Advanced Databases 2016 (Dr. Pierpaolo Dondio)
LAB 5 – Dimensional Model

Exercise 1 – Dimensional model Design

A bank requires designing of a data warehouse to record customer transactions. A transaction has two types: lodgement or withdrawal. There are three types of accounts: saving, premium and student. The following ER diagram is available:

ACCOUNT (aCode, OpeningDate, Balance,BrenchID (FK), AccountType, cCode (FK))

CUSTOMER (cCode, Name, Address, Phone, BDay, Gender, Salary)

TRANSACTION (Tcode, Date, Type, amount, aCode (FK))

BRANCH (BrenchID, Name, Address, RegionID (FK), BankID (FK))

REGION (RegionID, RegionName, Country)

BANK (BankID, Name,)

The fields underlined are primary keys. FK denotes a foreign key that points to the primary key with the same name. The fields Date, OpeningDate are timestamps with the format DD-MM-YYYY HH:MM.

You are required to:

1. Produce a star schema for the above ER diagram. The diagram should support queries about the total amount of the transactions that have been done at different period of times at each branch and by which type of customer. Justify your choices (grain, facts and dimensions)
2. Using your model, write an SQL query to get the total amount of all the transactions over students accounts for each branch in 2009

NO SQL implementation is needed!

Exercise 2 – Dimensional model of a business of your choice

You are required to select design a dimensional model for a (real) business of your choice. The business has to be delivered via a website. You are required to think about which kind of analysis/reports/questions the company might need and you have to design a star schema for it.

For instance, you can chose online forum, such as boards.ie and design a dimensional model to analyse the number of posts over time, users activity and lifetime, topics discussed on so forth.. Other suitable web-applications could be: flight reservation (boring!), irishrail.com, Carzone.ie, Daft.ie, Facebook, twitter, a banking system, paddypower.com, part of amazon.com and so on...

Any business that needs data is a good choice. However, you have to identify a reasonable set of business questions and design the right schema able to answer those questions.

You should deliver:

- A description of the business and the business questions your model is supposed to answer
- The dimensional model (start schema)
- also two sample SQL queries to show how the dimensional model can be used to answers the business questions selected.

NO SQL implementation is required!