Surge Internship - Practical Test (Answers)

1. Explain OOP Concepts with real-world examples

OOP is a programming concept that based on objects. There are 4 main OOP concept.

1. Inheritance
2. Encapsulation
3. Polymorphism
4. Abstraction

Inheritance

Inheritance means it allowing the child to inherit common properties from the parent. In programming inheritance is the procedure in which one class inherits the attributes and methods of another class.

When we consider about vehicles, there are different kind of vehicles and they all are not same. But we can get bike car and bus as examples of vehicles, all three vehicles have an engine, tyers, head lights and break lights which inherited from the parent vehicle class.

Encapsulation

In programming Encapsulation bind or cover all the variables and methods together into one unit. So that user cannot access the all the variables and methods directly in an object

When we consider about a multivitamin capsule, there are different kind vitamins which covered using a capsule. Then we cannot directly access each vitamin.

Polymorphism

Polymorphism is a situation that something occurs in several different types. In programming we can access objects of different types through the same interface.

When we consider about a person, he can be a son, father, uncle, son in law or grandfather. This what we called as polymorphism.

Abstraction

Abstraction is a concept of showing only essential things and hide the unnecessary things.
In programming abstraction is a process of reducing the object to its essence so that only the necessary characteristics are exposed to the user.

When we consider about an ATM machine, we can withdraw money, deposit money, check the balance, transfer the money and so on. Even though it performs lot of actions it doesn't show us the process. It has hidden its process by showing only the main things.

2. What is the SDLC model and explain the various segments of it?

SDLC known as Software Development Life Cycle model is a conceptual describing all activities in a software development project. This process has several models, and each include various tasks and activities. There are different SDLC models such as waterfall mode, iterative, spial, agile and so on. In SDLC there 8 main phases include in every SDLC models. They are,

a. Planning
b. Analysis
c. design
d. Development
e. Testing
f. Implementation
g. Maintenance

Planning – in the planning phase develop the project plan including identifies, prioritize and assigns the tasks and resources which required to develop the project. In planning phase mainly focusing in identification of the system of the development, feasibility studies and creation of project plan.

Analysis – in this phase take place the analysis of business requirement. Identify the main functions that main business goals identified in business requirement gathering. In this phase development team detailed analysis report

design - in design phase we describe the main functions and special features of the system. Development team should maintain several documents such as business rules, screen layouts and so on. Designing the infrastructure and designing the system model are the main activities in this phase.

Development – in this phase we convert the system design into a working information system with all documented system requirement. Developers will follow any coding guidelines as defined by the organization and utilize different tools such as compliers, debuggers, and interpreters.

Testing – in testing phase make sure that there aren't any bugs and failures. During this phase developers follow many testing methods such as integration testing, system testing, acceptance testing to identify the bugs and errors.

Implementation – in this phase different modules or designs will be integrated into the primary source code such as user notification etc. Installation of hardware, installing of software into production computers are the main activities in this phase

Maintenance - after the full operation of the system. There some activities to done according to customer requests. Software upgrades, repairs and fixes of the system if it breaks and main activities in this phase.

2. What is Docker / Kubernetes and what is the use of it?

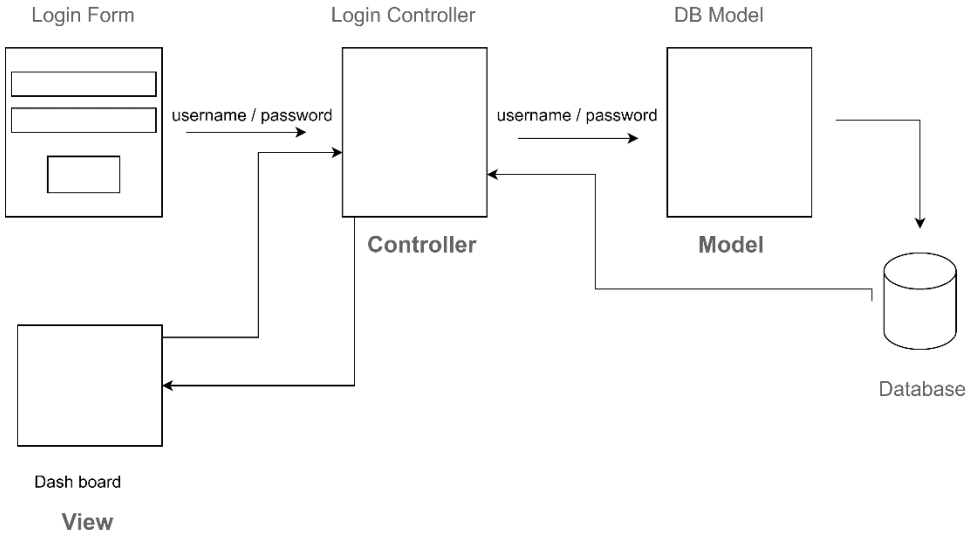
Docker is an open platform for developing, shipping, and running application. Docker enables enable to separate applications from the infrastructure so that we can deliver software quickly.

Docker mainly used to simply the configuration, code the pipeline management, server consolidation and so on.

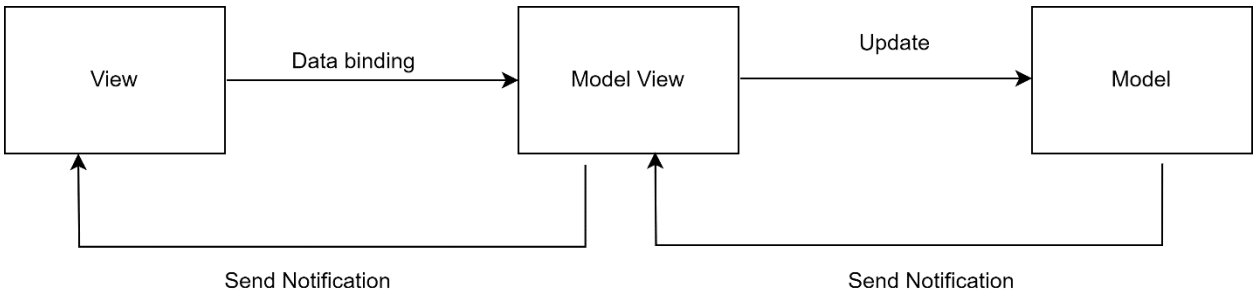
Kubernetes is an open-source container for automating software deployment, scaling and management. Kubernetes smoothens the container tasks.

3. Explain the MVC and MVVC architecture with a diagram

MVC Architecture



MVVM architecture



4. What is a Data flow diagram?

Data flow diagram is a diagram representing a flow of data through a system. It provides information about the outputs and inputs of each entity and the process.