

## Directed work 3 (TD)

### Object-Relational DBs

#### Exercise 1

Translate the entity-relationship schema below into an object-relational schema in Oracle 11g.

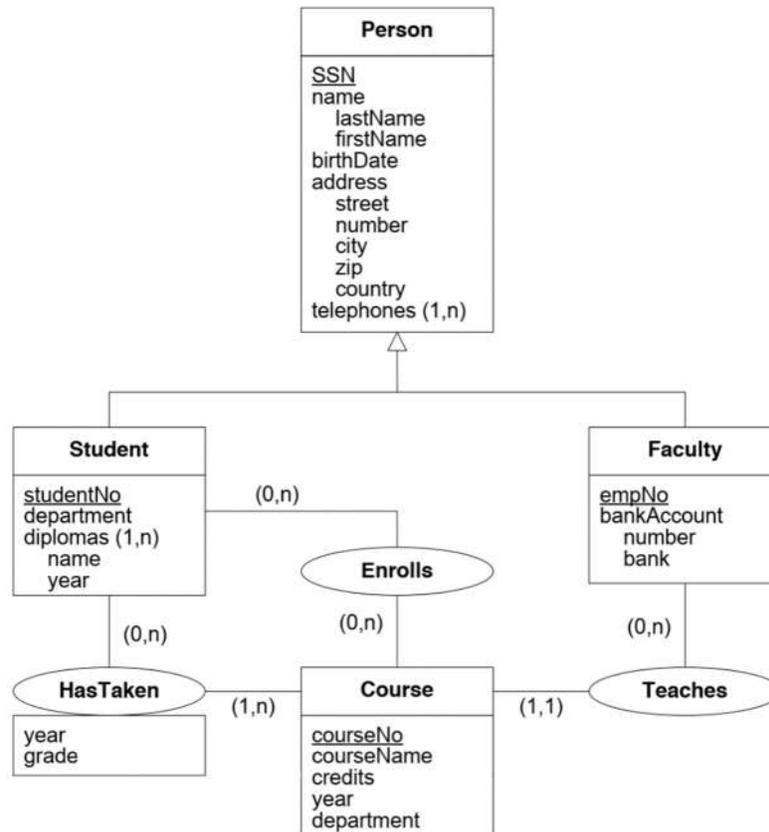


Figure 1. Entity-relationship sub-model of the University Database

#### Exercise 2

1. Insert a new person with SSN 123456789, with name Fares Kamel, born on 1/1/1980 and living in 05 Juillet City, M'sila, and telephones 12345 and 54321
2. Insert a new student with SSN 123123123, with name Brahim Badre, born on 1/5/1990, living in Ishbilila, M'sila, no telephones, student number 999, department of Computer Science, with no diplomas, and not courses taken or enrolled.
3. Insert a new student with SSN 111222333, with name Said Farah, born on 11/20/1991, living in Ishbilila, M'sila, no telephones, student number 999, department of Computer Science,

with no diplomas, and not courses taken or enrolled.

4. Insert a new faculty with SSN 666999666, with name Benazi Bilal, born on 4/6/1975, living in Dubai City, M'sila, no telephones, employee number 777, bank account 310 1234567 89 at AGB, and teaching no courses.
5. Add a new faculty with SSN 987987987, with name Malek Lina, born on 31/5/1980, living in 1000 Logements, M'sila, telephone number 2222, employee number 666, bank account 33333333 at AGB, and teaching no courses.
6. Add telephones 2222 and 3333 to the student Brahim Badre.
7. Add a new course identified by "ADDB-1", entitled "Advanced Databases" of 5 credits, taught in the fourth year in the Department of Computer Science, having as professor the newly inserted Benazi Bilal, and for the moment no students enrolled or that took the course in the pasts.
8. Add a new course identified by "WEB-TECH", entitled "Web Technologies" of 4 credits, taught in the fourth year in the Department of Computer Science, having as professor the newly inserted Malek Lina, and for the moment no students enrolled or that took the course in the pasts.
9. Add the course identified by "ADDB-1" as being taken by the student Brahim Badre in 2010 with grade 18.5.
10. Add the course identified by "WEB-TECH" to the courses to which the student Brahim Badre is enrolled.

### **Exercise 3 (Querying the Database)**

1. Give the names of the persons.
2. Give the names and student number of the students.
3. Give the names of the persons who are not students nor faculty.
4. Find the name and address of the person whose SSN is 123456789.
5. Find the couples of SSN of persons having the same name.
6. Find the value of the person Benazi Bilal.
7. Give the telephone numbers of the student Brahim Badre.
8. Give the name of persons having the telephone number '2222'.
9. Give the name of persons having no telephone number.
10. Give the numbers and names of students who have successfully completed the course "Advanced Databases".
11. Give the couples of names of a student and one of his teachers.
12. Give the course number of the courses in which Brahim Badre is enrolled.
13. Names of students who are enrolled in at least one course in which Brad Pitt is enrolled.
14. Names of students who are enrolled in (at least) all courses in which Brahim Badre is enrolled.