

**Architecture Design**  
**HR ANALYTICS – ABSENTEEISM**

**INeuron.ai**

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# 1. Introduction

## 1.1 What is Architecture Design Document?

Any software needs architectural design to represent the design of the software. IEEE defines architectural design as “the process of defining a collection of hardware and software components and their interfaces to establish the framework for the development of a computer system.” The software that is built for computer-based systems can exhibit one of these many architectures.

## 1.2 What is Scope?

Architecture Design Document (ADD) is an architectural 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 design principles may be defined during requirement analysis and then refined during architectural design work.

## 2. Architecture

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.

Understanding the architecture of Microsoft Excel helps users leverage its features efficiently for data management, analysis, and reporting. The combination of a user-friendly interface and powerful calculation capabilities makes Excel a versatile tool for various tasks.