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**CIDM 6325/70/MS-CISBA Capstone**

**Professor: Dr. Jeffry Babb**

**Software Systems Competency Assessment**

**What do I know?**

Programming:

I'm adept at programming with languages including Python, Java, and C++. I've gained hands-on experience in object-oriented design, functional programming, and the use of software design patterns.

Example: For my ongoing Object-Oriented Design course, I am in the process of developing a task management software using Python. It's designed employing the MVC pattern, with SQLite for data management.

Software Development Lifecycle (SDLC):

I've become well-versed in various SDLC stages, right from requirements gathering to deployment.

Database Management:

I have a good grasp of both SQL and NoSQL databases, along with normalization and optimization techniques.

Example: In a project I'm currently working on for my personal development, I'm conceptualizing a database schema for an e-commerce platform, with a focus on efficient data retrieval using optimized queries.

**Where am I weak?**

DevOps and CI/CD: While I understand the basic concepts, I have limited hands-on experience in setting up continuous integration and deployment pipelines using tools like Jenkins or Travis CI.

Microservices Architecture: Though I've studied the theory behind it, I haven't had extensive practical experience in designing and managing microservices-based systems.

**What do I wish I knew and/or don't realize I am missing?**

I aspire to dive deeper into cloud-native software development, focusing on the orchestration of microservices using tools like Kubernetes. Moreover, I sense there might be industry-specific software tools or methodologies I might not be currently aware of.

**Samples and Sources of Knowledge**

Courses (Currently Undertaking):

E-commerce Web Development:

Project Description: I am conceptualizing a degree checklist program.

Technology: Django, MySQL.

GitHub repository Still a work in progress. <https://github.com/Jom123410/Degree-Checklist-Project>

Object Oriented Design:

As mentioned, I'm developing a task management software as a part of this course.

Technology: Python with SQLite for backend data management.

Link: GitHub repository (<https://github.com/Jom123410/CIDM4360>

**Books:**

"Design Patterns: Elements of Reusable Object-Oriented Software" by Erich Gamma, Richard Helm, Ralph Johnson

Key Takeaways: Gained insights into reusable patterns that provide efficient solutions to commonly occurring problems in software design.

"Clean Code: A Handbook of Agile Software Craftsmanship" by Robert C. Martin.

Key Takeaways: Learned principles for writing clean, maintainable, and scalable code.

"Web Development with Django".

Description: An in-depth guide to building web applications using the Django framework. This book provides a comprehensive overview of Django’s features and teaches best practices for web development with Python.

Key Takeaways: Acquired a solid understanding of Django's Model-View-Controller (MVC) architecture, user authentication, and best practices for scalable web application development.

**Summary Statement:**

Having actively immersed myself in the realm of software systems throughout this program, I take pride in my capabilities related to programming, SDLC, and database management. However, areas like DevOps and microservices beckon as exciting frontiers I'm eager to explore. My growing portfolio echoes my competencies, and I'm keen on leveraging these strengths in my capstone project and beyond.

**Preparedness for Portfolio and Prototype:**

Drawing from my assignments and ongoing projects, I'm ready to showcase my proficiency in software systems for the capstone's portfolio and the representative prototype.

**Contribution Towards the Capstone:**

Integration with Other Areas:

Why: Data Analytics provides insights, which when coupled with software systems, can lead to the development of intelligent, adaptive, and efficient software solutions.

How: Data Analytics can influence system design by identifying bottlenecks or areas for optimization, and in turn, software systems can be architected to facilitate efficient data collection and analysis.

**Integration with Prior Work:**

Having worked on database management previously, it integrates seamlessly with software systems, where data storage, retrieval, and manipulation are key aspects.

**Final Statement:**

Software Systems, built upon a foundation of Data Analytics, can drive innovation, optimize processes, and deliver unparalleled user experiences, bridging the gap between raw data and actionable insights.

MS-CISBA Capstone GitHub link: <https://github.com/Jom123410/MS-CISBA-Capstone>