Milestone I

Task - Day 1:

Task 1: [Download and setup the “JDK - 17” and IntelliJ Idea]

Student Name: [Sundhara Rameshwar S]

Date Completed: [04.09.2025]

1.Objective - The objective of this task is to successfully install and do the setup.

2.Steps Taken – The exact steps are IntelliJ download, “JDK” installation from the official Oracle website.

3.Challenge Encountered (if any) – N/A.

4.Verification – I run the java -version command in my terminal, and it displayed the correct JDK version number, it confirms installation was successful.

Task - Day 2:

Task 2: [Downloading GitHub for desktop and MySQL and setup the needed requirements]

Student Name: [Sundhara Rameshwar S]

Date Completed: [08.09.2025]

1.Objective – The objective of the task is to successfully install MySQL and download GitHub desktop and open a repository.

2.Steps Taken – I created a repository named Inventory and pushed my code into it by commands.

3.Challenge Encountered (if any) – N/A.

4.Verification – When entering my repository, you can see all the codes there. It can be verified by git status and git push commands.

Task - Day 3:

Task 3: [Creating product class or model and main class]

Student Name: [Sundhara Rameshwar S]

Date Completed: [09.09.2025]

1.Objective – The objective of the task is to successfully create product class and display it in screen.

2.Steps Taken – I created the two classes namely product class and Main class.

3.Challenge Encountered (if any) – N/A.

4.Verification –When I run the main class, it will display the welcome screen and the operations will display below and user give the input and store the data.

Task - Day 4:

Task 4: [Creating Inventory class with a user Interface]

Student Name: [Sundhara Rameshwar S]

Date Completed: [10.09.2025]

1.Objective – The objective of the task is to successfully create an Inventory class and show an interface to choose an option.

2.Steps Taken – I gave options such as add, search, update, delete, list products and exiting.

3.Challenge Encountered (if any) – N/A.

4.Verification – When I run the Inventory class, it will return the correct output and do the storage in the temporary storage.

Task - Day 5:

Task 5: [Doing Exception handling in order to prevent the code from crash.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [11.09.2025]

1.Objective – The objective of the task is to successfully create Exception handling to avoid the exception in the output.

2.Steps Taken – I covered all the edge cases with try and catch blocks to avoid predefined exceptions.

3.Challenge Encountered (if any) – N/A.

4.Verification – When I give the input in wrong datatype or giving a duplicate value for ID variable, it shows some statement instead of code being failed.

Task - Day 6:

Task 6: [Creating Product DAO class and implementing JDBC connection]

Student Name: [Sundhara Rameshwar S]

Date Completed: [12.09.2025]

1.Objective – The objective of the task is to successfully create a Product DAO class and store the data permanently.

2.Steps Taken – I created a database named “inventory DB” to store the data with changes made with the help of Main.java.

3.Challenge Encountered (if any) – N/A.

4.Verification – When running the Main.java, the product data are stored in inventory DB.

Task - Day 7:

Task 7: [Writing SQL queries and updating in the database]

Student Name: [Sundhara Rameshwar S]

Date Completed: [15.09.2025]

1.Objective – The objective of the task is to successfully create an SQL file and learn database manipulation.

2.Steps Taken – I created a SQL file named “inventory” and entered the given input and manipulated the database.

3.Challenge Encountered (if any) – N/A.

4.Verification – When opening the inventory DB, the product data are updated as per the queries.

Task - Day 8:

Task 8: [Removing the predefined exceptions and adding the user – defined exceptions]

Student Name: [Sundhara Rameshwar S]

Date Completed: [16.09.2025]

1.Objective – The objective of the task is to successfully create custom exceptions.

2.Steps Taken – I created a package named “exception” and created the exceptions as classes.

3.Challenge Encountered (if any) – N/A.

4.Verification – When entering wrong inputs while running Main.java, we can import that package and handle exceptions.

Task - Day 9:

Task 9: [Creating the CSV file and learn IO operations]

Student Name: [Sundhara Rameshwar S]

Date Completed: [17.09.2025]

1.Objective – The objective of the task is to successfully create a CSV file and learn IO operations in java.

2.Steps Taken – I created a CSV Helper file and modified the product DAO for seamless connection among Main.java, database, and CSV.

3.Challenge Encountered (if any) – N/A.

4.Verification – When opening the inventory DB, CSV, the product data are updated as per the queries.

Milestone II

Task - Day 10:

Task 10: [Creating table - like output screen and learning JDBC in-depth.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [19.09.2025]

1.Objective – The objective of the task is to successfully learn JDBC operations and making user-friendly output screen.

2.Steps Taken – I created a table-like monitor screen by using printing statements.

3.Challenge Encountered (if any) – N/A.

4.Verification – When running the Main class, we can see an easily understandable data being shown.

Task - Day 11:

Task 11: [Creating DAO pattern and UI interface.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [22.09.2025]

1.Objective – The objective of the task is to successfully create DAO design pattern and an interface.

2.Steps Taken – I created a DAO implementation class along with the “interface” product DAO and handled the exceptions. I also used the prepared statements.

3.Challenge Encountered (if any) – N/A.

4.Verification –As prepared statements are used, we can use it as many times as needed.

Task - Day 12:

Task 12: [Expanded the code in search option.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [23.09.2025]

1.Objective – The objective of the task is to successfully create the implementation of comfortable searching options.

2.Steps Taken – I created three options to search, hiding the unnecessary implementations. They are:

* Search by id.
* Search by name.
* Get all products.

3.Challenge Encountered (if any) – N/A.

4.Verification – When we run Main function, we can see the search options being categorized.

Task - Day 13:

Task 13: [Learning CRUD operations and expanding the code in the delete and update options.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [24.09.2025]

1.Objective – The objective of the task is to successfully create the implementation of comfortable updating, deleting options.

2.Steps Taken – I created the following options to update, delete the products, hiding the unnecessary implementations. They are:

* Update id.
* Update name.
* Update category.
* Update quantity.
* Update all fields.
* Delete by ID.
* Delete by name.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run the Main function, we can see the above-mentioned functionalities.

Task - Day 14:

Task 14: [Adding validations and making the user-friendly console.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [26.09.2025]

1.Objective – The objective of the task is to successfully create the exceptions that could handle the unexpected input data provided by the user.

2.Steps Taken – I created the exceptions that can handle all the inappropriate input.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run the Main function, we can handle some exception like entering a negative value in the price field.

Task - Day 15:

Task 15: [Adding a “search by category” functionality and writing J-Unit test cases.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [29.09.2025]

1.Objective – The objective of the task is to successfully create “search by category” option and writing the J-Unit test cases.

2.Steps Taken – I added the maven dependencies in the xml file and added the test cases in the model.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run “product validation test” file, we can see the user-friendly messages.

Task - Day 16:

Task 16: [Writing Product DAO Implementation tests and completing the Products validation test.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [30.09.2025]

1.Objective – The objective of the task is to successfully create “DAO Implementation” class and writing the J-Unit test cases.

2.Steps Taken – Learned about the Integration test.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run “product DAO implementation test” file, we can see the test cases pass.

Task - Day 17:

Task 17: [Creating the Mockito test class and writing the test cases.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [1.10.2025]

1.Objective – The objective of the task is to successfully create the Mockito test class.

2.Steps Taken – I have learned about the assert function and I have chosen the option of try - catch.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run “Mockito test” file, we can see the test cases pass.

Task - Day 18:

Task 18: [Adding the get product by range and writing the test cases.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [3.10.2025]

1.Objective – The objective of the task is to successfully create J – unit test cases for the “search by price option”.

2.Steps Taken – I have modified the existing test class.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run “App Test” file, we can see the test cases pass.

Milestone III

Task - Day 19:

Task 19: [Implementing Authentication and Authorization.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [6.10.2025]

1.Objective – The objective of the task is to successfully create user table, a user class inside model.

2.Steps Taken – I have created the user DAO and user DAO implementation classes to implement **add user** and **view user** options.

3.Challenge Encountered (if any) – N/A.

4.Verification –As we run the Mockito tests, we can see the message “tests passed”.

Task - Day 20:

Task 20: [Implementing secure Environment variables and learning about the different GitHub branch.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [7.10.2025]

1.Objective – The objective of the task is to successfully create environment variables and securing personal data.

2.Steps Taken – I have created three environment variables such as database link, username and password.

3.Challenge Encountered (if any) – N/A.

4.Verification – Before these steps, we have manually entered the credentials which had the possible risk of misuse. But now, it is not accessible by only the coder, not the other users.

Task - Day 21:

Task 21: [Implementing two types of logics such as database logic and business logic]

Student Name: [Sundhara Rameshwar S]

Date Completed: [8.10.2025]

1.Objective – The objective of the task is to successfully create a user service class inside the service package.

2.Steps Taken – I have created the services inside the package which can be used with the DAO classes.

3.Challenge Encountered (if any) – N/A.

4.Verification – Test cases are written for user service class.

Task - Day 22:

Task 22: [Implementing RBAC in the App.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [9.10.2025]

1.Objective – The objective of the task is to successfully create the methods inside the App for both admin and user.

2.Steps Taken – I have used switch cases to separate out the user and admin functionalities.

3.Challenge Encountered (if any) – N/A.

4.Verification – Interaction for **registering** can have user and admin options.

Task - Day 23:

Task 23: [Learning about the Java Mail API and creating a CSV Helper class.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [14.10.2025]

1.Objective – The objective of the task is to create a class that sends the **mail** to the users about the **products**.

2.Steps Taken – I have written the methods that call the “**send email**” and “**generate report**” options

3.Challenge Encountered (if any) – N/A.

4.Verification – When we give the correct and **valid** email address, we can send the mail to any user.

Task - Day 24:

Task 24: [Refactor the UI of the App.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [15.10.2025]

1.Objective – The objective of the task is to refactor the UI.

2.Steps Taken – I have written the optimized, reusable login, register codes.

3.Challenge Encountered (if any) – N/A.

4.Verification – We can see the interactive emojis and alignment in the console application.

Task - Day 25:

Task 25: [Creating the OTP service class.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [16.10.2025]

1.Objective – The objective of the task is to write an OTP service class and authenticate the email.

2.Steps Taken – I have written the code for generate the OTP and verify the OTP.

3.Challenge Encountered (if any) – N/A.

4.Verification – There is one “**is Verified**” column in **users** Table which is used for verification.

Milestone IV

Task - Day 26:

Task 26: [Creating a stock alert service class.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [21.10.2025]

1.Objective – The objective of the task is to alert a user based on the low quantity of the stock.

2.Steps Taken – I have created a stock alert service which can send mail to user if the product count reaches a certain threshold 20 (For fast selling) or 10 (For other products).

3.Challenge Encountered (if any) – N/A.

4.Verification – When we give an appropriate test value in either **Integrated** or **Mockito** tests, we can see the correct output. I have written Integrated tests.

Task - Day 27:

Task 27: [Expanding the functions of Stock Alert Service class.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [22.10.2025]

1.Objective – The objective of the task is to learn how to schedule timing to send the low stock emails and also reuse the Email Service Class.

2.Steps Taken – I have refactored the code to send a single email which contains all the products that reaches the threshold rather than just sending multiple emails to the user.

3.Challenge Encountered (if any) – N/A.

4.Verification – I have written Integrated tests that confirms its functionality.

Task - Day 28:

Task 28: [Learning about deployment and end-to-end testing.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [24.10.2025]

1.Objective – The objective of the task is to test all the positive and negative scenarios to check the Application’s consistency.

2.Steps Taken – I have learned about the maven commands and deployment environments.

3.Challenge Encountered (if any) – N/A.

4.Verification – I have written J unit test cases, integration tests and Mockito tests.

Task - Day 29:

Task 29: [Creating a MIT license file and documentation.]

Student Name: [Sundhara Rameshwar S]

Date Completed: [27.10.2025]

1.Objective – The objective of the task is to create a license file and add it to the project files.

2.Steps Taken – I have completed all the required documentation. I am also currently preparing the ppt file for presentation.

3.Challenge Encountered (if any) – N/A.

4.Verification – I have also pushed them in my GitHub public repository.