

## Week 7 – 10

1. When do you think is proper to apply index?
2. What are the three approaches that combine SQL with procedural languages?
3. What are the pros and cons for using triggers?
4. Please draw 3-tier system architecture. And explain what each tier is used for.
5. What are the drawbacks for client-server architecture and how could you improve it?
6. Why web applications are so popular these days? List three reasons.
7. What are the differences between static and dynamic web pages? Which one involves data retrieval?
8. What are distributed databases? And under what conditions would you recommend distributed databases rather than centralized databases and vice versus?
9. What are the two properties we want to ensure for distributed databases?
10. What are the three recipes for distributed databases? Which one would you recommend and why?
11. For a replicated distributed database, what update plan would you choose and why?
12. If consistency is your first priority, which database configuration would you choose and why?
13. If both reliability and data consistency are your big concerns, which database configuration would you choose and why?
14. What properties do we want to ensure for a transaction?
15. Could you give me an example to explain the lost updates problems in concurrent transactions?
16. Could you give me an example to explain the uncommitted data problems in concurrent transactions?
17. Could you give me an example to explain the inconsistent retrievals problems in concurrent transactions?
18. How could you solve the concurrent transactions above?
19. What are two types of locks?
20. As a DBA, how could you improve the performance of database?

21. What are the differences between memory and disk?
22. What are these three steps to do query processing?
23. What are the two manager tools for concurrency control?
24. What are the four object statuses in buffer pool?
25. What are the five approaches to secure data in organizations?
26. What is DAC and what are the types of DAC?
27. What is an onsite offline physical full backup? And what are the cons for using it?
28. What is SQL injection and how could you prevent it?
29. What are the four recipes for NoSQL databases and how could you choose one over the other?
30. What is CAP theorem?
31. What does BASE mean?