Introduction to Databases

Homework no. 2: SQL

1. The following relations are given (primary keys are underlined):

```
AUTHOR(AuthorCode, Name, Surname, Department, University)
ARTICLE(ArticleCode, Title, Topic)
AUTHORS_OF_ARTICLE(ArticleCode, AuthorCode)
EDITIONS_OF_CONFERENCE(Conference, Edition, EditionName, StartDate, EndDate, Editor)
AUTHOR_PRESENTS_ARTICLE(AuthorCode, Date, StartTime, EndTime, Room,
                                    ArticleCode, Conference, Edition)
```

   Write the following query in SQL

   (a) For the authors who have *exclusively* presented articles with topic 'Data Mining', show the code of the author, the surname of the author, her/his university, and the total number of articles presented by the author in each edition of every conference.

   (b) Considering the conferences with at least 10 editions, for each edition of the conference show the name of the edition and the code of the author who presented the highest number of articles in the edition.

2. The following relations are given (primary keys are underlined):

```
DEPARTMENT(DCode, DName, Scientific-Field, University)
RESEARCHER(RCode, RName, Surname, DateOfBirth, DCode, EnrolmentDate)
COMPANY(CCode, CName, CompanyType, City, Industrial-Sector)
RESEARCH-CONTRACT(RCode-ScientificCoordinator, CCode, StartDate, Duration, Amount)
```

   Write the following query in SQL

   (a) Considering the research contracts whose scientific coordinator has been enrolled later than 2015/06/30, for each industrial sector show the industrial sector, the code and the name of the departments that drew up the highest number of research contracts with companies of that industrial sector.

3. The following relations are given (primary keys are underlined):

```
STUDENT(StudentID, Name, Surname, DegreeProgramme)
ASSIGNMENT_TO_BE_DELIVERED(ACode, Title, Topic, ScheduledExpirationDate)
TEACHER(TeacherID, Name, Surname, Department)
EVALUATION_OF_DELIVERED_ASSIGNMENT(StudentID, ACode, TeacherID,
                                   DeliveryDate, EvaluationDate, Score)
```

Write the following query in SQL

(a) Show the identifier, surname and degree programme of the students who have *never* delivered an assignment after the scheduled expiration date, and who have delivered *all* the assignments due always getting the highest score.

4. The following relations are given (primary keys are underlined):

```
DANCER(SSN, Name, DateOfBirth, CityOfResidence, MainDanceType)
DANCE_SCHOOL(DSCode, Name, City, Artistic_Director)
BALLET(BCode, DSCode, Title, #Scene, Type, Choreographer_Name)
DANCER-PARTICIPATES-IN-BALLET(SSN, BCode, DSCode, Role)
```

Write the following query in SQL

(a) For each dance school located in Rome that has only organized classical ballets (*Type = "Classical'*), show the name of the dance school, the name of the artistic director, and for each organized ballet, the title of the ballet and the number of dancers who participated in it.

(b) For each dancer born before 1990 who has participated in ballets organized by at least four dance schools, show the name and date of birth of the dancer and the name of each dance school in which the dancer has participated in *all* the ballets organized by the dance school.