Business Intelligence Lab

First mid-term/Written exam 4/11/2015

First mid-term: deliver solutions to ex. 1, 2 within 3 h

Written exam: deliver solutions to ex. 1, 2, 3, 4 within 4 h

Notice: use your own SQL Server credentials (the lbi account is disabled)

Exercise 1 (8 pts). Consider the `sales_fact` table of the `foodmart` database. The *deviation sales* in a day *time_id* is:

$$dev\_sales(time\_id) = sales(time\_id) - avg\_sales$$

where $sales(time\_id)$ is the total sales of day *time_id*, and *avg_sales* is the average total sales of any day. We are interested in finding the interval $[time\_id_1, time\_id_2]$ such that the sum of deviations sales for the days in the interval:

$$\sum_{time\_id \in [time\_id_1, time\_id_2]} dev\_sales(time\_id)$$

is maximum. Write a Java program Deviation.java which outputs such an interval and the sum of deviation sales. The Java program can submit only SQL queries of the form "SELECT * FROM table".

What to deliver: Deviation.java, myJDBCdef.props (with only the parameters needed for a test of the program).

Exercise 2 (8 pts). Develop a SSIS package that outputs on a CSV file the result of Ex. 1. The usage of GROUP BY / WHERE / ORDER BY clauses in SQL queries to perform computation at server side is not permitted. All the work must be done by the SSIS package.

What to deliver: SSDT solution.

Exercise 3 (8 pts). Write a SQL query with analytic functions or, at your choice, a MDX query that solves the problem of Ex. 1.

What to deliver: text file with SQL/MDX query and with a brief comment about, a screenshot of SQL Management Studio with query result.

Exercise 4 (8 pts). Consider the problem of sending an offer to customers for buying products from the *Seafood* department. Model the problem as a classification problem. Use SQL plus Weka Explorer, or Weka Knowlegde Flow or Weka API at your choice for experimenting your solution.

What to deliver: screenshots of SQL Management Studio plus either a Weka knowledge flow `.kfml` file or a PowerPoint file with screenshots of Weka explorer or a Java program with Weka API calls, and a description of the steps of the designed solution.

How to deliver: send an e-mail with a single <your surname>.zip file attached to ruggieri@di.unipi.it, including your name, surname, student ID, and computer IP address (http://www.whatismyip.com).

Results and oral exam. Results will be published on-line by this week. Oral exam dates (for the "Appello straordinario") will be emailed to you.