

MODULE 3-2 MILESTONE TWO:
ENHANCEMENT ONE: SOFTWARE DESIGN AND ENGINEERING

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CS-499 Computer Science Capstone 22EW4

Southern New Hampshire University

March 20, 2022

Module 3-2 Milestone Two: Enhancement One: Software Design and Engineering

This paper is a narrative that accompanies the artifact enhancements for software design and engineering. It explains why the selected artifact was included in this category of our ePortfolio and reflects on the process used to create the artifact. The narrative focuses on the learning that happened through the artifact's creation (Southern New Hampshire University, 2022).

Prompt

The artifact selected for the category of software design and engineering is the mobile application **Inventory App**. The app's goal is to track an inventory of items using android mobile devices. The software was planned, designed, and develop as part of the CS360 Mobile Architecture and Programming computer science course. The application is developed in JAVA programming language with integration to the relational database SQLite. The development and programming tool used is Android Studio IDE. The testing and running of the app are through a Nexus device emulator inside Android Studio.

This artifact selected involved an entire software design and engineering process. It consists of design considerations of user experience and user interaction with different screens and actions that the application includes. Ensure an intuitive use of the application and its features through industry-standard icons and symbols. The engineering of practices of validate input data, architect and design for security mindset, and default deny. Envelope design and engineering considerations of relationship and functionality in their algorithms and data structure between the different classes and methods, and database in their layouts and source code. Envelope using a relational database to store the data created, read, updated, and deleted by users through the operation and use of the application.

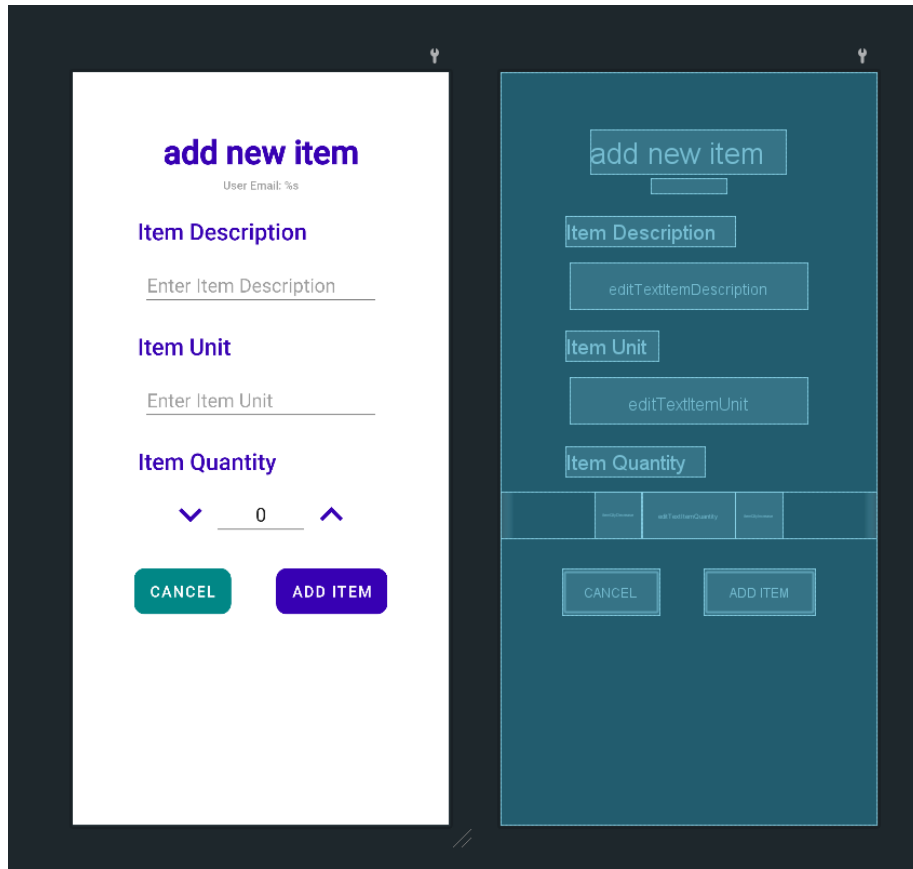


Figure 1 Design of Add Item Activity Layout

Through the design and development of the mobile application, we showcase our skills and abilities in designing software, considering and interpreting the user needs, and implementing them into a program relation of activities in an organized structure. The approach of developing programs that integrate the presentation and layout aspects of the user interface with the programmatic phase of the application.

The significant artifact enhancements introduced made the application fully functional by implementing a complete user CRUD functionality in the item's activity and improving the functionality, structure, and efficiency of the SQLHelper class function and methods. With this enhancement, we meet the objective of designing and evaluating computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to our solution while managing the trade-offs involved in design choices. We follow

mobile development principles and best practices using user-centered design principles and industry standards through application development. The application of user-centered design principles helps to demonstrate our ability to use well-founded and innovative techniques, skills, and tools in computing to implement computer solutions that deliver value and accomplish industry-specific goals. Implement and practice quality assurance techniques effective in identifying and eliminating vulnerabilities.

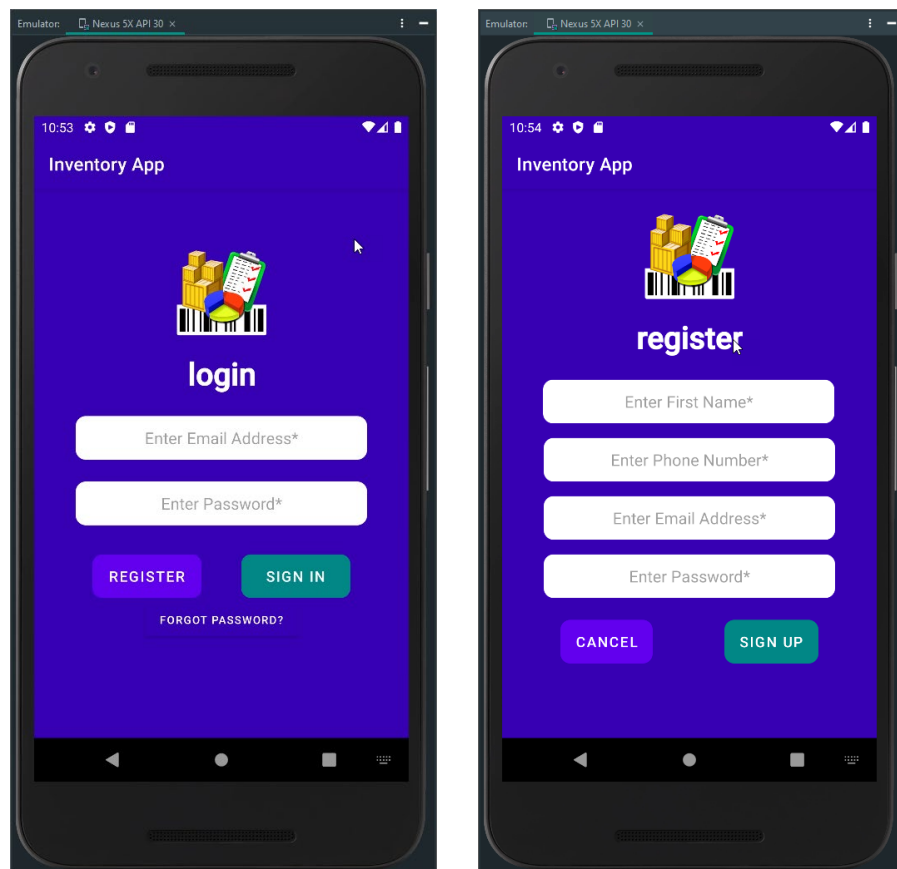


Figure 2 Login Activity and Register Activity Screenshot

We were authenticating the user by their name, phone number, and email as part of their credentials, and a mechanism to recover their password in case of forgetting showcased our zero-trust ethic. Emphasize our security mindset in the development process to anticipate adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design

flaws, and ensure privacy and enhanced security of data and resources. We conduct security from initiation, product assuredness, testing, and compatibility checks in our entire software development life cycle. Apply secure coding standards for the target development language and platform.

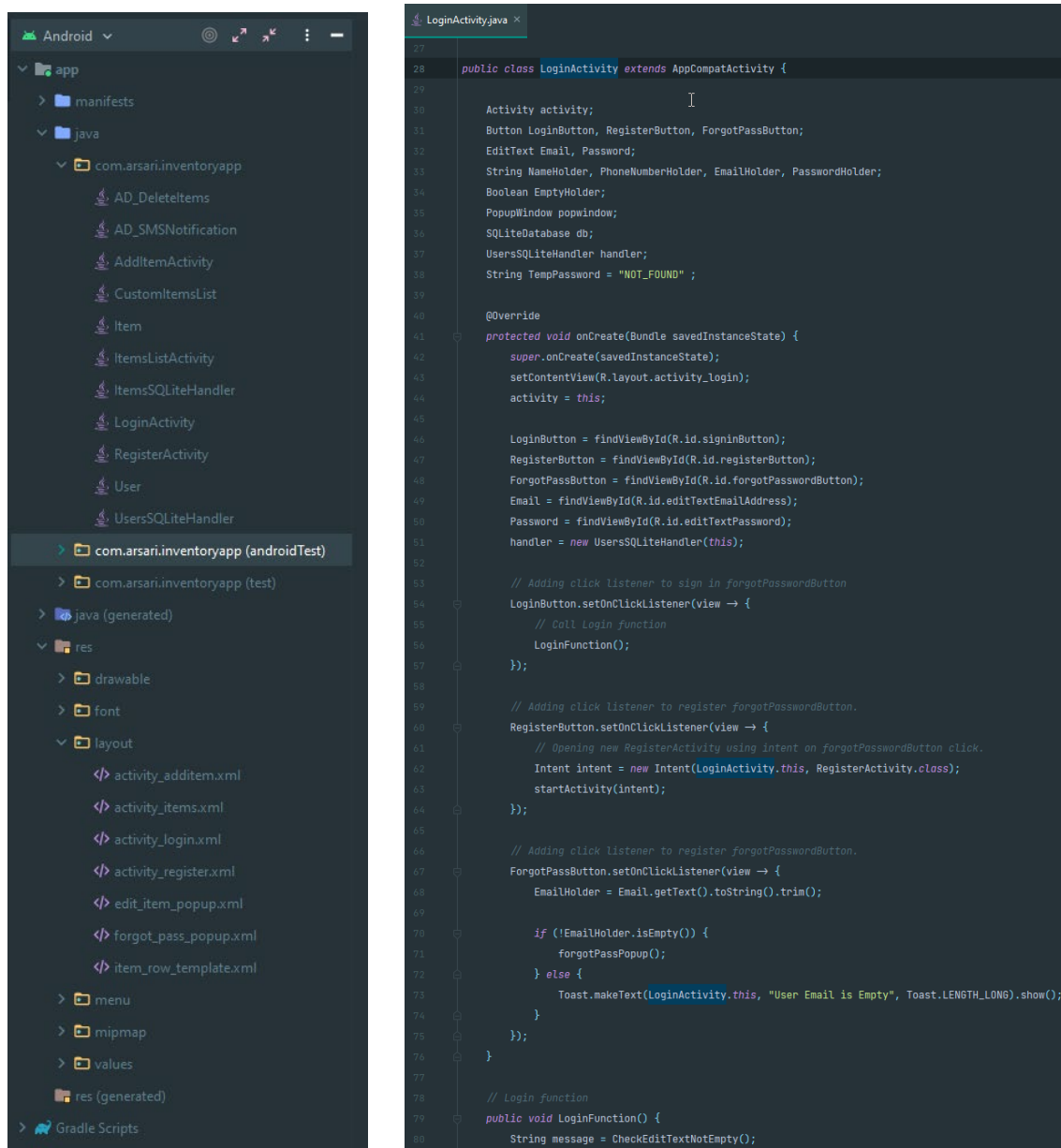


Figure 3 JAVA Files Structure and Sample of Coding Formatting

We employ industry-standard JAVA code best practices and techniques such as in-line comments, appropriate naming conventions, formatting, and indentation in conformance with

proper coding standards, making the code easy to read and enhancing the application code organization. Global variables were identified with camelCase CapWords names, and methods scope variables were identified with camelCase lower case names or lower case dash_ names. JAVA class files were named with camelCase CapWords and layout files with lower case names. The class methods naming, as possible, are a representation of the method's purpose and action. Comments statements in the code summarise class and methods functionality. Methods that override methods from its superclass are named camelCase with an initial lower case word. Other ways that do not override methods from its superclass are named in camelCase with CapWords.

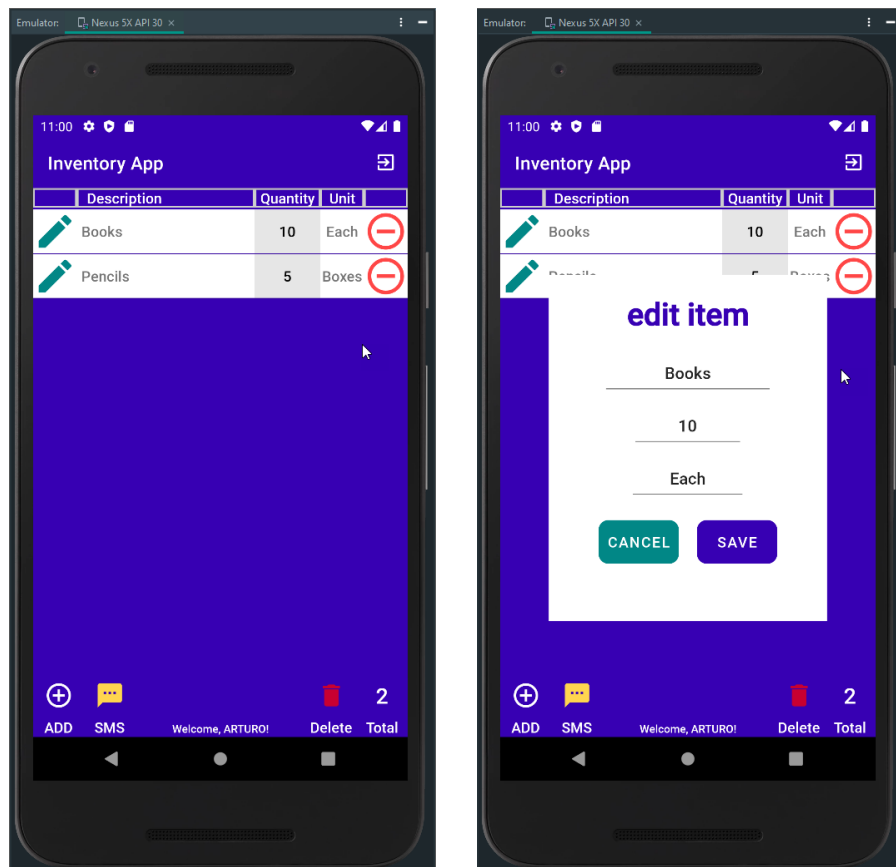


Figure 4 Items Activity List and Item Edit Feature Screenshot

As a designer and engineer, I initially plan and program the purpose of my idea and my target audience. Every audience is different, and I should interpret user needs and implement them into the idea to develop by considering their needs in a prioritized way where the most important or favorite features are attended to first. It is like ranking the tasks that need to be incorporated into the app at their initial launch. The importance of looking for competitive apps and how they approach the application's design to resolve the UI/UX for the app and how similar features to our idea were presented and determined by those apps. So, searching in the app store or the internet to find similar apps to the app idea we want to develop is a critical approach to implement.

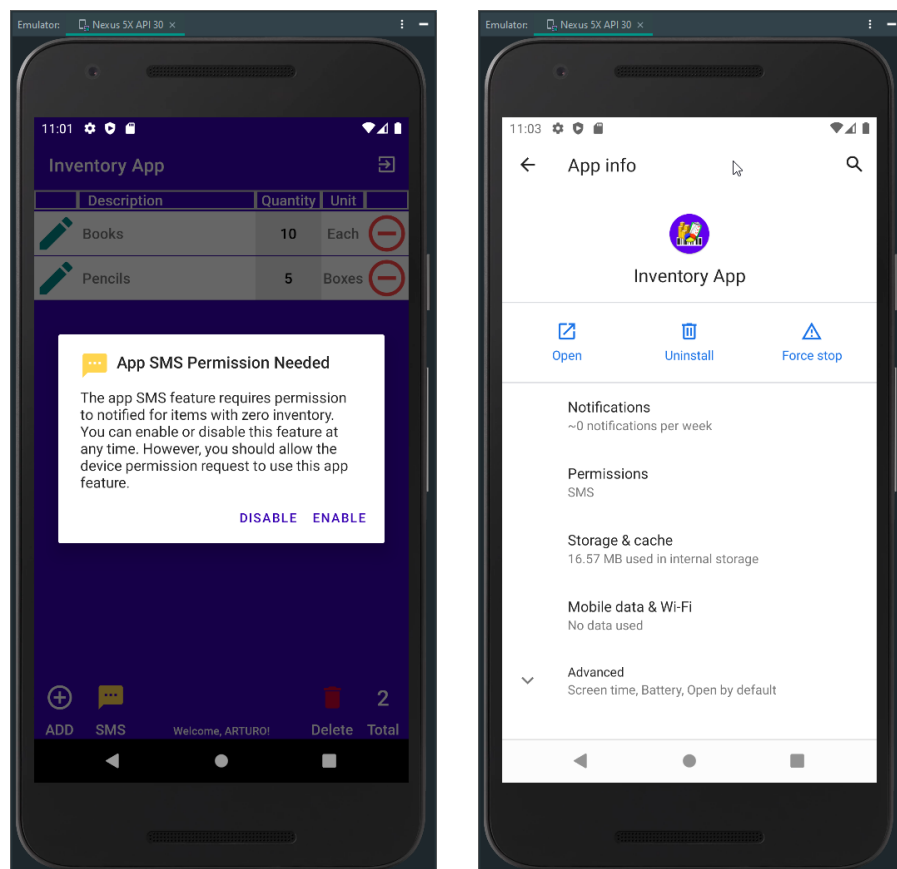


Figure 5 SMS Alert Dialog and App Info Screenshot

There's much information on how a mobile application design process should be. Understanding this process is crucial to producing an app of quality and acceptance by our target audience. Doing these alone is impossible, so it is questionable to think we create a great application ourselves. In the complete app design and development process, it is essential to look for help to understand our strengths and weaknesses from initial planning to finalization. To be successful, we need to build a collaborative team that could help us digest and practice mobile app development's good practices. Focus on implementing and relating the design components and the programmatic code to continue finding opportunities to improve and innovate the mobile app to overcome a challenge.

References

Southern New Hampshire University. (2022, March 17). *Milestone Two Guidelines and Rubric*

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Two: Enhancement One: Software Design and Engineering:

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