Microservices Training Session:

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Assignment 1

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1. What is Microservices?

- ➢ Microservices means Modularized Development, as the name suggests, it is to developing separate "modules" for discreet parts of your application or code.
- ➢ Microservices, also known as Microservice Architecture, is an architectural style that structures an application as a collection of small autonomous services, modelled around a Business Domain.
- ➢ It is a self-contained process which always have different and unique business capabilities and implements as a single Business capability.

2. Challenges with monolithic oriented architecture?

1) **Large & Complex Applications**: If you have a large application or with increase the size of the application it very complex to understand and modify such applications. As a result, development slows down and modularity breaks down over time more ever because it is difficult to understand how to correctly implement a change and due to that the quality of code declines over time.

2) **Slow Development**: As an application and respective teams grows, the application becomes difficult to understand and modify that. So that larger the codebase leads to slower ID, which makes the developers less productive. The Codebase was pretty large and slow developed.

3) **Blocks Continuous Development**: It is blocks continues development it means is an obstacle to frequent deployments. If you want to update one component it needs to establish whole system. As a result, the risk associated with redeployment increases which discourages frequent updates.

4) **Unscalable**: Each copy of application instance will get access to all the data, which makes caching less effective and increase memory consumption along with input/output traffic. Also, different application has different resource requirements one might be CPU-intensive other might be memory intensive. So, for that we cannot scale each component Independence with monolithic architecture.

5) **Unreliable**: In this system has the tightly coupled components so that if one of the components goes down then entire system will fail to run. In that all the modules are running within the same process, a bug in any module can potentially bring down the entire process. For that this system is highly unstable and unreliable.

6) **Inflexible**: It is becoming really difficult to adopt a new Frameworks and languages. In this system, it is extremally expensive in terms of time as well as cost to rewrite the

entire application to use new Framework. As a result, have huge barriers to adopting new technologies.

3. Any three advantage and disadvantage of microservices.

Advantages:

- ✓ **Independent Development**: In the microservice architecture, each service has independent development. So, no other services get affected.
- ✓ **Independent Deployment**: As the service has successful developed the easy to deployed those services because of independent nature.
- ✓ **Fault Isolation**: It is very big advantage of this system because if in one service have bug itself then no need to fixed entire system and our whole system can run with unaffected. So, fault isolation is easy.
- ✓ **Mixed Technology Stack**: It can be works with different technologies as per requirements specified.
- ✓ **Granular Scaling**: Each service can be scale independently.

Disadvantages:

- ❖ **Additional complexity of a distributed system**: Developers must implement an inter-process communication mechanism.
- ❖ **Testing and monitoring can be complex**: Testing isn't straightforward. Each service has its own dependencies, some direct, other transitive, etc.
- ❖ **Poorer Performance**: As microservices need to communicate like network latency, message processing, etc.
- ❖ **Needs more load balancing**: Harder to maintain the network because of less fault tolerance.
- ❖ **Service Discovery**: Features that span multiple services requires a rollout plan based on the dependencies between the services.