MODULE 1-4 ePORTFOLIO SELECTION AND REFINEMENT PLAN

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Module 1-4 ePortfolio Selection and Refinement Plan

This paper is an initial plan to fulfill the ePortfolio and demonstrate my skills in three key categories within computer science: software design/engineering, algorithms and data structures, and Databases. It discusses work and proposed enhancements (Southern New Hampshire University, 2022).

Prompt

For the final project, ePortfolio, two artifacts have been selected for each category representing my growth in the key areas of software design/engineering, algorithms and data structures, and databases. The chosen artifacts are project work of courses in the Computer Science Program. While the artifact selected demonstrates my skills in the referenced key category, the artifacts may illustrate skills across other key categories.

Software Design and Engineering

Artifact: Inventory App – Android Mobile App

Origin: CS360 Mobile Architect and Programming

Enhancement plan:

When delivering the final work, I can't complete adding more than one item in the ItemActivity list, limiting the app to perform as expected. I look to make the app fully functional by improving the design of the ItemActivity list and login capability and the software engineering by adding the ability to add items, edit the item quantities, delete an item or delete all the items in the database. I would improve the LoginActivity with the ability to recover the user password if it was forgotten.

Skills:

By enhancing the app's functionality, I will illustrate the skills gained in optimizing a mobile app in their software design and development. Our ability to manage the tool of Android Studio IDE in combination with the JAVA programming language and SQLite database to create, read, update, and delete records in a database. Demonstrate the knowledge, skills, and experience of a clear understanding of the relations and integration of the components in a source code of functions, transfer information between activities, activating mobile device features.

Outcomes:

[CS-499-03] 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.

[CS-499-04] Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices to implement computer solutions that deliver value and accomplish industry-specific goals.

Pseudocode:

1. Improve the code functionality of the database CRUD
2. Add the ability to recover user passwords in the login screen
3. Improve source code functionality to list the items in the database and manage them easily.

Algorithm and Data Structures

Artifact: Authentication and Monitoring System

Origin: IT145 Foundation in Application Development

Enhancement plan:

I look to expand the application capabilities by adding a dashboard (monitoring system). According to the user authentification and authorization, it will perform activities in the dashboard to know the activities of the animals in they are care and monitor their living habitats. Add the functionality of reads input from the user and uses system output. Utilizes appropriate control structures for program logic and standard libraries to pull in predefined functionality using the JAVA programming language and run in the computer terminal console. Brake the program in proper classes and correctly utilize all included methods within the classes.

Skills:

The enhancement introduced will demonstrate our understanding of algorithms logic and relation with data structures to integrate essential object-oriented programming elements effectively. Illustrate the skill and concepts of using and maintaining JAVA programming sources codes to assemble basic, working programs that effectively incorporate crucial aspects of object-oriented programming. Implementation of appropriate variables, operators, methods, and classes used in object-oriented programming to develop successful programs. Detail the proper syntax and conventions in terms of their best practice and use in programming. How to debug coding errors by testing existing code, identifying errors, and correcting errors for improved functionality.

Outcomes:

[CS-499-01] Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in the field of computer science.

[CS-499-05] Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources

Pseudocode:

1. Utilizes appropriate control structures for program logic.
2. Design and display a simple terminal GUI dashboard.
3. Show different screens according to user authentication and authorization.

Databases

Artifact: Salvare Search for Rescue App

Origin: CS340 Client/Server Development

Enhancement plan

This project was developed in the Apporto platform. I will reproduce the application in my local machine and improve the dashboard GUI. I will refine the corresponding guidelines for implementing the dashboard based on running it on my local machine.

Skills:

Demonstrate our understanding of Python language and the integration of MongoDB database through the implementation and use of the Python driver PyMongo and the use and modification of the Python framework Dash. Demonstrate the use and control of Jupiter Notebook to produce, run, and test Python scripts.

Outcomes:

[CS-499-03] 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

[CS-499-04] Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices to implement computer solutions that deliver value and accomplish industry-specific goals

Pseudocode:

1. Revise documentation to improve the implementation of the dashboard in different computer environments.
2. Describe the software pattern used for the development of the application.

ePortfolio Overall

Through the code review of an artifact, I plan to illustrate the skills of creating a secure coding standard from initiation in an appealing way to reduce security risks and not leave security to the end of the software development life cycle. The more complex the application is, the more opportunities to create vulnerabilities. As a result, all software development processes must be revised in their structure, style, logic, performance, test coverage, design, readability and maintainability, functionality. Some of these can be automated checks with third-party tools, but others require human review to evaluate structure and functionality. Reviewing code with specific questions can help focus on the right things. By evaluating code critically, we will check for the right things with questions in mind. Furthermore, we will reduce the time when it comes to testing.

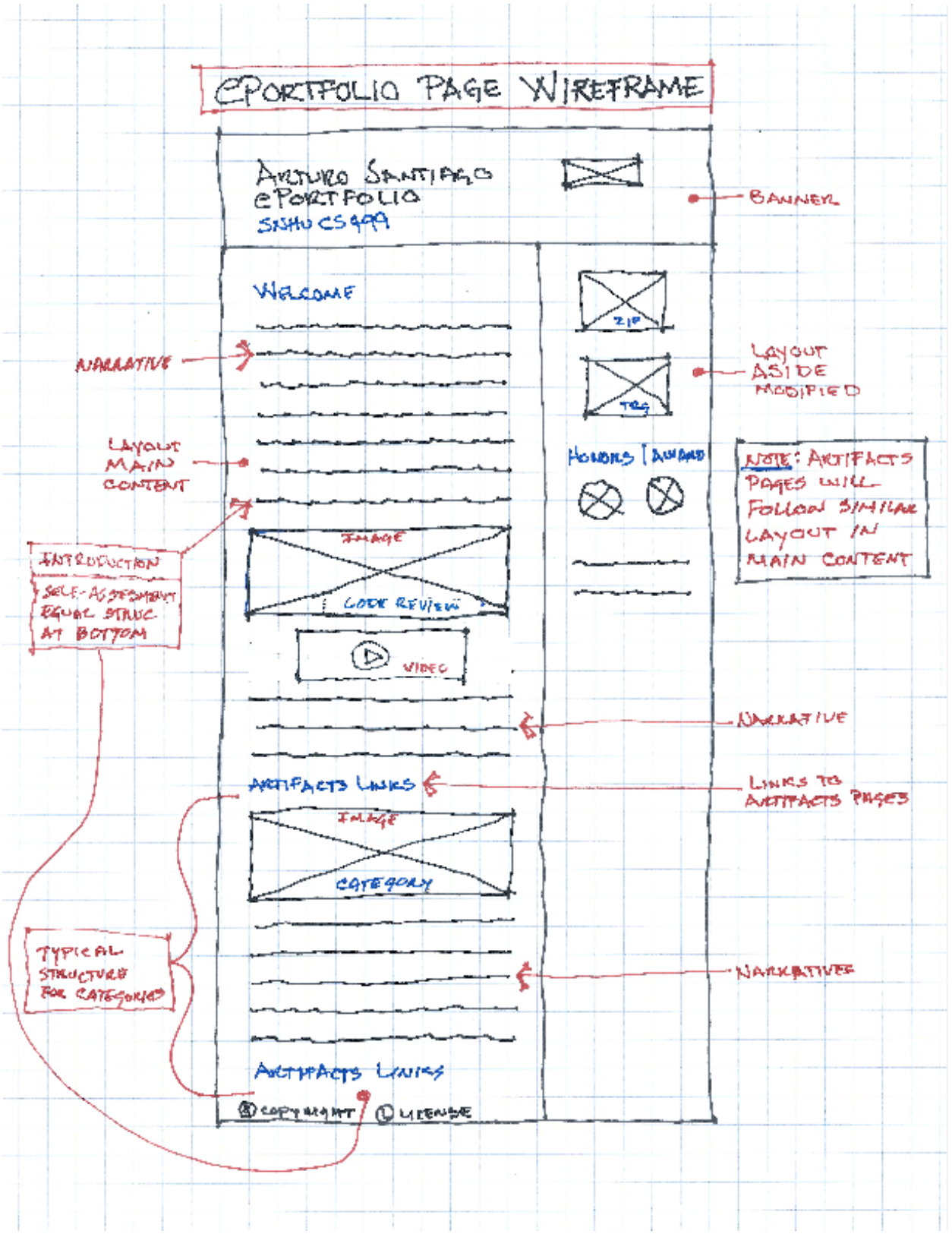
Through the narratives of the category areas of software design and engineering, algorithms and data structure, and databases, I look to illustrate the skills and knowledge acquired by applying appropriate data structures for effectively organizing data given the requirements and constraints of various problems. Implement technically sound algorithms that accurately perform required functions and employ basic algorithms and shared data structures in developing effective computer programs. The employ of appropriate organizational methods in tracking the progress of software development projects and the development of software and systems services enforced with security practices and techniques from initiation. When possible,

break the software into smaller methods to accommodate the needs of each block of code and implement security techniques through the rectification of the method behavior. Implement and practice quality assurance techniques effective in identifying and eliminating vulnerabilities. Testing and source code audits should be incorporated into the quality assurance technique.

The professional self-assessment will illustrate our background and motivation to enter a Computer Science program to improve and sustain our knowledge and skills acquired during our years of study. Demonstrate through the portfolio our unique abilities and talents focused on strong motivation, well organized, and accomplished mastery of the individual components and tools for planning and programming in an SDLC and our ability to integrate those components in navigating the field in an agile environment. Applying skills and concepts learned in various programming languages like C++, JAVA, Python, SQL, and development tools and IDE tools to build a collaborative culture that creates exciting fresh solutions for the built environment. Demonstrate our natural skill of finding a solution to logical problems during coding, debugging, and troubleshooting to implement the industry's best standards and good practices. Enjoy learning new things and quickly picking up on the required skills, and I genuinely look to excelling and pushing myself.

Webpage Wireframe

For the final ePortfolio webpage, I'm considering a layout as illustrated below, where each key category will be titled with an image as well the code review section. I expect to make a similar layout page for each artifact on the key categories with a short description and screenshot of the running artifact. The page will start with an introduction, code review and key categories in the middle, and the self-assessment at the bottom.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