HW#6

1 – What is the difference between manual testing and automated testing ?

The biggest difference is manual testing is done by human, automated testing is done by tools and scripts.

Reliability of manual testing is less than automated testing because manual testing is done by human and there may be more mistakes in manual testing.

Automated testing is more expensive than manual testing.

Manual testing is time consuming and less efficient than automated testing.

With manual testing, it is more difficult to provide sufficient test coverage.

2 – What does Assert class ?

Assert class in JUnit is used to test various conditions withing unit tests. Assert class does testing with Assert methods.

There are 2 types of Assertions in tests : Hard Assertions and Soft Assertions.

In Hard Assertions, If an assert statement fails, throws an AssertException then aborts the execution.

In Soft Assertions, when even an assert statement fails,the execution continues.

3 - How can be tested 'private' methods ?

In common, private methods should not test, but if you want testing there are some ways to use.

- You can make method public and use @VisibleForTesting annotation, also this annotation is used with protected methods.
- You can make package of method private and put tests in this package.
- You can put private methods statements into a public class.
- We can use ReflectionTestUtils for testing private methods.

4 – What is Monolithic Architecture ?

In this Architecture, all application pieces develop and present at same place, basically. The application is affected when you want to make any change. So, all system acts together.

5 - What are the best practices to write a Unit Test Case ?

-Naming unit tests is important. For example : Name of Unit test class should end with “Should”.

-Test method should have these parts : Arrange, Act, Assert.

-Only one Assert should be in a unit test.

-Test all scenarios.

-Avoid dependencies.

-Be short and basic.

-Be careful for speed and security.

-Collect all tests in a folder.

-Use CI.

6 - Why does JUnit only report the first failure in a single test ?

JUnit is designed for small tests. JUnit executes each test withing a separate instance of the test class and it reports failure on each test.

Also if there are multiple failures in a single test, this test is too big for unit test.

7 - What are the benefits and drawbacks of Microservices ?

Benefits :

Development is faster, maintenance and management is easier.

Each microservice can deploy by itself.

Able to use database for every service.

Able to use any framework or language for services.

When any service has problem, other services don't effect.

Drawbacks :

Microservice system is a distributed system, each database and service need different configurations.

Testing is more difficult.

Communication in services can be complex.

8 - What is the role of actuator in spring boot ?

Actuator provides to take informations about project health, beans, traffic etc. HTTP Endpoints are used to take these informations.

9 - What are the challenges that one has to face while using Microservices ?

-Design : if you use microservices for the first time, determine these might be difficult:

--Size of each microservices

--Connection between microservices

--Framework to integrate services.

-Security : System security and also security of communication of services with each other have to consider.

-Testing : Have to test each services independently.

10 - How independent microservices communicate with each other?

2 types of communication : Synchronous Communication and Asynchoronous Communication.

Synchronous Communication / Request Driven Communication : Services communicate with each other with http requests. When it's needed, a service sends a request to another service, if it!s necessary waits for response or without waiting continues.

Asynchoronous Communication / Event Based Structure : Communication of services starts with throwing event. In this structure, it is used to PUB/SUB model. Producers publish an event and the event is taken by Consumer which subscribe to Producer.

11 - What do you mean by Domain driven design ?

DDD is not a certain method or technology. DDD is an approach which try to make solutions for basic problems when occur in phase developing or providing continuity of complex software systems.

12 – What is container in Microservices ?

Container has logic of Microservices work. So each microservice is held and deploy as container image. Container holds Config, Policy, Security and datas.

13 - What are the main components of Microservices architecture ?

-Microservices

-Containers

- Service mesh / communication

- Service discovery

- API gateway

14 - How does a Microservice architecture work?

It is actually like single responsibility principle. For example you have a application which has different modules and this application is complex. With microservice architecture, divide application into services. Each service is independent and when something happening in a service, other services don't effect.