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March 3, 2024

CS 470 Final Reflection

Final Presentation Link: https://youtu.be/MJQWoRc2314

- **Experiences and Strengths:** Explain how this course will help you in reaching your professional goals.
    - What skills have you learned, developed, or mastered in this course to help you become a more marketable candidate in your career field?

    This course taught me how to apply many web development principles using a serverless architecture in Amazon Web Services. I learned how to implement a frontend, backend, and database using Amazon S3, API Gateway / Lambda, and DynamoDB, respectively. I also learned how to containerize various aspects of a full-stack web application.

    - Describe your strengths as a software developer.

    As a software developer, I possess many strengths. I am able to design, develop, and maintain software applications on many different platforms. I can think analytically and solve software engineering problems with critical thinking and an open mind. Also, collaboration is key to success when it comes to software development, and I am able to effectively collaborate with teammates with strong communication skills. I can also effectively manage my time and adapt to changing requirements with a keen understanding of Agile methodologies.

    - Identify the types of roles you are prepared to assume in a new job.

    I believe that I am prepared for the role of a junior software engineer. I am able to do full-stack development for web applications. I am also able to develop complete

desktop and Android applications. I can design, implement, and test code so that it is secure, efficient, and correct.

- **Planning for Growth:** Synthesize the knowledge you have gathered about cloud services.
    - Identify various ways that microservices or serverless may be used to produce efficiencies of management and scale in your web application in the future.

Microservices allow developers to independently develop multiple components of an application in parallel. This leads to efficiencies in development, testing, and maintenance. Because of this, it is easier for a team to manage the development of a large project with many interconnected components. Orchestration between each contained component can be used to place services on nodes, identify failures, and rebalancing services across nodes.

Serverless architecture makes it easier for developers to work on their project without concerning themselves with the underlying infrastructure. The third party that is hosting the web app provides the tools for error logging, auditing, monitoring, and fault tolerance. These tools help developers easily maintain their projects and keep errors to a minimum. Serverless architectures also have mechanisms in place that will allow various aspects of the web app to automatically scale as demand increases.

Serverless architectures also allow companies to utilize a pay-as-you-go type of payment scheme. This means that the developers are only charged for the resources that they use. This helps companies forgo large initial investments for infrastructure, and it avoids the costs of operating at idle capacity. Serverless providers also provide a means of measuring costs through usage statistics. These usage statistics can help the company make predictions relating to future costs. The cost of microservices can be predicted by measuring the utilization of resources that are allocated for each service. Data collection can be utilized to monitor the resource consumption. Because of the tools provided by serverless providers, it is easier to predict the costs of serverless rather than the cost of containers.

- Explain several pros and cons that would be deciding factors in plans for expansion.

Expanding an infrastructure or project has many pros and cons. Expanding the infrastructure allows a company to accommodate the amount of traffic visiting the website. This helps the web app run faster, and it allows more people to effectively visit the website. The web app itself can be expanded upon as well. This means that more services can be developed to make the web app more feature rich. This helps attract customers and increase revenue. The downsides to expansion include an increased cost of development and infrastructure. It also becomes increasingly more complex to manage a larger infrastructure and web app. This would require the company to increase personnel to accommodate the various aspects of the expansion.

- What roles do elasticity and pay-for-service play in decision making for planned future growth?

The serverless architecture makes it easier to decide whether or not to expand. This is because of the various monitoring tools that are provided and the pay-for-service plan. Since the serverless architecture allows for elasticity in growth, the application can scale up or down to meet the immediate demand. This results in cost savings because the company is only charged for the resources that are used. This makes it easier for the company to decide whether or not they should expand. The easier predictability of serverless, along with a flexible pricing model makes it easier for a software development company to expand.