> *Chris Sanchez 2023-12-07 CS 470 Final Reflection https://youtu.be/mBOWzowR-SY*

As I reflect on the completion of my full-stack web application in the cloud and the culmination of my experiences in CS 470, it's evident how instrumental this course has been in enhancing my professional capabilities. Throughout this course, I've honed my skills in cloud services and serverless architecture, which have been critical in developing a robust, scalable, and efficient web application.

One of the most valuable skills I've mastered is the ability to design and implement cloud-based solutions. The process of building a full-stack application from the ground up, particularly in the cloud, has given me a profound understanding of cloud infrastructure and services. My QA background played a pivotal role in ensuring the application's reliability, as I meticulously tested and debugged every component, demonstrating my thorough and precise attention to detail. The knowledge I've gained about cloud service concepts and the practical experience of implementing them have undoubtedly prepared me for roles such as collaborative developer, SDET (Software Development Engineer in Test), and automation lead. I am now well-versed in deploying scalable applications, setting up CI/CD pipelines, automating workflows, and managing cloud resources effectively—an 'automation first' mindset that's vital in today's fast-paced software development landscape.

Looking ahead, planning for the growth of my web application involves a strategic approach to scalability and cost management. The shift toward microservices and serverless architectures presents several opportunities for efficiency. For instance, microservices allow independent scaling of application components, which means that each service can be scaled based on demand without affecting others, leading to better resource management and error isolation. Serverless computing, with its event-driven execution model, offers scalability and eliminates the need to predict server capacity. Error handling can be more streamlined as serverless functions are stateless and each function execution is independent. When it comes to cost prediction, serverless is often more cost-predictable as it follows a pay-for-what-you-use model, avoiding over-provisioning and under-utilization of resources. However, the decision between using containers or serverless functions isn't straightforward. Containers offer a bit more control and consistency across different environments, which can be a crucial factor for certain applications. On the other hand, serverless functions shine in their simplicity and scalability, especially for applications with variable traffic.

In plans for expansion, elasticity plays a significant role. The ability of the cloud infrastructure to adapt to workload changes dynamically means that the application can handle growth seamlessly. The pay-for-service model also impacts decision-making; it allows for a more flexible cost structure that aligns with usage patterns and application demand. The insights and skills garnered from CS 470 have not only fortified my software development and QA expertise but have also equipped me with the strategic foresight necessary for scaling web applications in the cloud efficiently and cost-effectively. These capabilities underscore my readiness to tackle advanced roles in the field and contribute to the technological advancement of any organization.