**Written Questionnaire**

1. **Explaining what is design pattern and how we can use design patterns in projects.**

A software or application can be designed using a design pattern. Each design pattern describes a solution to a specific problem or collection of related problems. Therefore, these design patterns aid in understanding those issues and providing appropriate solutions .A general, repeatable solution to a software design issue that frequently crops up. And design-level remedies for recurrent issues that software engineers frequently run with. OOP languages like java frequently use and generate design patterns. A pattern in object-oriented programming can describe specific objects and object classes to be utilized, along with their properties and dependencies, and it can also describe the overall strategy to solving the problem.

The underlying principle underpinning object-oriented systems is made more flexible, elegant, and reusable by these patterns, which also tackle some specific design issues. Classes and objects that have been modified to address a specific context-specific design issue. A design pattern therefore essentially consists of a problem, a solution, and a future consequence. Creating appropriate objects and figuring out the object level are two techniques.

1. **What is DTO and explain the use of it.**

The design pattern known as DTO, or Data Transfer Object, was created to lessen the number of calls when working with remote interfaces. A DTO is an object that transfers data between processes. The adoption of a design pattern, and the exchange of data between software application subsystems. To retrieve data from a database, DTOs and data access objects are frequently used together.

A DTO will write each one from scratch while minimizing boilerplate.

Simple to produce DTOs shouldn't be so difficult to write because of their complexity. Anyone should be able to parse the code if it is readable.

1. **How are you going to store secrets in an application without exposing it to the internet?**

In a google drive or cloud

1. **What is JWT and how does it work?**

An open standard called JSON Web Token (JWT) outlines a condensed and independent method for securely transferring data between parties as a JSON object. The fact that this information is digitally signed allows for verification and confidence. JWTs can be signed with either a public/private key pair or a secret using the HMAC technique. A cryptographic procedure is used to sign JWTs to ensure that the claims cannot be changed after the token is issued.

Three sections of a string called a JWT are separated by dots (.) and serialized with base64. Compact serialization is the most popular serialization format.here, Receive two JSON strings after decoding. The header and the payload And the signature.

The kind of token is contained in the JSON Object Signing and Encryption header. The assertions are in the payload. To keep the JWT small, this is shown as a JSON string that typically only has a dozen fields. The server often uses this data to confirm that the user has authorization to carry out the action they are seeking.

The token can't have been changed, thanks to the signature. With a secret that is known to both the issuer and the receiver, or with a private key that is known only to the sender, the party that creates the JWT signs the header and payload. The receiving party checks that the header and payload match the signature before using the token.

1. **What is the difference between SQL and NoSQL databases?**

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| **SQL** | **NoSQL** |
| relational | non-relational |
| utilize a predetermined schema and structured query language | for unstructured data, dynamic schemas are needed |
| vertically scalable | horizontally scalable |
| table-based | Wide-column, document, key-value, or graph storage |
| better for transactions with several rows | for unstructured data like papers or JSON, is superior |

1. **Suggest a good state management for frontend application and explain why you recommend it.**