Module 3-2: Artifact Narrative (Software Design and Engineering)

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Computer Science Capstone

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The artifact that I created for this capstone project is an Event Tracking Mobile App for the Android operating system. This artifact was originally created during my class, CS-360: Mobile Architecture and Design in the 2023-24 school year at Southern New Hampshire University. The application that I am enhancing for this project gives users the ability to manage events in their lives. The application allows the user to manage the details of the event, track multiple events in their portfolio, add and delete events, and keep their information secure through a mobile interface.

I have chosen to include the Event Tracking Mobile App in my portfolio to demonstrate mobile application development and database handling. The artifact allows me to showcase my skills in application development, UI/UX design, and secure and industry standard coding practices. The inclusion in my ePortfolio of this artifact will highlight my design of a user-friendly application, application reliability, and management of secure databases. The redesign of the UI/UX with a consistent scheme will showcase my skills in application development along with proper unit tests and error handling. These sections of my enhancement will showcase a user-friendly, reliable application. I will also be implementing password hashing and encryption to provide a more secure application and mitigate SQL injection risks. This artifact was enhanced by creating a bottom navigation bar, creating animated buttons for feedback, adding encryption, and input sanitation that significantly improves the application.

I planned well to show the demonstration of my skills and the successful inclusion of the course outcomes into my application enhancements. This section of the process enhanced my project through consistent navigation, animation feedback, clear layouts, testing and security. Outcome 1, which is, employ strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in the field of computer science is crucial to a well-built application. In this outcome I used my skills in modular design and consistent practices to build a collaborative environment. The code uses a modular code structure that allows multiple team members to work on different parts of the application without conflicts. I have also shared themes, styles, colors, and used BottomNaviationView across all pages. This supports organizational design-making that aligns with this outcome. Outcome 2, which states, Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts is shown through this code. This outcome was achieved by using toast messages in my code to communicate feedback to the user on whether actions were successful or failed. Animation feedback on button clicks also communicates feedback to the user. The request and handling of SMS permissions communicates with the user on how their privacy is maintained and how security is handled within the application. Outcome 3, which states, Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution, while managing the trade-offs involved in design choices is also used in this code. By using authentication logic and checking user credentials against the database (dbHelper.checkUser(username, password), shows algorithmic thinking to solve a problem. This validates inputs, queries the database, and determines access based on if the results are true or false. The navigation logic in the BottomNavigationView and the if-else conditions within it manage user flows which demonstrate algorithmic principles. The error handling within the application, denied permissions and displaying error messages, involves logical structures and further provides proof of outcome 3.

Through the process of enhancing and modifying my artifact during the initial stages of this capstone, I have learned a lot about my skills, skills employers are looking for, and how to handle challenges in an industry best way. When I initially created the artifact, I learned all the initial information I learned about mobile app development and the Android operating system. In improving this application, I have learned how to better code and comment for proper creation and sharing of the code. I have also learned the need for proper data handling, privacy, and security that must be included in any successful application. This artifact has shown me where I have lacked as well. I have been challenged in creating multiple enhancements for the same artifact and having them all run smoothly. The addition of multilingual support and error handling is something I have not had much experience with and requires much planning.