CSC423- Database Systems
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Project Part 3

Translate the logical data model for the Oracle Enterprise DBMS. (12/09/21)

a) Develop SQL code to create the entire database schema, reflecting the constraints identified in previous steps.

```
CREATE TABLE Department (
   dept_id varchar(5) NOT NULL,
   department_name varchar(20) NOT NULL CHECK (department_name LIKE 'Department%'),
   chair_first_name varchar(15),
   chair_last_name varchar (15),
   numb_of_faculty int,
   PRIMARY KEY(dept_id)
   );
CREATE TABLE Major (
   major_code varchar(3) NOT NULL CHECK (Length(major_code) =3),
   major_name varchar(20) NOT NULL,
   dept_id varchar(5) NOT NULL,
   PRIMARY KEY(major_code),
   FOREIGN KEY(dept_id) REFERENCES Department
   );
CREATE TABLE Event (
   event_id varchar(5) NOT NULL,
   event_name varchar(20) NOT NULL,
   /* Setting current date to Nov 30 , 2021 */
   startDate date NOT NULL CHECK (startDate>to_date('2021-10-10','yyyy-dd-mm')),
   endDate date NOT NULL,
   PRIMARY KEY(event_id)
   );
ALTER TABLE Event ADD CONSTRAINT
   dateCheck CHECK (endDate>startDate) ENABLE
   ;
CREATE TABLE Student (
   stu_id INT NOT NULL CHECK(stu_id <1000000000 AND stu_id > 99999999),
   first_name varchar(15) NOT NULL,
   last_name varchar(15) NOT NULL,
   initials varchar(3) NOT NULL CHECK (Length(initials)>1) ,
   PRIMARY KEY(stu_id)
   );
```

```
CREATE TABLE Hosting_event (
   dept_id varchar(5) NOT NULL,
   event_id varchar(5) NOT NULL,
   PRIMARY KEY(dept_id,event_id),
   FOREIGN KEY(dept_id) REFERENCES Department,
   FOREIGN KEY(event_id) REFERENCES Event
   );
CREATE TABLE Attending_event (
   stu_id INT NOT NULL
     CHECK(stu_id <1000000000 AND stu_id > 99999999),
   event_id varchar(5) NOT NULL,
   PRIMARY KEY(stu_id,event_id),
   FOREIGN KEY(stu_id) REFERENCES Student,
   FOREIGN KEY(event_id) REFERENCES Event
   );
CREATE TABLE Declaring_major (
   stu_id INT NOT NULL
              CHECK(stu_id <1000000000 AND stu_id > 99999999),
   major_code varchar(3) NOT NULL,
   PRIMARY KEY(stu_id,major_code),
   FOREIGN KEY(stu_id) REFERENCES Student,
   FOREIGN KEY(major_code) REFERENCES Major
   );
```

b) Create at least 5 tuples for each relation in your database.

```
INSERT INTO Department VALUES ('bio12','Department of Molecular Biology','John','Doe','15');
INSERT INTO Department VALUES ('mth11','Department of Applied Mathematics','Issac','Newton','10');
INSERT INTO Department VALUES ('arch1','Department of Architechture','Frank','Wright','25');
INSERT INTO Department VALUES ('eng01','Department of English Literature','Walt','Whitman','35');
INSERT INTO Department VALUES ('csc01','Department of Computer Science','Odelia','Schwartz','27');
```

```
1   select * from Department
```

	dept_id	department_name	chair_first_name	chair_last_name	numb_of_faculty
1	bio12	Department of Molecular Biology	John	Doe	15
2	mth11	Department of Applied Mathematics	Issac	Newton	10
3	arch1	Department of Architechture	Frank	Wright	25
4	eng01	Department of English Literature	Walt	Whitman	35
5	csc01	Department of Computer Science	Odelia	Schwartz	27

INSERT INTO Major VALUES ('bio','Biology','bio12');
INSERT INTO Major VALUES ('mth','Mathematics','mth11');
INSERT INTO Major VALUES ('csc','Computer Science','csc01');
INSERT INTO Major VALUES ('eng','Creative Writting','eng01');
INSERT INTO Major VALUES ('arc','Architecture','arch1');

```
1    select * from Major
```

	major_code	major_name	dept_id
1	bio	Biology	bio12
2	mth	Mathematics	mth11
3	csc	Computer Science	csc01
4	eng	Creative Writting	eng01
5	arc	Architecture	arch1

INSERT INTO Event VALUES ('com22','Comencement 2022','08 AUG 2022', '09 AUG 2022');
INSERT INTO Event VALUES ('fai22','Expo Fair 2022','09 SEP 2022', '16 SEP 2022');
INSERT INTO Event VALUES ('ftr22','Food Trucks December','09 DEC 2021', '16 DEC 2021');
INSERT INTO Event VALUES ('art01','Art Basel UM','20 OCT 2021', '24 OCT 2021');
INSERT INTO Event VALUES ('bk003','Discount Books Sales','20 JAN 2022', '20 FEB 2022');

```
1    select * from Event
```

	event_id	event_name	startDate	endDate
1	com22	Comencement 2022	08-08-2022	09-08-2022
2	fai22	Expo Fair 2022	09-09-2022	16-09-2022
3	ftr22	Food Trucks December	09-12-2021	16-12-2021
4	art01	Art Basel UM	20-10-2021	24-10-2021
5	bk003	Discount Books Sales	20-01-2022	20-02-2022

```
INSERT INTO Student VALUES ('123456789','Tom','Vega','TV');
INSERT INTO Student VALUES ('103456789','Jane','Smith','JS');
INSERT INTO Student VALUES ('100456789','John','Doe','JD');
INSERT INTO Student VALUES ('100056789','Rob','Garcia','RG');
INSERT INTO Student VALUES ('100006789','Lynn','Johnston','LJ');
```

```
1  select * from Student
```

	stu_id	first_name	last_name	initials
1	123456789	Tom	Vega	TV
2	103456789	Jane	Smith	JS
3	100456789	John	Doe	JD
4	100056789	Rob	Garcia	RG
5	100006789	Lynn	Johnston	LJ

```
INSERT INTO Hosting_event VALUES ('bio12','fai22');
INSERT INTO Hosting_event VALUES ('bio12','ftr22');
INSERT INTO Hosting_event VALUES ('arch1','art01');
INSERT INTO Hosting_event VALUES ('mth11','bk003');
INSERT INTO Hosting_event VALUES ('eng01','bk003');
```

```
1  select * from Hosting_event
```

	dept_id	event_id
1	bio12	fai22
2	bio12	ftr22
3	arch1	art01
4	mth11	bk003
5	eng01	bk003

```
INSERT INTO Attending_event VALUES ('123456789','fai22');
INSERT INTO Attending_event VALUES ('123456789','ftr22');
INSERT INTO Attending_event VALUES ('103456789','art01');
INSERT INTO Attending_event VALUES ('123456789','bk003');
INSERT INTO Attending_event VALUES ('100006789','bk003');
```

```
1  select * from Attending_event
```

	stu_id	event_id
1	123456789	fai22
2	123456789	ftr22
3	103456789	art01
4	123456789	bk003
5	100006789	bk003

```
INSERT INTO Declaring_major VALUES ('123456789','csc');
INSERT INTO Declaring_major VALUES ('103456789','bio');
INSERT INTO Declaring_major VALUES ('100456789','mth');
INSERT INTO Declaring_major VALUES ('100056789','eng');
INSERT INTO Declaring_major VALUES ('100006789','csc');
```

```
1  select * from Declaring_major
```

	stu_id	major_code
1	123456789	csc
2	103456789	bio
3	100456789	mth
4	100056789	eng
5	100006789	csc

c) Develop 5 SQL queries using embedded SQL (see Python tutorial).

1. List the details of students that are attending a named event

```
SELECT s.*
FROM Student s, Event e, Attending_event a
WHERE s.stu_id=a.stu_id
AND a.event_id=e.event_id
AND e.event_name='Discount Books Sales';
```

	stu_id	first_name	last_name	initials
1	123456789	Tom	Vega	TV
2	100006789	Lynn	Johnston	LJ

2. Count the number of Majors offered by department. List by major count and department name

```
SELECT count(major_code) AS Major_count, department_name
FROM Major m, Department d
WHERE d.dept_id=m.dept_id
GROUP BY major_code, department_name
ORDER BY count(major_code);
```

	Major_count	department_name
1	1	Department of Architechture
2	1	Department of Molecular Biology
3	1	Department of Computer Science
4	1	Department of English Literature
5	1	Department of Applied Mathematics

3. List events being hosted by named department.

```
SELECT event_name, department_name AS hosted_by
FROM Department d, Event e, Hosting_event h
WHERE e.event_id=h.event_id
AND d.dept_id=h.dept_id
AND d.department_name='Department of English Literature';
```

	event_name	hosted_by
1	Discount Books Sales	Department of English Literature

4. Find the events being attended by a named student and also list the same student's major (or majors).

```
SELECT first_name, last_name, event_name, major_name
FROM Student s, Event e, Attending_event a, Declaring_major d, Major m
WHERE s.stu_id=a.stu_id
AND e.event_id=a.event_id
AND s.stu_id=d.stu_id
AND d.major_code=m.major_code
AND s.first_name='Tom'
AND s.last_name='Vega';
```

	first_name	last_name	event_name	major_name
1	Tom	Vega	Expo Fair 2022	Computer Science
2	Tom	Vega	Food Trucks December	Computer Science
3	Tom	Vega	Discount Books Sales	Computer Science

5. List the chair name for every department.

SQL 1

```
SELECT chair_first_name, chair_last_name, department_name
FROM Department
```

	chair_first_name	chair_last_name	department_name
1	John	Doe	Department of Molecular Biology
2	Issac	Newton	Department of Applied Mathematics
3	Frank	Wright	Department of Architechture
4	Walt	Whitman	Department of English Literature
5	Odelia	Schwartz	Department of Computer Science

d) Upload all the code and documentation to GitHub

https://github.com/tomv5001/CSC423