CS 470 Final Reflection
Thomas Brown
16 Dec 2023
https://youtu.be/vH9GsqZWeP0

- **Experiences and Strengths:**
    - This course has broadened by understanding of serverless hosting services. Throughout the course I have gained experience with containerization and making good use of various services offered by vendors. This course helped provide a good foundation for making effective decisions based upon costs and business needs. As a software developer I am now more confident evaluating the strengths and weaknesses of various options for launching an application, and am able to communicate this information to both technical and nontechnical audiences.
- **Planning for Growth:**
    - Throughout the course we utilized Amazon Web Services (AWS). There are multiple microservices that are offered, such as S3 Storage, Lambda, Gateway, and DynamoDB. These microservices are geared towards scalability, allowing for resource demand to be very predictable. This helps when estimating costs and planning ahead. A good example of this is the comparison between DynamoDB and MongoDB. While both are scalable, MongoDB can require exponentially more resources as it increases in size and scope due to how it stores data. DynamoDB has strict limitations, which impacts the querying of data, but ensures that increasing the database has a very predictable resource requirement increase. Serverless hosting has several advantages for scalability over containerization as well. A serverless application creates an instance each time it is called, which takes a fraction of a second. This operation ends typically before the requester gets the information. This allows for any number of requests to be executed at the same time. A server-based application is generally running at all times, and needs to handle requests as they come in. Depending on how it is set up, this may cause resource allocation difficulties as the number of requests increase within a short period of time. This also relates to the elasticity and pay-for-service advantages that a serverless application has. Since a serverless application is only active when required, it meets demand exactly.

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Where a server-based application would require resources and infrastructure in place for that application. This requires more planning to keep up with rising demand, but also results in waste when that demand does not utilize the available resources. There is also a risk of problems when that demand goes above the available resources.