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CS-470 Final Reflection

YouTube Video Link: <https://www.youtube.com/watch?v=lu6GLow7bBM>

Experiences and Strengths

While my personal career goals do not necessarily involve developing a full stack web application in the cloud, it is essential that I understand the principles behind it so that as an aspiring UX/Product Designer, I can effectively collaborate with both front and backend developers to create user-centric products.

Throughout this course, I have learned many skills in the process of successfully migrating a full stack application to a serverless environment using cloud storage and a database. Such skills include understanding how containerization and orchestration were used by utilizing Docker and Docker Compose to containerize the frontend of the MEAN REST API with the MongoDB backend, understanding the benefits of the serverless cloud and serverless API, integrating Lambda with Amazon API Gateway to integrate the frontend of an application with the backend, using the Lambda functions I created to interact with the DynamoDB database, and adding security by creating IAM policies that specifies permissions that are attached to roles.

My strengths as a software developer have now been majorly advanced due to the knowledge I gained in this course. My understandings of Docker, Amazon Web Services, and the serverless architecture have helped me in my understandings of the cloud infrastructure, I am able to address security issues that ensure user data is protected, I can properly convey technical information to other designers, and work as a team member in design and development teams to ensure products are not only user-friendly but are seamlessly integrated.

As I mentioned in the beginning, my career goal is to become a UX or Product Designer, however, I am not limited to only those roles. I could also pursue various other career paths in the future if I ever decide to switch career paths. Some of the roles that I am prepared to assume in a new job include Full-Stack Developer, Web Developer, Back-End and Front-End Developer,

Systems Architect, AWS Solution Architect, Cloud Engineer, Cloud Application Developer, and more.

Planning for Growth

The major benefit of microservices and serverless architecture is that scaling and error handling can be easily addressed. For example, with the pay-for-use model in cloud development, an organization or company can easily scale memory, storage, and capacity for CPU when there are changing demands. Also, with AWS Lambda, when a request is made to the API Gateway, which then sends a request to Lambda, the function scales automatically for the incoming traffic and has built-in error handling. If for some reason a request is not successful, Lambda can then retry or send the failed request somewhere else for further inspection.

With serverless architecture, cost does not need to be predicted because the client would only need to pay for what they need at the moment without worrying about the amount of memory or storage they “might” need in the future as that can be easily scaled, as I explained before. There are many benefits with either container or serverless applications, but, as far as which is more cost predictable, I would say containers are because they allow for control on resource allocation, which means you can accurately plan for when there may be a spike in usage on a web application.

Overall, there are many pros and cons to cloud computing when planning for expansion. Some pros would consist of:

- Eliminating the need to assign staff to monitoring resources that are needed because a service provider such as AWS will take care of that, which reduces infrastructure costs.
- Data stays protected even in case of a disaster which is essential for storage security.

- Employees can work from anywhere, making cloud computing the most efficient option as they can collaborate on projects from anywhere.
- Instantly scalable system when a company is growing quickly.

Some cons would consist of:

- Cost can sometimes be unpredictable if a company is growing quicker than they expected.
- Companies might be concerned that they are handing over control of the infrastructure to the cloud provider instead of them managing it.
- Affects to how the internet performs due to backups when a lot of people are using the internet.

Elasticity and pay-per-service play a major role in the decision making for planned future growth as they both allow for scaling based on demand and only paying for what is needed at the current time. This is greatly beneficial and offers flexibility for companies that are planning on expanding their business in the future.