# Project

Form a project group with 4 to 8 members. Select a leader for the group. Every group must implement a database for a Decision Support System (DSS) in Oracle SQL Developer as practical application for this module. The project will be done in the form of 2 assignments comprising the following phases:

1. Requirement analysis
2. Extraction, transformation and loading into DSS, providing information for decision making

Project Assignment 1 – Requirement Analysis

Your group must develop a database for a Decision Support System (DSS). For this assignment you must only do a requirement analysis for the DSS database to be developed. Based on the information requirements identified, you will create the database tables in Oracle SQL Developer in project assignment 2.

Your assignment must be submitted on time (details will be communicated in class). **No late assignments will be accepted.** Hand in a Word document containing the early business requirements. Remember to consider aspects such as:

* Information needed for business decisions
* Different levels of the organization for which information is needed
* Different business areas of the organization for which information is needed
* Format that information is needed in, e.g. end user presentation tools, graphical, web based, drill-down
* Timespan required for information
* Aggregation required (e.g. sum, average)
* Granularity, i.e. different levels of aggregation needed
* Dimensionality of the information needed

Please see the marking guide below for the allocation of marks.

**Marking Guide Project Assignment 1 - Requirement analysis**

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group members:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ %Contributed: \_\_\_\_\_\_\_\_

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| --- | --- | --- |
| **Criteria** | **Total** | **Mark** |
| * Information needed for business decisions | 10 |  |
| * Different levels of the organization for which information is needed | 5 |  |
| * Different business areas of the organization for which information is needed | 5 |  |
| * Format of information needed (e.g. end user presentation tools, graphical presentation, web based, drill-down levels) | 5 |  |
| * Timespan required for information | 5 |  |
| * Aggregation needed * Granularity, i.e. different levels of aggregation needed | 10 |  |
| * Dimensionality of the information needed | 10 |  |
| **TOTAL** | **50** |  |

Project assignment 2

Create tables in Oracle for the Decision Support System (DSS) for which you identified requirements in project assignment 1. You can add your NEW tables to the same database created in module ITRW311 or a new database. Draw an ER diagram for the new DSS tables, draw a minimum of three star schemas (including facts, dimensions, attributes and attribute hierarchies) and provide the SQL used to create these tables (remember to include constraints for at least primary and foreign keys). Make sure your design satisfy the information requirements identified in project assignment 1 and that it is efficient with minimum duplication.

Write and execute SQL statements to **extract** data from an operational database. You may additionally make use of external sources (such as Excel spreadsheets, etc.) if additional data is needed for your DSS tables. Filter the data and check for inconsistencies. **Transform** and integrate data where necessary. Use aggregate functions (e.g. sum, average, etc) where applicable and summarize the data (e.g. by using group by) according to dimensions identified in project assignment 1. Make use of transactions where applicable to ensure data consistency.

Write and execute SQL statements to **load** the extracted data into your DSS tables. Ensure the data you load will satisfy the information requirements for business decisions identified in project assignment 1. Ensure the data is accurate (e.g. reflects the data in operational sources exactly), relevant to the information requirements, useful, of high quality and easy to access. Include SQL statements for creating indexes and group SQL statements into transactions where applicable.

Write and execute SQL statements to **update / refresh** data regularly from operational database or external sources.

Write and execute SQL queries to provide information for **decision making** (as specified in project assignment 1). These are the SQL statements that the users of your DSS will use. Make sure all SQL statements used are correct and optimized as described on p.533 - 534 of DS 13th ed.

Your assignment must be submitted on time and your group must be ready to demonstrate your DSS database (details will be communicated in class). **No late assignments will be accepted and all groups will only have one chance to demonstrate their database.** During your demonstration a hardcopy of all documentation (ER diagram, star schemas and all SQL statements used) must be handed in as discussed in class. Please see marking guide of how marks will possibly be allocated.

**Marking Guide Project Assignment 2 – Extraction, transformation and loading into DSS, providing information for decision making**

Group Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date & Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ @ \_\_\_**:**\_\_\_

Group Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Criteria** | **Total** | **Mark** |
| **Data store component (DSS tables)**   * Complete ER diagram (electronic copy of original document to be handed in) * Minimum three star schemas (facts, dimensions, attributes, attribute hierarchies) * Database has minimum duplication * Efficient design * Design satisfy information requirements of project assignment 1 * SQL for * create tables (minimum 4) * constraints (primary keys, foreign keys) | 20 |  |
| **Initial data extraction from operational tables or external** **sources**   * SQL for: * Extract * Filter (including checking for inconsistent data) * Transform * Integrate * Aggregate * Summarize * Transactions | 20 |  |
| **Data Loading**   * Data is * high-quality * accurate * relevant * useful * accessible * Data satisfy information requirements of project assignment 1 * SQL for: * creating of indexes * transactions | 20 |  |
| **Regular update / refresh of data from operational database or external sources**   * + Include all SQL statements used | 10 |  |
| **SQL queries to provide information for decision making (as specified in project assignment 1)**  All SQL statements are correct  Optimized SQL statements (eg. as described on p.533 – 534 of DS) | 20 |  |
| **Database successfully created in Oracle** | 10 |  |
| **Demonstration**   * Presentation * Whole team participates * On time for appointment * Computer set up correctly * Complete hardcopy available * Questions answered correctly | 20 |  |
| **Extra functionality / features** | 10 |  |
| **TOTAL** | **130** |  |