

Databases
DBDMG - Politecnico di Torino
Relational Algebra / SQL (IV)

Exercise 1. (*February 2011*)

Given the following relations (primary keys are underlined):

```
EMPLOYEE (EID, EmployeeName, Office)
PROJECT (PID, ProjectName, Budget, ProjectType)
EMPLOYEE_ASSIGNED_TO_PROJECT (EID, PID, TotalHoursEstimated)
EMPLOYEE_IN_PROJECT_BALANCE_SHEET (EID, PID, Date, HoursOfWork)
```

express the following queries:

(a) (*in SQL language*)

Show the name of the projects with a budget greater than €100,000 that have been assigned at least 5 employees from the Turin office.

(b) (*in SQL language*)

For each employee who has never been assigned to projects with a budget lower than €200,000, show the employee's identification code and the code of each project in which the employee has worked for an overall number of hours greater than the estimated number of hours.

(c) (*in relational algebra*)

Show the identification code, the name and the budget of the projects that have only been assigned employees from the Milan office.

Exercise 2. (*March 2011*)

Given the following relations (primary keys are underlined):

```
COMPANY (CID, CompanyName, CompanyCity)
EVENT (EID, EventName, StartDate, EndDate, Type, EventCity)
SPONSORSHIP (CID, EID, SponsorshipAmount)
```

express the following queries:

(a) (*in SQL language*)

Show the name of the companies that have sponsored at least one event whose start date follows 1/1/2010, and that have never sponsored any musical-type event with a sponsorship amount greater than €300,000.

(b) (*in SQL language*)

For each company that has sponsored events in at least 3 different cities, show the identification code of the company and each of the cities in which the company has sponsored all events taking place in that city.

(c) (*in relational algebra*)

Show the name of the events that have been sponsored by at least two companies based in Milan.

Exercise 3. (*February 2012*)

Given the following relations (primary keys are underlined):

```
WRITER (WID, WName, DateOfBirth)
BOOK (BID, Title, WID, LiteraryGenre)
LITERARY_CONTEST (CID, CName, Date, City)
PARTICIPATES_IN_LITERARY_CONTEST (WID, CID, BID, AwardedScore)
```

express the following queries:

(a) (*in SQL language*)

For each literary contest held in Rome in which books of at least 3 different literary genres have been presented, show the name of the literary contest and the number of writers who participated in it.

(b) (*in SQL language*)

For each writer who has participated in literary contests in at least 4 different cities, show the name of the writer and the name of the literary contest in which she was awarded the highest score of all contests in which she has participated.

(c) (*in relational algebra*)

Show the identification code and the name of each literary contest in which no writer born after 1970 has participated.