Data warehouse in Oracle – Practice 2

Data	https://dbdmg.polito.it/dbdmg_web/wp-content/uploads/2021/10/DW_CELLS_sql.zip

Data Management and Visualization *- Politecnico di Torino*

Recap from Practice 1: The practice purpose is to first build a data warehouse compliant with the specifications listed in the following points, using Oracle. You then write some queries, in extended SQL, to retrieve data from the design data warehouse.

The outline of the practice is as follows:

1. Problem specifications
2. Description of the OLTP database
3. Exercise: design of the data warehouse
4. Exercise: comparison with the logical schema of the data warehouse
5. Exercise (SQL queries): query of the data warehouse
6. **Exercise (SQL queries): more advanced query**

⚠️ If some of these points are still unclear to you, please have another look to **Practice 1** before starting!

6. Exercise (SQL queries): Additional queries

Tables	Description
DWABD.TIMEDIM (ID_time INT NOT NULL, dayDate DATE NOT NULL, DayOfWeek CHAR(15) NOT NULL, DateMonth CHAR(15) NOT NULL, DateYear INT NOT NULL, PRIMARY KEY(ID_time));	Time dimension 10 rows
DWABD.PHONERATE (ID_phoneRate INTEGER NOT NULL, phoneRateType VARCHAR(20) NOT NULL, PRIMARY KEY(ID_phoneRate));	Phone rate dimension 7 rows
DWABD.LOCATION (ID_location INTEGER NOT NULL, City VARCHAR(20) NOT NULL, Province CHAR(20) NOT NULL, Region CHAR(20) NOT NULL, PRIMARY KEY(ID_location));	Place dimension 1500 rows
DWABD.FACTS (ID_time INTEGER NOT NULL, ID_phoneRate INTEGER NOT NULL, ID_location_Caller INTEGER NOT NULL, ID_location_Receiver INTEGER NOT NULL, Price FLOAT NOT NULL, NumberOfCalls INTEGER NOT NULL, PRIMARY KEY(ID_time, ID_phoneRate, ID_location_Caller, ID_location_Receiver), FOREIGN KEY(ID_time) REFERENCES timeDim(ID_time), FOREIGN KEY(ID_phoneRate) REFERENCES phoneRate(ID_phoneRate), FOREIGN KEY(ID_location_Caller) REFERENCES location(ID_location), FOREIGN KEY(ID_location_Receiver) REFERENCES location(ID_location));	Fact table 7809 rows

6. Consider the year 2003. Separately for phone rate and month, analyse the (i) average daily income and the (ii) average income for number of calls.

7. Select the daily number of calls for each caller region and the daily number of calls for each caller province.
8. Consider the year 2003. Separately for phone rate and month, analyse the (i) total income, (ii) the percentage of income with respect to the total revenue considering all the phone rates, (iii) the percentage of income with respect to the total revenue considering all the months.
9. For each caller province, analyse (i) the total number of calls and (ii) the percentage of number of calls with respect to the total number of calls considering the corresponding region.
10. For each receiver region, select the monthly number of calls and the cumulative monthly number of calls from the beginning of the year.