

Low Level Design

HR Analytics – Absenteeism

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1. Introduction

1.1 What is a Low-Level Design Document?

The goal of the Low-level design document (LLDD) is to give the internal logic design of the actual program code for the Sales Analysis dashboard. LLDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

1.2 What is Scope?

Low-level design (LLD) is a component-level design process that follows a step-by step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

2. Problem Statement

HR is not just about hiring people it is an ocean of its own. The HR department goes through a constant journey of finding, selecting, onboarding and monitoring the right talent. You are required to use the analytics concept to provide smooth monitoring of the workforce for the HR department.

This data set is suitable for identifying pockets of absence in the organization. These pockets may require intervention. 'Absent Hour' will be used as a dependent variable. In addition, age and length of service may also be associated with absence – but how? This is for you to find out. The data set can also be used as an exercise set to predict absence using decision trees or linear models. This data set is quite straightforward. It is large but still manageable in software like SPSS or Excel. You may have to code several nominal variables into number values before you can do your analysis but on top of that, the data itself doesn't pose much of a challenge.

Note: The data does need to be cleaned. Everyone under 18 or above 65 may be removed from the data set. This HR data set focuses on absence at work. The data set contains 740 rows and 21 columns of data.

The data set contains several employee IDs. Each row represents a certain quantity of absence – meaning that one employee can have multiple rows. Information on employees includes the number of children, workload, distance from work, transportation expense, education, height, weight, BMI, and absenteeism time in hours. Other information includes the season, month of absence, day of absence, and day of the week. This data set can help you find predictors of absence.

Potential analyses could be to see if there is an association between BMI and absence, as well as season, workload, distance from work and the other factors in the data set. The challenge of this data set is mostly in structuring the data. An individual employee has multiple records. These

need to be combined prior to analysis. This data set also enables you to do longitudinal research.

3. Dataset Information

- Employee ID: Unique identifier for each employee.
- Gender: Gender of the employee (Male/Female).
- Age: Age of the employee.
- Department: The department in which the employee works.
- Division: The division to which the employee belongs.
- Length of Service: Number of years the employee has been in service.
- Absent Hours: Total hours of absence for the employee.

4. Architecture Description

Microsoft Excel is a spreadsheet program that is part of the Microsoft Office suite of productivity software. It's widely used for tasks such as data analysis, visualization, and tabular calculations. The architecture of Microsoft Excel involves several key components and functionalities:

1. User Interface (UI):

Ribbon: The ribbon interface is a prominent feature, providing a set of tabs, each containing related commands and functions. Users can navigate through the ribbon to access various tools for formatting, data manipulation, and more.

Cells and Worksheets: The basic unit of data in Excel is a cell, arranged in a grid on worksheets. Worksheets are organized within workbooks, allowing users to manage and analyze data in a structured manner.

2. Calculation Engine:

Formulas and Functions: Excel has a powerful calculation engine that supports a wide range of formulas and functions. Users can create custom formulas or use built-in functions for mathematical calculations, statistical analysis, and more.

Recalculation: Excel automatically recalculates formulas and updates the results when changes are made to the data. This ensures that users always have up-to-date calculations.

3. Data Storage:

Workbooks: Workbooks are the files that contain Excel data. Each workbook can have multiple worksheets, and users can create, save, and open workbooks to organize their data.

File Format: Excel workbooks are typically saved in proprietary file formats such as .xlsx or .xlsb. These formats preserve various elements, including formatting, formulas, and charts.

4. Data Analysis and Visualization:

Charts and Graphs: Excel provides a variety of chart types for visualizing data. Users can create charts to represent trends, patterns, and comparisons within their datasets.

PivotTables and Pivot Charts: PivotTables allow users to summarize and analyze large datasets interactively. Pivot Charts provide visual representations of PivotTable data.

5. Integration and Compatibility:

Integration with Other Office Applications: Excel seamlessly integrates with other Microsoft Office applications, allowing users to embed Excel tables or charts in Word documents, PowerPoint presentations, etc.

Data Import and Export: Excel supports importing data from various sources, such as databases, text files, and online sources. Users can also export Excel data to different formats.

6. Macro and VBA (Visual Basic for Applications):

VBA Programming: Excel includes a powerful scripting language called VBA. Users can create macros using VBA to automate repetitive tasks and extend Excel's functionality.

Macro Recorder: The Macro Recorder allows users to record a series of actions in Excel and then play them back as a macro. This is a convenient way to automate tasks without writing VBA code.

7. Security and Collaboration:

Worksheet Protection: Excel allows users to protect worksheets and workbooks with passwords, controlling access to sensitive data.

Collaboration Features: Excel supports real-time collaboration, allowing multiple users to work on the same workbook simultaneously. Changes made by one user are updated for others in real-time.