**Architecture Design for**

***ProductivityCraft***

a desktop-based productivity application

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| Name | Layered architecture |
| Description | Organizes the system into layers with related functionality associated with each layer. Services of each layer are used by the layers above it. |
| Reasoning | Used because new facilities are most likely to be built on top of existing systems on a regular basis such as developing new features in all the core functionalities (Pomodoro, Finance, Task Management), adapting to interactive user interface emergence. Since the development of the application is divided into a group of developers, It is ensured that each developer can work on a specific layers without affecting the other layers. |
| Advantages | Allows replacement of entire layers so long as the interface is maintained. Also, redundant facilities can be provided in each layer. |
| Disadvantages | In practice, providing a clean separation between layers is often difficult and a high-level layer may have to interact directly with lower-level layers rather than through the layer immediately below it. Performance can be a problem because of multiple levels of interpretation of a service request as it is processed at each layer. |

**Layers Representation:**

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| User Interface |

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| User Authentication and Authorization | User Interface Management |

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| Application Functionality |

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| Data Access |

Figure: Layered architecture pattern

The lowest layer includes system support software – typically database and operating system support. For this project, files have been used for data access facilities. The next layer is the application layer that includes the components concerned with the application functionality and utility components that are used by other application components. The third layer is concerned with user interface management and providing user authentication and authorization, with top layer providing user interface facilities.

ProductivityCraft Architecture

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| Desktop Application Window |

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| Signup | Login | Form and Menu Manager | Data Validation |

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| Pomodoro Technique | Budget Tracking System | Task Management |

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| Data Management using Files |

**Description**

1. The top layer is responsible for implementing the user interface. In this case, the UI has been implemented using a desktop application window.
2. The second layer provides the user interface functionality that is delivered through the web browser. It includes components to allow users to signup and login using their credentials to the system. Form and menu manager components present information to users in such a way that is easily understandable to the users and allow them to fetch necessary information. Data validation components check information consistency.
3. The third layer implements the functionality of the system and provides components that implement Pomodoro technique for better focus while working towards a specific goal, budget tracking system that keeps track of income and expenses of users and finally a task management system that let users to prioritize task and allocate time to the tasks.
4. Finally, the lowest layer, which is built using a set of files provides data storage and retrieval facilities.