Prisoner Management System

Functional Specifications and Methodology

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1. Introduction to the Document

"Automation is the creation and application of technologies to produce and deliver goods and services with minimal human intervention. The implementation of automation technologies, techniques and processes improve the efficiency, reliability, and/or speed of many tasks that were previously performed by humans" [3]. Today, automation is being used in many different fields in order to handle many human-oriented tasks in a much more productive manner. Thus, prison management is also one such task that can be achieved in an efficient manner through the process of automation. Therefore, **PMS** is an unravelment based on the process of automation that will help improve the conditions of prisons in Pakistan.

1.1 Purpose of the Document

As of 2020, there are 99 established prisons in Pakistan with a total 77,275 prisoners (including pre-trial detainees/remand prisoners). Therefore, the need of the hour is to manage the large number of records in an efficient manner. However, most of the prisons in Pakistan follow a manual system to handle this large amount of data which can lead to many problems related to data loss, security and time management. Therefore, the purpose of PMS is to help bring automation into management of prisoners throughout their time in a respective prison. Furthermore, PMS will also cover the transfer of prisoners from one prison to another. Therefore, providing an efficient way of managing the prisons system.

1.2 Scope of the Product

The motive of our project is to provide a system which allows management of prisoners in an efficient and effective manner. The system enables a jail officer to manage prisoners and their records. In addition, a court officer looks for the well-being of prisoners and manages their complaints. Moreover, a Jail officer is responsible for the approval/disapproval of transfer of prisoners from one prison to another upon the orders of court.

1.3 Acronyms, Definitions

1.3.1 Acronyms

- PMS: Prisoner Management System (the system being developed

1.3.2 Definition

- Jailer: User of the system who approves/disapproves prisoner transfer request.
- Court/Complaint Officer: User of the system for managing complaints of prisoners and delivering orders of court to Jail Officer.
- Jail Officer: User of the system for handling prisoner's profiles in the system.

1.4 References

[1] Joel K., Nana G. Prison Management System Project Proposal. November 2, 2010 https://idoc.pub/documents/prison-management-system-project-proposal-pon2pv3vw040

[2] Million G., Kibrom H. Prison management system, Exercises for Object Oriented Analysis and Design. December 14, 2019 https://www.scribd.com/doc/40824549/Prison-Management-System-Project-Proposal

[3] Masood K. The Prison System in Pakistan. July 3, 2010 http://www.pjcriminology.com/wp-content/uploads/2019/01/3-24.pdf

[4] Human Rights Commission of Pakistan. World Prison Brief. December 13, 2013 https://www.prisonstudies.org/country/pakistan

[5] Techopedia. Automation. August 7, 2020 https://www.techopedia.com/definition/32099/automation#:~:text=Automation%20is%20the%20creation%20and,were%20previously%20performed%20by%20humans

1.5 Outline of the Rest of the SRS

The rest of the SRS document provides information regarding detailed description of our project i.e. **PMS**. It spans information about the project’s domain, user classes and their characteristics, functional and non-functional requirements, system and design constraints, use cases and as well as user, hardware, software and communication interfaces.

2. General Description of the Product

PMS is a system that allows efficient and effective management of prisoners. The system gives rights to a jail officer to manage prisoners and their records. On the other hand, a court officer looks for the well-being of prisoners and manages their complaints and day to day concerns. Court officer is a representative from the court. Moreover, a Jail Officer is responsible for the approving or disapproving transfer of prisoners from one prison to another upon the orders of court.

2.1 Context of Product

PMS will be used across all prisons of the country in order to manage the information and activities of different categories of prisoners from the time of entry until they are released. Furthermore, PMS will have different actors with specific roles contributing to the overall working of the PMS.

2.2 Product Functions

The product would decrease the paperwork, manual system, long processing time for the management of prisoners. It will help manage large records more efficiently in a quick manner. It will automate the whole prisoner's management process and this data will be easy to maintain. The system shall allow the jail officer and the jailer the successful management of prisoners and their profiles. Jail officers can maintain a prisoner's profile, add/remove prisoners in an efficient manner.

2.3 User Classes and Characteristics

2.3.1 Class Diagram

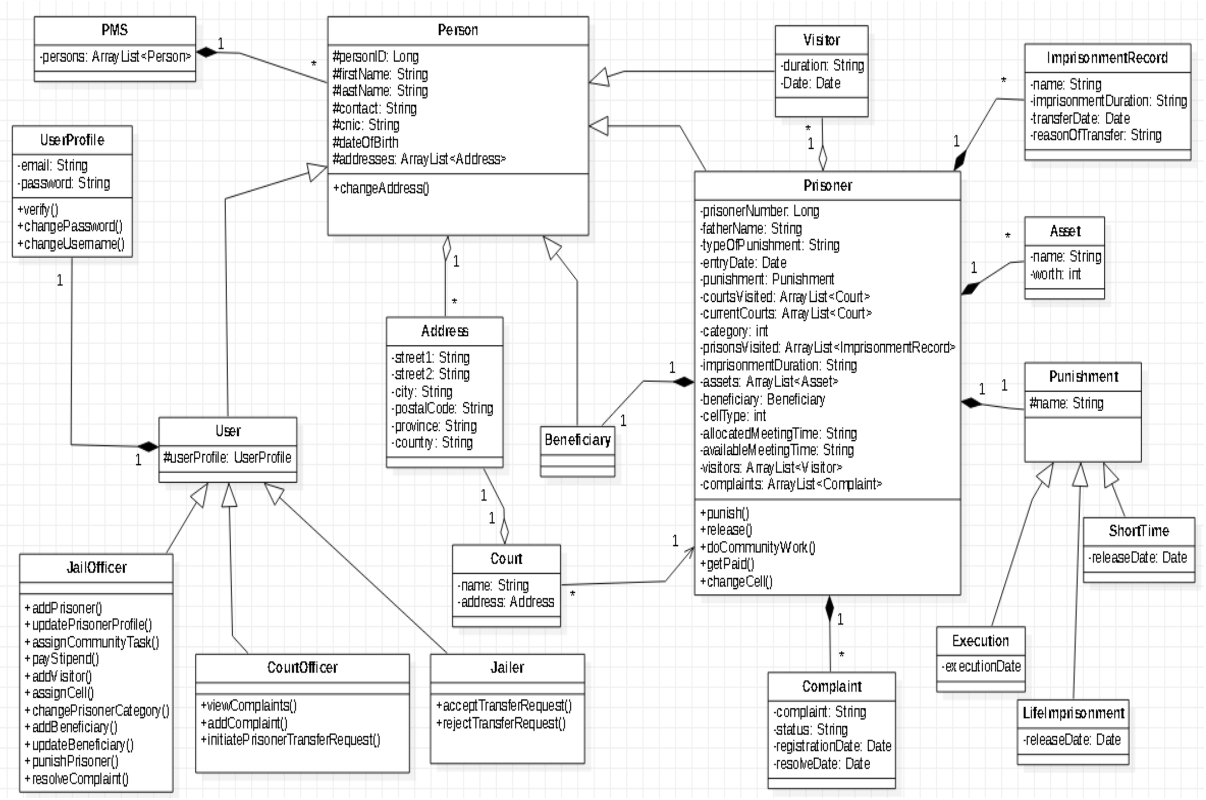

Figure 1: Class Diagram

The Figure represent the class diagram for PMS.

2.3.2 Use Case Diagram

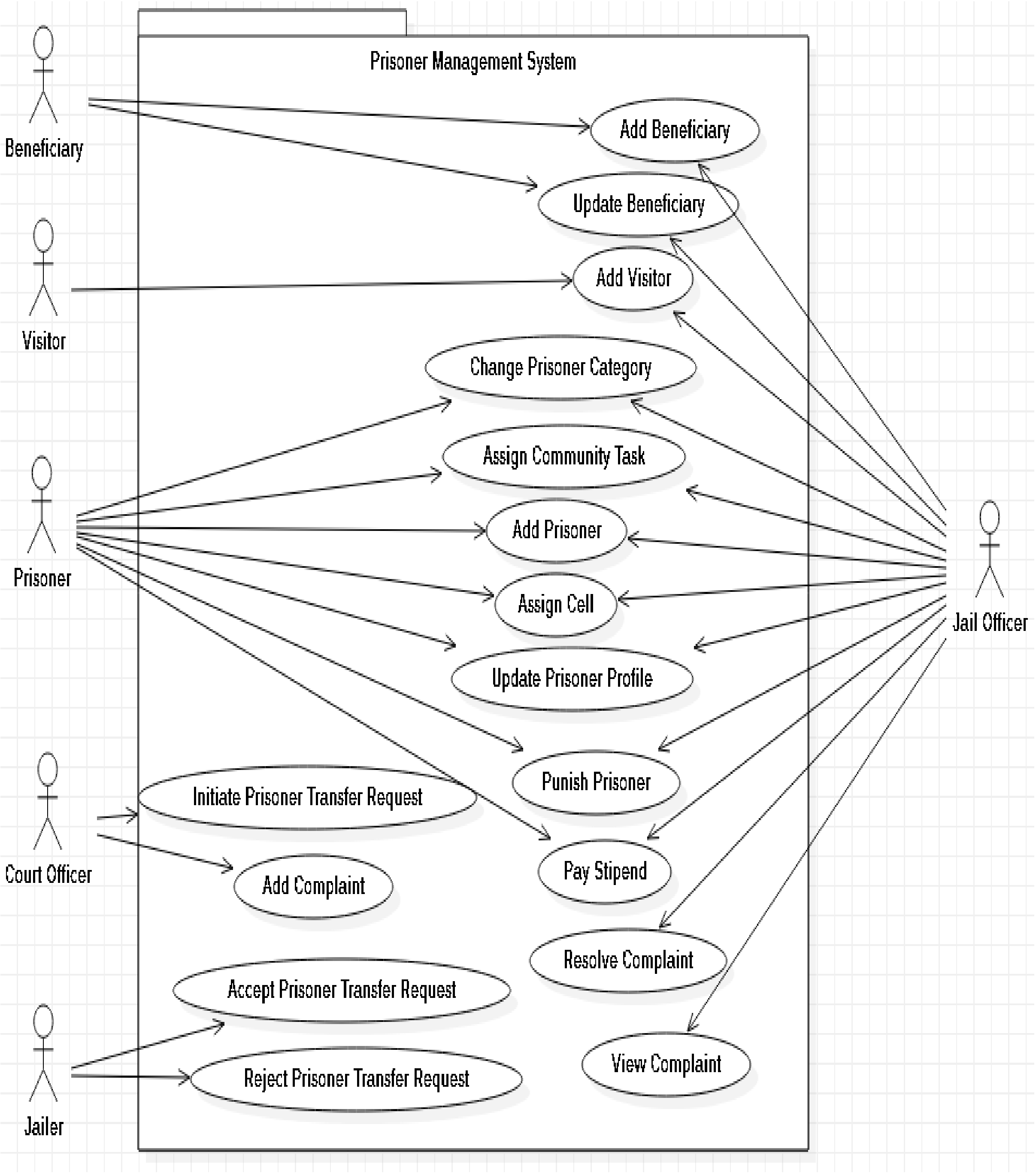

Figure 2: Use Case Diagram
The figure represents Use Case Diagram for PMS.

2.3.3 User Characteristics

This section describes the users and their characteristics.

2.3.3.1 Jail Officer

A Jail Officer is the most important user of the system as a jail officer can add a new prisoner profile or update it. Also, he can assign tasks to the prisoner and manage his stipend. Jail officer can change the type and categories of the prisoner. Moreover, jail officer can also manage the beneficiaries for the prisoner.

2.3.3.2 Court Officer

Court Officer is a representative from the court which requests the jailer to transfer a prisoner from one prison to another, after the orders are issued by the court. Also, a court officer plays the role of a complaint officer as he will hear the issues or complaints of prisoners and ask jail officer to resolve them.

2.3.3.3 Jailer

Jailer will use the system to approve or disapprove the prisoner transfer request from one prison to another.

2.4 Constraints

- Getting familiar and comfortable with new technologies/platforms to be used for this project’s implementation.
- The automation process might be difficult because the manual data might already be incomplete, faulty or inaccurate.
- Human error is possible while data entry.
- Integration Issues
- Hardware crashes might lead to loss of data.

2.5 Assumptions and Dependencies

- The users of the system be familiar with the usage of computer system
- The users of the system must know how to manage, enter, manage, update the data.
- Internet facility is available.
- Intended users know how to use the internet.
- Web users have web browsers installed.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

The user interfaces would be simple and easy to use. The system is to be used within a prison so the interfaces would accordingly be designed, keeping in the environment and the characteristics of the user of the system. The interface would present information clearly and concisely. In addition, the system would be responsive to the user's needs. Moreover, it would allow easy reversal of action and provide informative feedback on closure of an event. The design of the interfaces would be consistent. The color and design scheme would be appropriate with respect to the prison environment.

3.1.2 Hardware Interfaces

It is important to understand that two architectural styles will be used for the implementation of PMS.

3.1.2.1 Client-Server Architecture

Our PMS will be based on two types of components namely server and clients. Server will deliver all services as defined through functional and non-functional requirements. Clients which in our case will be the actors (jailer, jail officer and court officer) will access these services using a request/reply protocol.

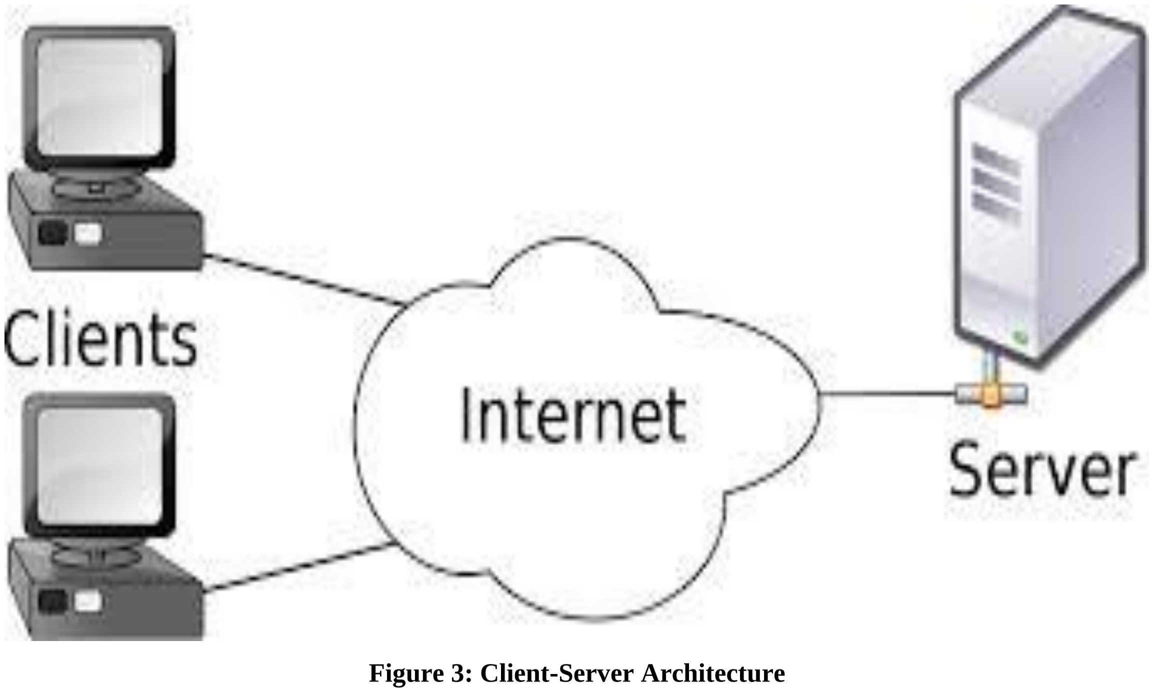

Figure 3: Client-Server Architecture
The figure represents basic client-server architecture.

3.1.2.2 Repository Architecture

The main purpose of PMS is to manage and store a large amount of prisoner records. Therefore, we need to follow the Repository architecture which will consist of a central database and collection of components that will operate on that database for the purpose of storage, retrieval and manipulation of data.

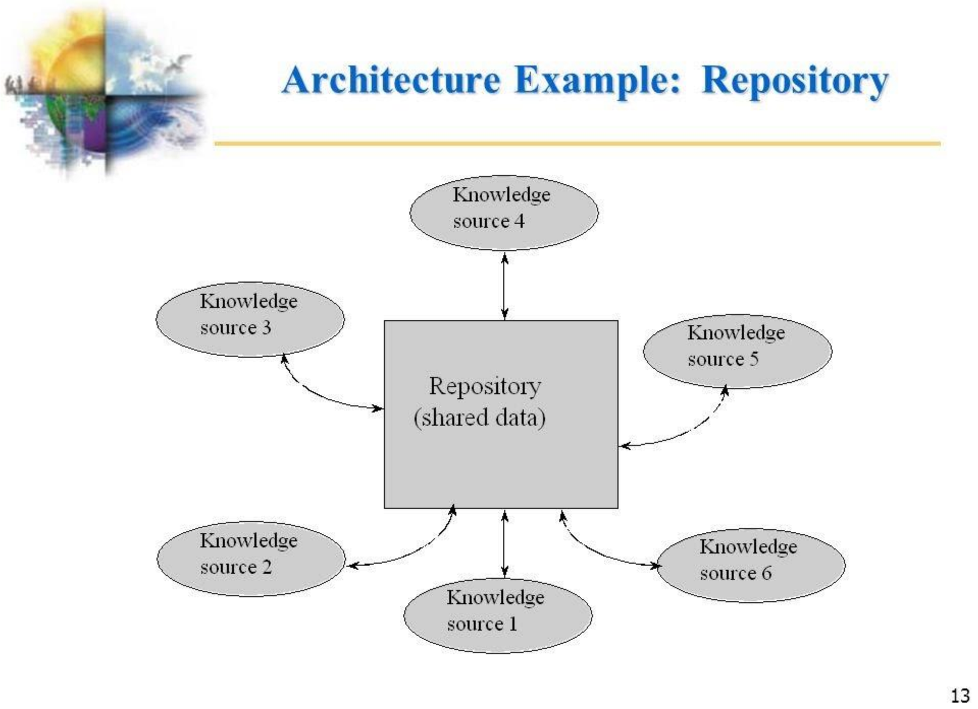

Figure 4: Repository Architecture
The figure represents a basic repository architecture.

3.1.3 Software Interfaces

PMS will be implemented using the latest technologies that are currently used in the industry. Front-end will be implemented using the Quasar (Vue.js) framework and Back-end will be implemented using spring boot (Java) framework. MySQL will be used to implement our data store. Primary development will be done on Microsoft windows operating system. The major task will be integration of different modules and for this purpose GitHub will be used. Finally, testing will be done on a local area network.

3.1.4 Communication Interfaces

The client will request the server for its services and the server will fulfill the request by getting the data from the database and then respond back to the client. This client and server architecture will use the stateless request i.e. HTTP requests. The client server will make use of Model, View, Controller framework (MVC). On the other hand, in the repository architecture the different implemented modules will make use of the shared data repository to fulfill their queries or to carry out their specific tasks.

3.2 Functional Requirements

System should allow:

- Jail Officer to add a new prisoner profile.
- Jail Officer to update the prisoner's profile.
- Jail Officer to assign a community task to a prisoner.
- Jail officer to add stipends to prisoner’s profiles.
- Jail Officer to record information about a prisoner’s visitors.

- Jail Officer to assign a cell to a prisoner.
- Jail Officer to change prisoner's cell.
- Jail Officer to assign a category to a prisoner.
- Jail Officer to change a prisoner's category.
- Jail Officer to add/update beneficiaries for a prisoner.
- Court Officer to initiate a prisoner transfer request.
- Court Officer to manage complaints of prisoners.
- Jailer to approve/ disapprove prisoner transfer requests.

3.3 Performance Requirements

System will:

- Be functional at different jails simultaneously.
- Provide informative feedback.
- Permit easy reversal of actions.
- Be compatible with all browsers.
- Respond to requests in a quick manner.
- Be easy to use and learn.
- Deal with exception handling.
- Be easy to navigate with the help of hyperlinks thus reducing short term memory load.

3.4 Design Constraints

- Issues while modelling the problem.
- Time Limitation
- Integration issues
- Skillset of team members

3.5 Other Quality Requirements

- System must be reliable
- System must be available at all times
- System must fit to its purpose well
- System actions are verifiable, consistent and unambiguous

3.6 Other Requirements

- System must be easily maintainable
- System must be adaptable to changes required in future.

4. Appendix

4.1 Activity on Node Diagram

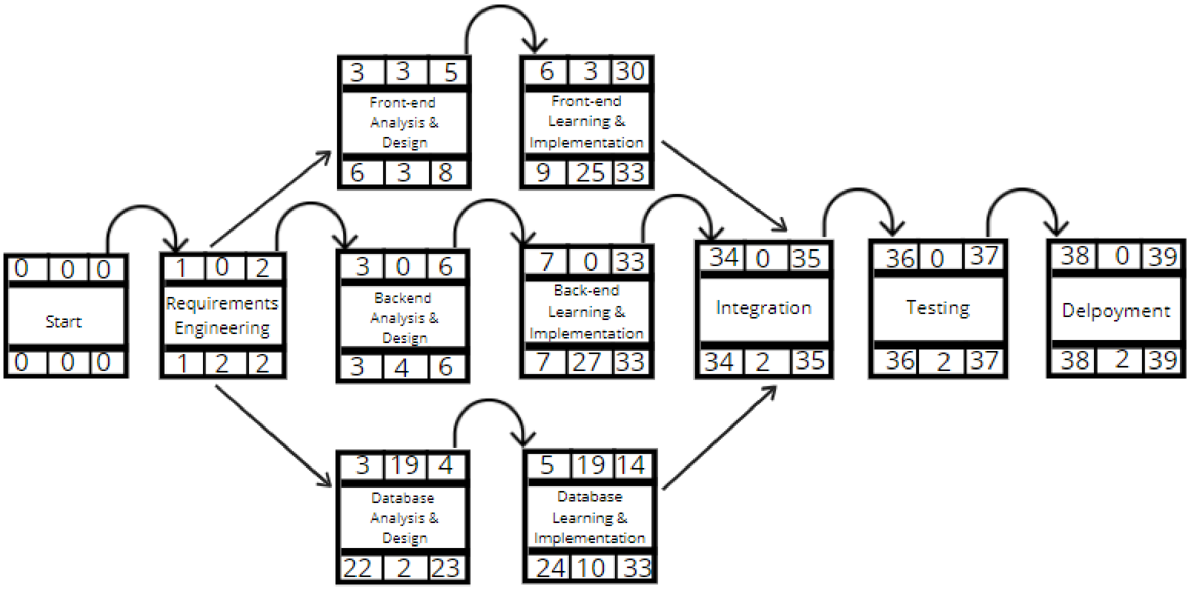

Figure 5: Activity on Node Diagram

The figure represents activity on node diagram for PMS.

4.2 Gantt Chart

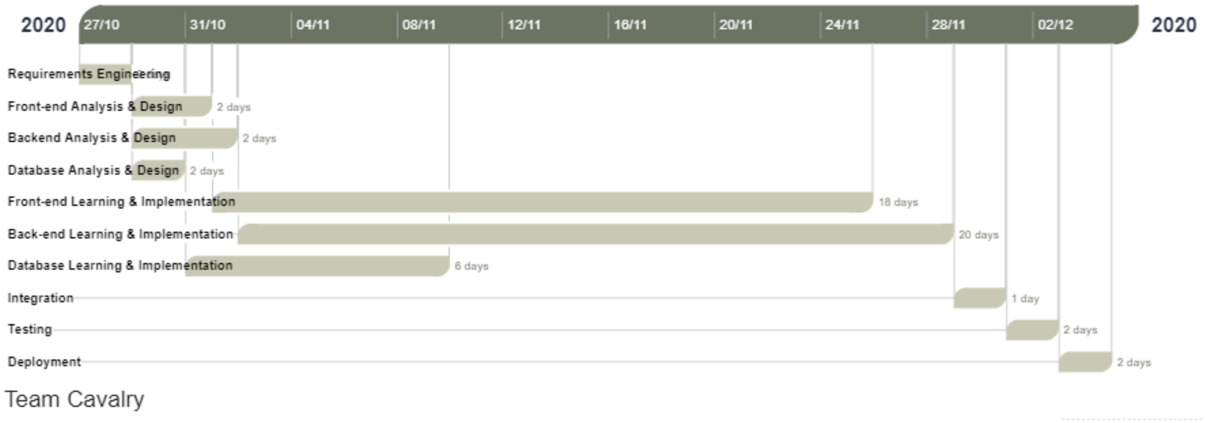

Figure 6: Gantt Chart

The figure represents Gantt chart for PMS.