# Exercise 1:

## Performance

* CDN (content delivery network): In systems where data being supplied is static, we can use CDN to provide data to customers at different geographical locations.
* Caching: In cases where we have many read operations in our software systems, we can use caching to cache data that is read often times
* Algorithm optimization: Using algorithms with optimal speed in the application can also improve the application performance speed.
* Serverless architectures: Using serverless architectures like Amazon Lambda that are already optimized can also improve the performance of our applications.
* Autoscaling: Auto scaling the application in times of high performance can greatly increase the performance of an application.

## Scalability

* CDN (content delivery network): Use of CDN also increases scalability in cases where the system is to be used in different geographical areas.
* Autoscaling: Scaling up and down the application as per timely need also improves scalability. Auto scaling can be achieved using many technologies on the market such as Kubernetes.

## Availability

* Load balancing: creating multiple instances of the same application can improve availability in times when one instance is down another instance can handle the requests.
* Deploying the applications in containers and using container orchestration can greatly improve the availability of the application.
* Autoscaling can also improve availability since when one instance is down and we have many request, other instances are brought up to manage the scaling.

## Maintainability

* Keeping the application simple will make the application maintainable.
* Making the application modular also will make the application maintainable.

## Reliability

* Autoscaling can make the application reliable since we can be sure that we will at all times have enough instances to handle our requests.
* Making the application fault tolerant such as using containers and container orchestration to manage the application can make the application reliable.
* Ensuring that the application can recover in the smallest period of time in cases where you have calamities such as having backup datacenters can improve reliability.

# Exercise 2

## Context Diagram

A screenshot of a cell phone

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## container diagram

A close up of a map

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## component diagram

A close up of a map

Description automatically generated

## Sequence Diagram

A screenshot of a social media post

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