

## Web Infrastructure Design

### Task 0: Definitions and Explanations

1. What is a server? A server is like a central hub that provides services to other devices or programs, known as "clients".
2. What is the role of a domain name? A domain name is like an easy-to-remember label that identifies resources on the internet, such as computers, networks, or services, using text instead of IP addresses).
3. What type of DNS record is "www" in www.foobar.com? It's called a "cname".
4. What is the role of the Web Server? A Web Server stores, processes, and displays website content and delivers web pages to users using the HTTP protocol.
5. What is the role of the application server? An application server generates dynamic content by running server-side code like Ajax or PHP.
6. What is the role of the database? The database organizes and manages data efficiently, allowing easy addition, access, update, and data deletion.
7. What does the server use to communicate with the user's computer when they request the website? The server communicates using the HTTP protocol.

#### Issues:

- A. Single Point of Failure (SPOF): Having only one server containing all components (web server, application server, database) creates vulnerabilities. If this server fails, the entire system fails.
- B. Downtime during maintenance: When maintenance is required , the website may experience downtime because it's reliant on a single code base. Users won't be access the website during this period, leading to a poor user experience and loss traffic.
- C. Scalability issues with high traffic: Directly pointing the domain name to the server without a load balancer makes it difficult to handle increased loads. This can result in poor user experience or limit the number of users the website can accommodate.