IT4090

Cloud Computing Year 4 - Semester 2

Assignment 1

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1. Monolithic architecture is the traditional structure for software applications. As an all-in-one architecture, it operates all software aspects in one single unit. Easiness of testing, debugging, deploying, and developing are some of the advantages while difficulty in scaling or changing, complicated code, and demand to integrate with new technology are the disadvantages of monolithic architecture[1]. In monolithic architecture program's components are tightly coupled [2].

2. Scaling is one of the challenging issues of monolithic architecture. Since the design consists of a single structure, it is impossible to scale only one segment. So any changes must involve the entire architecture. But it is very difficult and takes considerable time to scale the entire application [3].

3. Microservices architecture is also an organizational approach for software development with loosely coupled components. Here the software application will be developed as a collection of services than as a single unit. Development, deployment, and maintenance are done independently as individual units in Microservices architecture. Those features are capable to address the crucial problem of monolithic architecture mentioned above. Because of containing independent services, when scaling is involved it is easy to scale/change individual units/services than scaling the entire application. It is also time and cost-effective [3].

4. **Serverless Model** - Serverless model is an application delivery model, in which the cloud provides developers to only build and run applications while the cloud provider handles managing, maintaining, provisioning, and scaling up and down automatically as needed [4].

FaaS - FaaS is one of the cloud computing services as well as a subset of serverless. It focuses on event-driven triggers where code runs in response to events or requests. It only needs the code and not infrastructures and users have to pay when only the resources are used [5]. IBM Cloud Functions, Amazon's AWS Lambda, and OpenFaaS (open source) are a few examples of FaaS services.

How FaaS Works - Microservices only can perform one action in response to an event. Therefore the server only starts when a function is generated in FaaS. After executing it, the server will automatically shut down. The strength of FaaS will be maximum when each function only performs one activity. If using too many libraries or requesting one function to call another will cause poor performance of the program [6], [7].

5. No, Do not agree with the statement.

Both Monolith and Microservices architecture have different drawbacks as well as benefits. When there is an issue with Monolith architecture, there is a solution for that issue in Microservices architecture, and vice versa. In some scenarios, Microservices architecture is the best selection sometimes Monolith architecture is the structure to be selected. It depends on the requirements, structure, and purpose of the software application that is planning to build using one of these architectures. Although the Microservices architecture is easy to use with new technologies, Monolith architecture is also best for some time.

In summary, it is difficult to state that the Monolith architecture is never to be used and Microservices is always better to use.

References

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