

# Introduction to Databases

## Homework no. 1: Relational algebra

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_PPRESENTS_ARTICLE(AuthorCode, Date, StartTime, EndTime, Room,
                          ArticleCode, Conference, Edition)
```

Write the following query in relational algebra

- (a) Show the code and the surname of the authors who have presented at least two articles with topic 'Databases' in the same edition of a conference.

2. 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 relational algebra

- (a) Show the identifier and surname of the students of the "Computer Science Engineering" degree programme who have *always* delivered their assignments at least 15 days before the scheduled expiration date.
- (b) Show the identifier and surname of the students who have delivered *all* assignments.

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

```
TENNIS-PLAYER(TPIId, TPName)
SPORTS-COMPLEX(SCCode, SCName, Municipality, Province)
TENNIS-COURT(TCCode, SCCode, Type)
BOOKING(TCCode, SCCode, Date, StartTime, EndTime, TPIId)
```

Write the following queries in relational algebra

- (a) Find identifier and name of tennis players who have booked at least two different tennis courts on 15-05-'12 at the same start time.