

ALX PROJECT: Web Infrastructure Design

Task 0.

1. What is a server?

A server is a computer that manages network resources and provides services to other computers, known as clients, in the same network. Servers handle specific tasks such as storing and managing data, running applications, or facilitating communication between different devices.

2. What is the role of a domain name?

A domain name serves as a user-friendly alias for the numeric IP addresses associated with computers or servers on the Internet, making it easier for users to access websites and online resources.

3. What type of DNS record is "www" in "www.foobar.com"?

It is a 'cname' record.

4. What is the role of the Web Server?

The primary function of a web server is to handle and respond to incoming requests from clients, typically web browsers, by serving web pages, which are usually HTML and CSS, over the HTTP protocol.

5. 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. It manages the business logic, application processes, and communication between the user interface and backend databases or services in web applications.

6. What is the role of the database?

A database stores, organizes, and manages data in a structured manner, serving as a central repository that applications can easily access, manipulate, and retrieve data from.

7. How does the server communicate with the user's computer requesting the website?

The server communicates with the user's computer through the HTTP protocol.

Issues:

A. Single Point of Failure (SPOF) occurs when a system relies on a singular element, such as a lone server integrating multiple roles like web server, application server, and database. If this component fails, it can disrupt the entire system's functionality.

B. Maintenance requirements, like deploying new code needing a web server restart, may result in extended downtime beyond estimates. This occurs when the server relies on a single code base temporarily inaccessible during maintenance, leading to user inability to access the website and content, causing a suboptimal experience and potential traffic loss.

C. Scalability challenges arise during high traffic influx. Directly pointing the domain name to the server without a load balancer makes it difficult to manage increased loads efficiently, potentially resulting in a poor user experience and limiting the website's effective user accommodation.