Microservice Assignment 1

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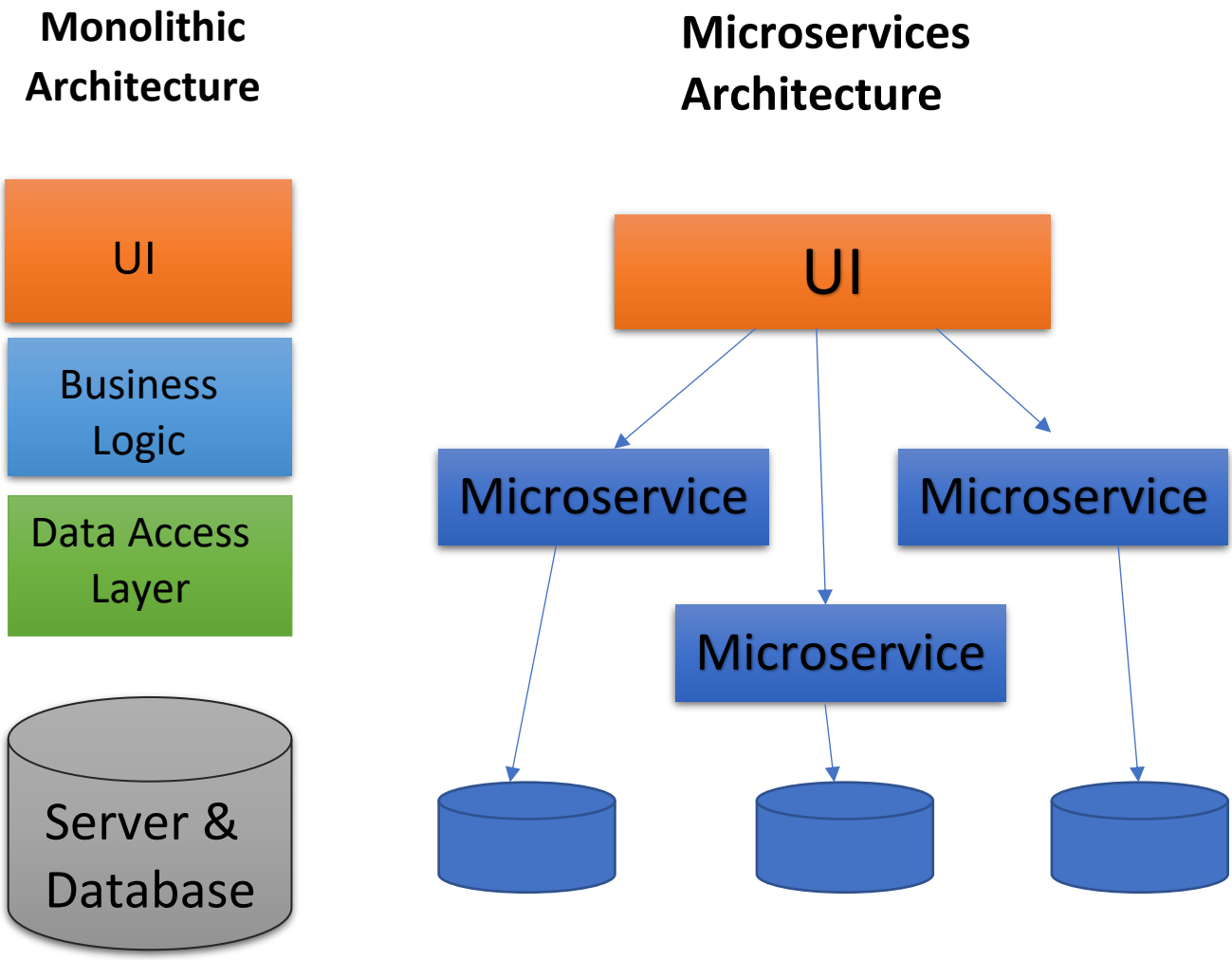
Q1: What are microservices?

Ans: Microservices are nothing but an architectural pattern in which we break down or split the whole monolithic application into some small-small individual code which are independent and have their own servers and can communicate with each-other with API calls. This gives developer independence to work on their separate environment which being worry of others environment because each microservice is independent.



Q1: Challenges with monolithic oriented architecture?

Ans: Below is the list and brief explanation of every challenges faced during monolithic architecture-

1. **Difficult to deploy big application:** It is so much difficult to deploy a hug web application whenever new changes come because we have to build whole application test a whole application and then deploy a whole application so this will increase timespan of maintenance.

2. **Scalability:** It create scalability problem because whenever the huge traffic come like in seasonal time then we have to occupy more servers and deploy the duplicate copy of our application into those servers that will create redundancy.

3. **Reliability:** Major problem is reliability. A simple bug or error in one module can bring down the entire application because all the modules are dependent on each other so this bug will impact whole application.

4. **Complex Code:** When we create a monolithic application, this will lead us to complex and unreadable code which have all the code inside one giant application and cannot be understand easily. This will also lead time consuming process of solving the bugs or adding new feature.

5. **New release takes months:** As it is monolithic architecture that's why it will take time to add features because we have to first add that feature and have to test the whole application in order to detect if any error or bug occurs. This process takes a while like weeks or months.

Q3: Any three advantage and disadvantage of microservices.

Ans: Below is the list and brief explanation of every advantages and drawback of microservice architecture-

Advantages:

1. **Deployment Flexibility:** This will reduce the complexity of code and make deployment so easy and fast because when we add or fix bugs then we have to only test that microservices not others then this will decrease the deployment time and make it efficient.

2. **Technology Flexibility:** If our application is distributed then we can use separate technology for each microservices rather than using same. For example, we can use multiple databases for individual services and can user multiple front-end technology for each microservices.

3. **Easily Scalable:** As we know in this architecture, we make separate independent microservices and they are light in size so this will increase the efficiency of scalability because whenever the huge traffic comes, we can scale separate microservices instead of whole monolithic application.

Disadvantages:

1. **Deployment Complexity:** When we were using monolithic architecture then we only have to deploy one application but, in this approach, we have to take care of all the microservices that are being used and have to deploy on specifics servers and have separate configuration, so this makes deployment complex.

2. **Service Discovery:** When we're using monolithic architecture, it was obvious that how services call each other, but in microservices how did the services know which REST API endpoint to call and which environment, did we have to hardcode those URL or we have process around service discovery.

3. **Distributed Transaction**: Microservices has the partitioned database architecture. Business transactions that update multiple business entities in a microservices-based application need to update multiple databases owned by different services. And this will end up having to use an eventual consistency-based approach, which is more challenging for developers.