

## **ALX - 0x09. Web Infrastructure Design**

### **Task 0: Simple web stack**

**What is a server;** A server is a system, virtual machine, or software that provides services and functionality to other devices or programs, known as "clients."

**What is the role of a domain name;** A domain name serves as a user-friendly label to identify resources on the Internet, such as computers, networks, and services. Instead of numerical IP addresses, it makes it easier for people to remember and access websites.

**What type of DNS record is "www" in www.foobar.com;** The "www" in www.foobar.com is a 'CNAME' (Canonical Name) record.

**What is the role of the Web Server;** The Web Server's role is to store, process, and serve website content, including codebases, web pages (HTML/CSS), and other files, to users over the HTTP protocol.

**What is the role of the application server;** The application server generates dynamic content by executing server-side code, such as JSP, Ajax, PHP, etc., and handles business logic and interactions with databases.

**What is the role of the database;** Database role is to efficiently and systematically manage data in a well-organized manner. It allows for easy addition, access, updating, management, and deletion of data.

**What is the server using to communicate with the user requesting the website;** The server communicates with the user's computer through the HTTP protocol.

### **Issues:**

**A. SPOF (Single Point of Failure);** A single point of failure is a vulnerable component of a system that, if it fails, can cause the entire system to stop functioning. Examples include having a single server that houses the web, application, and database, making the system more susceptible to failure.

**B. Downtime when maintenance is needed (like deploying new code, web server restarts);** During maintenance or updates, the downtime period might be more extended than expected, primarily if the server relies on a single code base that becomes unavailable. This results in a negative user experience and loss of traffic.

**C. Cannot scale with too much incoming traffic;** Without a load balancer, the domain name points directly to a single server, making it challenging to handle increased traffic efficiently. This can lead to poor user experience and limit the website's ability to accommodate more users.

