Annamark Road	fbutcher2@blog.com
6	575611545	02678669	Garrard Whitwood	5 North Hill	gwhitwood9@woothemes.com
7	658084913	28010606	Lizette Timmis	1 Stoughton Crossing	ltimmis1@indiegogo.com
8	912111839	27587298	Iona Gymlett	56 Haas Center	igymlett8@behance.net
9	887647045	89284302	Bartel Carbin	3152 Prentice Avenue	bcarbin4@qq.com
10	656908828	61078773	Lindsey Crock	25 Scoville Road	lcrockf@blog.com
11	883687516	46831570	Murial Pessolt	2948 Maple Wood Park	mpessoltd@stanford.edu
12	781367937	41361017	Codie Hylden	9 Logan Trail	chylden3@about.me
13	816584317	34105645	Filippa Siccombe	5668 Annamark Lane	fsiccombeg@theatlantic.com
1//	6/15750806	022555//0	Mada Henlev	54 Arizona Circle	mhealevi@skune com