TASK LIST – DATABASE ARCHITECT
(CLASS CODE 1470)

1. Designs databases at physical and logical levels by utilizing Entity Relationship Diagram and data dictionary in order to meet application requirements using database modeling tools such as Erwin or Toad.

2. Recommends to users as to which designed database structures need to be normalized in order to meet application requirements and utilize the appropriate database platform.

3. Evaluates the potential impact of proposed database structure on database performance by determining and evaluating performance factors such as response time and issues of integrity in order to ensure the database performs efficiently.

4. Monitors the performance of databases by analyzing performance data, evaluating complaints from users, and analyzing control information and records in order to ensure proper database functionality.

5. Recommends changes to a new or existing database based on an evaluation of factors such as user needs, performance data, technical capabilities of the hardware, and logical abilities of the software available in order to improve batch and online processing performance.

6. Implements changes to databases by tuning or redesigning the database, or recommending modifications to the application in order to improve batch and on-line processing performance.

7. Develops and documents physical structures such as data access, search, and ordering strategies by evaluating factors such as the needs of users and the access requirements in order to improve or maintain the database.

8. Determines feasibility of general design for databases based on user requirements, system capabilities, and resource and technical availability of the application in order to create a robust database system with high availability and high responsiveness.

9. Develops and implements standards and procedures for databases such as number of calls, naming conventions, programming standards, and response time, based on performance considerations, compliance to organizational standards, and programming requirements in order to create and maintain an optimal operating environment.

10. Provides assistance to the database development team by explaining the structure of databases such as access paths, control blocks, transactional processing, and answering other relevant questions in order to ensure the efficient coding of the database applications.

11. Defines and organizes the database by minimizing duplicate data, meeting user performance requirements, enhancing data sharing capabilities, and providing for data security and integrity in order to create a secure and functional database.

12. Develops standards and procedures for the testing of new databases by providing technical support such as developing utilities, maintaining systems configurations, and creating multiple test data environments, in order to prevent unauthorized access and damage to the operational databases.

13. Recommends the appropriate computer specifications such as processing power, storage, and memory by evaluating the data processing hardware as it relates to the performance objectives of the database and the current computer configurations in order to ensure the user can efficiently maintain and operate the database.

14. Develops and implements methods and procedures for the loading of the physical database by recognizing existing data formats, knowing where to capture the data, and/or by writing programs to restructure the data in order to transform data from one database to another.

15. Develops and implements methods and procedures for the reorganizing of physical databases by monitoring the frequency of the use of the database, size of the database, and activity related to the database in order to optimize the performance of the database.

16. Develops and implements procedures for the backup and recovery of databases by evaluating business objectives/goals and system requirements in order to ensure no data is lost.

17. Collaborates with Systems staff assisting in database functions in order to comply with database standards, maximize security and availability, minimize errors, provide for efficient data access, and maintain data integrity.

18. Reads technical information material such as new product announcements, trade journals, and industry news, and attends seminars and training sessions in order to stay informed of developments in the information systems profession.

19. Document standards and procedures to be used in databases such as database configurations, database naming standards, password policies, and backup/recovery procedures in order to maintain a consistent use and shared understanding of the databases.

20. Manages integrated conceptual model of City data resources, including identifying database integration opportunities, and providing the technology to retrieve data from multiple sources in order to maximize the efficiency of the City's database systems.

21. Maintains the metadata repository by versioning in order to keep track of changes.

22. Installs and configures database software and related administration tools and utilities including tuning and optimizing database/system parameters using Erwin or Toad software in order to maintain the database.

23. Develops, implements, and maintains policies and procedures for database change management in order to maintain change control.

24. Develops, implements, and maintains database standards for installation, patches, upgrades, and security in order to ensure consistency across the database to ease the support and keep software and security updated.

25. Develops, implements, and maintains policies and procedures for data security by adopting best practices within the industry in order to meet business and system requirements, and ensure compliance with legal mandates.

26. Develops, implements, and maintains production scripts at the operating system level and database server level for database-related tasks in order to automate the database task.

27. Tunes and optimizes SQL statements by examining the SQL advisor report for errors in order to make the necessary changes and ensure SQL statements run properly.

28. Ensures data privacy by encrypting data that is at rest and in transit in order to maintain database security and compliance with legal mandates such as SB1386 and data privacy acts.

29. Designs, builds, operationalizes, secures, and monitors data pipelines by using Visual Studio Code, Google SDK for Python, Google Cloud Run with Docker Image, data encryption at rest and in transit, and Google Monitoring & Log Explorer in order to collect structure data from database sources such as Oracle, SQL Server, PostgreSQL, and MySQL; semi-structure data from API data sources such as Geohub, OpenData, 311; and structure and semi-structure data from flat files such as csv and paraquet in order to consolidate into a single warehouse on the Google Cloud Platform.