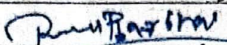


**Surprise Test**  
**VII SEMESTER (CSE Core, CSE AI)**  
**Cloud Computing (CSE\_4063)**

Max Marks: 5

Duration: 15 minutes

Student Name	Reg No	Section	Semester
Rutvik Avinash Barbhui	225805222	CSE A	VII
Student Signature: 			

1. A popular online learning platform notices that its servers slow down whenever thousands of students attempt to watch live classes simultaneously.

The technical team is considering two strategies:

**Option A:** Upgrade the current server by increasing its memory and CPU capacity.

**Option B:** Add multiple servers with the same configuration and place them behind a load balancer to handle incoming requests.

**Question:**

Identify which option improves performance by enhancing the power of a single machine, and which option improves performance by adding more machines to share the workload.

If the platform expects unpredictable, globally distributed traffic surges during exams, which option would be more reliable, and why?

**Ans:**

For a platform that expects unpredictable, global distributed traffic surges during exam option B: (~~Horizontal~~ scaling) would be significantly more reliable and effective

Elasticity and scalability: The primary advantage of horizontal scaling is its ability to flexibly adapt to varying demand. During a sudden, massive surge in exam traffic, the platform can automatically add new servers to the network to handle the increased load. Once the surge subsides, these servers can be taken offline to save costs. This "elasticity" is a crucial for managing unpredictable events. In contrast vertical scaling is limited by physical constraints of a single machine. Once a server is upgraded to its maximum capacity, it cannot handle any further increase in traffic.

Redundancy and fault tolerance: Horizontal scaling creates a resilient system that with no single point of failure. If one server malfunctions, the load balancer can instantly detect the failure and



reroute all incoming requests to the healthy servers. This ensures that the platform remains operational for students, with vertical scaling the failure of single, powerful server would lead to a complete outage, disrupting the exams for all students simultaneously.

Global Performance: Distributing servers geographically is a key benefit of horizontal scaling. Placing servers in different regions, closer to students around the world, reduces latency and improves the user experience. A single powerful server, server as in opt A, would always be physically far from some users, leading to slower response times and potential lags during live classes. This distributed architecture is ideal for a global learning platform.

(5/5)

4/9/21