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DEPARTMENT OF COMPUTING

COMP3211 Software Engineering

Project Group11

Personal Information Manager

Software Requirements Specification

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1 Preface

1.1 Expected Readership:

- Users
- Software Managers
- Investors
- Software Designer

1.2 Version: 1.5

1.3 Change History: N/A

1.4 Abstract:

- The second section shows the purpose and scope of the Personal Information Manager.
- The third section will define technical glossaries which may be displayed in the Software Requirement Specification.
- The fourth section will summaries the key features and restrictions of the Personal Information Manager system.
- The fifth section provides a concise and visual overview of the system architecture in high level representation. It illustrates the components of the system modules, highlighting their roles and interactions.
- The sixth section provides a more detailed outlining the specific tasks, operations, and interactions description of the system's functional and non-functional requirements, which outlines the specific tasks, operations, and interactions that the system should support.

2 Introduction

2.1 Purpose

The Personal Information Manager (PIM) software is to provide users with a centralized and efficient solution for managing their personal information.

- Enhance productivity and organization by providing a single location for users to store and manage all their important information.
- By offering features such as creating different types of records, including plain texts, tasks, events, and contacts, the PIM enables users to categorize and structure their data effectively.
- Users can easily add, edit, and delete information, ensuring that their personal information remains up to date and easily accessible.

2.2 Overview

The primary deliverable of this project is the PIM, which serves as a comprehensive platform for users to manage their personal information. The development team is responsible for analyzing the requirements and designing a fully functional system that caters to the needs of the users. The PIM system encompasses various functionalities that enable users to effectively handle their personal information.

3 Glossary

This section mainly defines the technical terminology in this document and corresponds its abbreviation to its definition to help the users can better understand the document.

Abbreviation	Meaning
PIM	Personal Information Manager
PIR	Personal Information Record
CLI	Command Line Interface
JVM	Java Virtual Machine
MVC	Model-View-Controller
NFR	Non-Functional Requirement
OOP	Object-Oriented Programming
REQ	Requirement
SR	System Requirement
TNFR	Types of Non-Functional Requirements
UR	User Requirement

4. User Requirements Definition

4.1 User Functional Requirements

- **UR-01:** The Personal Information Manager (PIM) provides 4 types of personal information records (PIRs).
- **UR-02:** Users can create new plain texts.
- **UR-03:** Users can create new tasks.
- **UR-04:** Users can create new events.
- **UR-05:** Users can create new contacts.
- **UR-06:** Users can modify the data in existing PIRs.
- **UR-07:** Users can search for PIRs stored in the system.
- **UR-08:** Users can print out detailed information about a specific PIR or all PIRs.
- **UR-09:** Users can delete a PIR.
- **UR-10:** Users can store the PIRs in a file for future access.
- **UR-11:** Users can load the PIRs from a file and continue working with the stored PIRs.

4.2 User Non-functional Requirements

- **UR-12:** Our system is a command line-based system that requires some prior knowledge of command lines.
- **UR-13:** Users are required to enter specific information in a prescribed form.
- **UR-14:** This system only supports recording, retrieving, saving, modifying and alarming information. There are no other functions.
- **UR-15:** Only ".pim" files are supported for reading and storing.
- **UR-16:** System language only supports English.
- **UR-17:** Any modifications user.

5. System Architecture

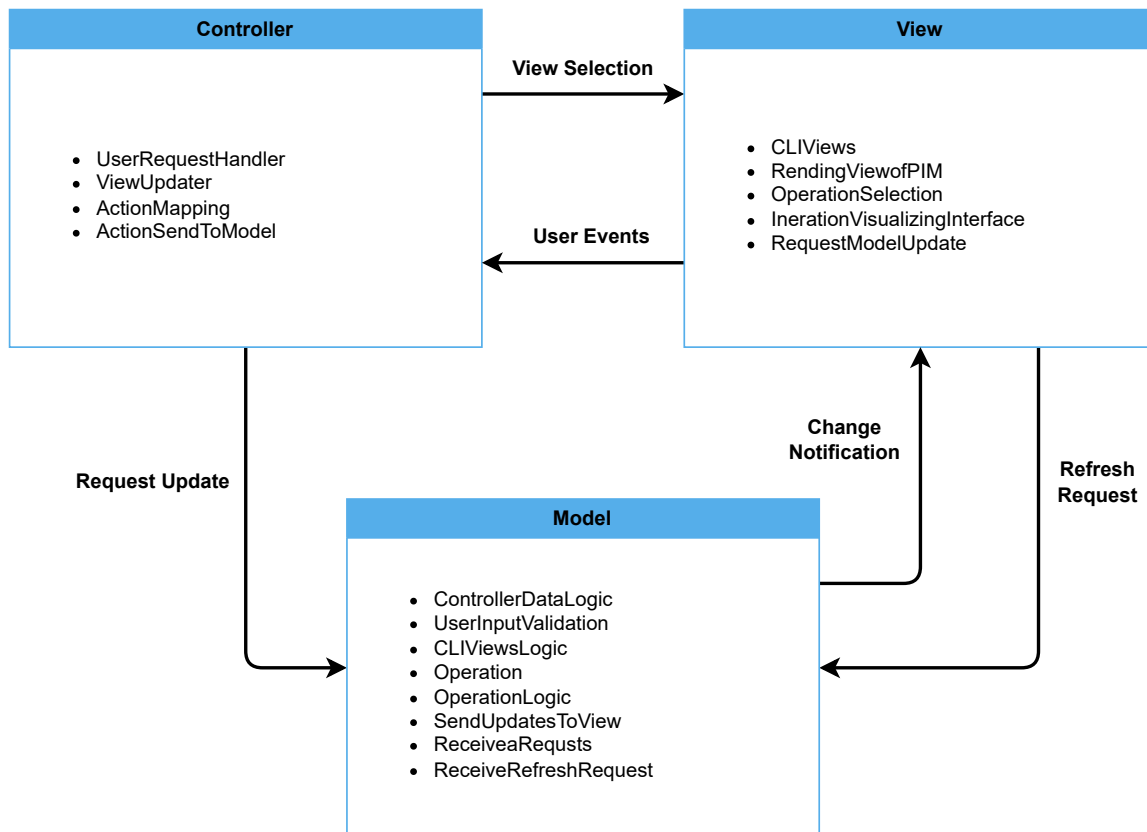
5.1 Architectural Patterns

The Model-View-Controller (MVC) separates the presentation from the interaction from the system data. The Personal Information Management is divided into three mutually logical building blocks. The Model component handles all potential logics which manages all data and accepts actions that transmit user commands/requests. The View component defines the Command Line View and the updated views responds from Model. The Controller component manages the user interface, such as selecting the crossponding operations, and these interactions are transmitted to the view and model.

5.2 Reasons and Advantages for MVC

1. MVC enforces the principle of Separation of Concerns: It segregates various aspects of an application, enabling autonomous development and maintenance of the Model (data logic), View (user interface), and Controller (user interaction logic).
2. MVC prioritizes maintainability and testability: By decoupling components, MVC simplifies code upkeep and testing. The Model handles data-related operations, the View handles the presentation layer, and the Controller manages user input and interaction. This segregation facilitates individual testing of each component, ensuring safer modifications and updates to the application.
3. MVC empowers flexible scalability and customization. The independent nature of the components allows for relatively effortless integration of new views, controllers, or models with minimal impact on other parts. This scalability capability facilitates adapting to evolving requirements and incorporating new features.

5.3 Overall Architecture



5.4 Architecture Components

• Model

- **Receive Requests**: Provide the ability to receive requests from controller.
- **Receive Refresh Requests**: Provide the ability to receive refresh requests from controller.
- **User Input Validation**: Provide the ability to check validation of user input.
- **Controller Data Logic**: Provide the ability to handle data processing logic from controller.
- **CLI Views Logic**: Provide the ability to handle CLI views logic.
- **Operation Logic**: Provide the ability to handle operation logic.
- **Send Updated To View**: Provide the ability to send updated data to view.

• View

- **CLIViews**: Provide a structural view of CLI.
- **Rendering View of PIM**: Provide a rendering view of PIM.
- **Operation Selection**: Provide different operation selection views.
- **Interaction Interface Visualization**: Provide a visualization of interaction interface.
- **Request Model Unpdate**: Provide the ability to update views according to model.

• Controller

- **User Request Handler**: A handler to handle user requests.
- **View updater**: A updater to update views.
- **Action Mapping**: Provide the ability to map user actions from view.
- **Action Send To Model**: Provide the ability to send user actions to model.

6. System Requirements Specification

6.1 System Functional Requirements

ID	SR-01
Title	Record Types
Requirement	The Personal Information Manager (PIM) shall provide four types of personal information records (PIRs), including editable plain texts, tasks, events, and contacts.
Rationale	Grouping personal information into the four types mentioned above helps in efficient and quality management.
Reference (SR, UR)	UR-01
Priority	1

ID	SR-02
Title	Unique Name
Requirement	The PIM regards the unique name as the PRIMARY KEY which uniquely identifies each record in the database system.
Rationale	Unique names for easy document management in the PIM system.
Reference (SR, UR)	SR-01, UR-01
Priority	1

ID	SR-03
Title	Plain Texts Creation
Requirement	The PIM system shall encompass the capability for users to create new plain text as a PIR, allowing them to type in any desired content quickly. The process of creating a new plain text necessitates the provision of a unique name, ensuring its distinct identification within the system.
Rationale	Convenient for users to create and edit the text freely.
Reference (SR, UR)	SR-01, SR-02, UR-01, UR-02
Priority	1

ID	SR-04
Title	Tasks Creation
Requirement	The PIM system shall encompass the capability for users to create a new task as a PIR, allowing them to indicate a task with corresponding descriptions and deadlines. To ensure clarity and consistency, the system shall provide a format for the user to fill in the descriptions and deadlines. The process of creating a new task necessitates the provision of a unique name, ensuring its distinct identification within the system.
Rationale	Convenient for users to create tasks in a quick and standard way.
Reference (SR, UR)	SR-01, SR-02, UR-01, UR-03
Priority	1

ID	SR-05
Title	Events Creation
Requirement	The PIM system shall encompass the capability for users to create a new event as a PIR, allowing them to indicate an event with corresponding descriptions, starting and alarm time. To ensure clarity and consistency, the system shall provide a format for the user to fill in the descriptions, starting and alarm time. The process of creating a new event necessitates the provision of a unique name, ensuring its distinct identification within the system.
Rationale	Convenient for users to create events in a quick and standard way.
Reference (SR, UR)	SR-01, SR-02, UR-01, UR-04
Priority	1

ID	SR-06
Title	Contacts Creation
Requirement	The PIM system shall encompass the capability for users to create new contact as a PIR, allowing them to manage a contact with corresponding names, address and mobile numbers. To ensure clarity and consistency, the system shall provide a format for the user to fill in the names, address and mobile numbers. The process of creating a new contact necessitates the provision of a unique name, ensuring its distinct identification within the system. The system offers the capability to convert a contact into an event, enhancing component reusability.
Rationale	Convenient for users to create contacts in a quick and standard way. Simultaneously, users can leverage the data and details already associated with the connection, saving time and effort in event creation while ensuring consistency and accuracy of information by converting a contact into an event.
Reference (SR, UR)	SR-01, SR-02, UR-01, UR-05
Priority	1

ID	SR-07
Title	Data Modification
Requirement	The PIM system shall encompass the capability for users to modify various fields and attributes of existing PIRs, such as PIR name, description, date, time, or any other relevant information in the consistent format. The system does not support modification of the type.
Rationale	Ensure that the system can easily adapt to evolving user needs and requirements, allowing for seamless modifications and keeping the PIRs up to date.
Reference (SR, UR)	SR-02, UR-06
Priority	1

ID	SR-08
Title	PIR Searching
Requirement	<p>The PIM system shall encompass the capability for users to search for PIRs based on the following criteria.</p> <ul style="list-style-type: none"> Based on information: <ol style="list-style-type: none"> String Matching: Check whether a piece of raw text (stored in a note, a description, a name, an address, or a mobile number) or unique PIR-name contains a string. Comparison Operation: Check whether a time (stored in a deadline, a starting time, or an alarm) is before (<), after (>), or equal to (=) another given valid point in time. Logical Connectors: Multiple above conditions via logical connectors and (&&), or (), and negation (!). Based on Primary Key: Search a PIR with a specific name which can identify the unique PIR.
Rationale	Increased productivity and effectiveness in managing and utilizing information.
Reference (SR, UR)	SR-02, UR-07
Priority	1

ID	SR-09
Title	Information Printing
Requirement	The PIM system shall allow the user to print detailed information on the screen about all PIRs or print detailed information about a specific PIR which can be accessible by search operation.
Rationale	Ensure that users have the option to access information in a tangible format to enhance the flexibility and usability of the PIM system, catering to users who prefer or require physical copies of their personal information records for various purposes.
Reference (SR, UR)	SR-02, UR-08
Priority	1

ID	SR-10
Title	PIR Deleting
Requirement	The PIM system shall encompass the capability for users to delete a specific existing PIR by indicating the unique name of the PIR which can be accessible by search operation. Confirmation is given before the user deletes the PIR, but the deleted PIR cannot be recovered.
Rationale	Ensure that users have the option to organize PIRs on their own as well as review and confirm the deletion action. Additionally, deleting unnecessary PIRs frees up storage space within the system.
Reference (SR, UR)	SR-02, UR-09
Priority	1

ID	SR-11
Title	Storing
Requirement	The PIM system shall encompass the capability for users to store the PIRs in a file with the extension name ".pim" in the pre-arranged path.
Rationale	Ensure the persistence of the data and improve data portability.
Reference (SR, UR)	SR-13, UR-10
Priority	1

ID	SR-12
Title	Loading
Requirement	The PIM system shall encompass the capability for users to load the PIRs from a file with the extension name ".pim" in a provided path. Additionally, the system shall aggregate newly loaded PIRs into user-specific PIM within a single ".pim" file.
Rationale	Ensure that users have the option to work continuously on the loaded previous PIRs.
Reference (SR, UR)	SR-13, UR-11
Priority	1

ID	SR-13
Title	Store and Load Path
Requirement	The PIM system shall encompass the capability for users to store or load the ".pim" file. Users can choose to enter only the file name, and the software will automatically use the default path in conjunction with the provided file name. Additionally, users can specify an absolute file path to store or load a ".pim" file.
Rationale	Ensure system flexibility, as well as meeting users' individual storage habits.
Reference (SR, UR)	SR-11, SR-12, UR-10, UR-11
Priority	1

6.2 System Non-functional Requirements

ID	SR-14
Title	Real-time Response Time
NFR	The system should respond efficiently to any action specified by users. For new, modification, printing, deletion operations on PIRs, they should be completed accurately in 1 second. Searching operation should be completed in at most 2s. As for loading and storing of PIM file, they should be completed in 5s. Additionally, the process changing overhead time should within 0.5s.
TNFR	Speed
Reference (SR, UR)	-
Priority	-

ID	SR-15
Title	Ease of Use
NFR	The system should provide a detailed user manual, concise instructions, clear prompts and straightforward operation procedures to ensure users will be able to use the software in a short period of time.
TNFR	Ease of Use
Reference (SR, UR)	-
Priority	-

ID	SR-16
Title	System Reliability
NFR	The system should respond correctly to user operations, run successfully without errors, validate input data effectively, and provide appropriate feedback to users.
TNFR	Reliability
Reference (SR, UR)	-
Priority	-

ID	SR-17
Title	Robustness
NFR	The system should effectively handle errors, prevent the storage of erroneous data in the database, and ensure that the integrity and consistency of other data are not compromised.
TNFR	Robustness
Reference (SR, UR)	-
Priority	-

ID	SR-18
Title	Software Portability
NFR	The PIM software is implemented using Java statements and has been designed to be platform-independent, allowing for its migration and use on various operating systems such as Windows, Linux, and macOS.
TNFR	Portability
Reference (SR, UR)	-
Priority	-

ID	SR-19
Title	Code Reusability and Requirement Extension
NFR	By combining Java's object-oriented design principles, abstraction, and encapsulation with a component-based architecture and flexible framework, the system can effectively accommodate additional requirements and cope with changes in the future.
TNFR	Maintainability
Reference (SR, UR)	-
Priority	-