Genesis Grant

CTEC 324

Project 1

In this project, I will review three job listings for Database Development positions, highlighting key details like job titles, descriptions, qualifications, and benefits, etc. Also, I will provides a set of common interview questions and answers for both Entry-Level and PL/SQL Database Developer roles, giving insight into what candidates might encounter. Overall, this document serves as a helpful guide for understanding job expectations and preparing for interviews in database development.

**Review 3 Database Developer Job Announcements:**

1. Title: Entry Level Developer/Coder/Programmer/Data Scientist/Analyst/Engineer
   1. This job posting from SynergisticIT looks for candidates in different technical specifications (Data Science, ML, Analyst, Programmer, etc.). This job calls for individuals who are recent grads/ have a bachelor’s degree or higher, want to switch careers paths and get into IT or even those who have a career gap.
   2. For certain positions they hope to find candidates who have skills, qualifications and/or experience in NLP, text mining, Tableau, TensorFlow. There is no security clearance requirement. There is more emphasis on being a self-motivated learner, having experience with data science topics and quality reading, writing and communication skills.
   3. This job is located in Arlington VA with SynergisticIT, who focuses on software solutions and topics within the IT community. It requires employees to work in person and the job description does not disclose salary or other benefits.
2. Title: Entry Level Applications Developer
   1. This job posting from AMG Technology looks for candidates who desire working with databases for the entirety of the job including tasks such as developing ETL processes, creating custom dashboards, code reviews, etc. Applicants should have an understanding of basic coding principles in C++, Java, etc. and basic database development tools and scripting tools.
   2. The ideal candidate would have 3+ years of experience but the application is still open to entry level developers. Typically, they require a bachelor’s degree or equivalent experience; there is no required certifications.
   3. The job is located in New Jersey and does not specify salary, and in person, hybrid or virtual preference for working.
3. Title: Database Developer/ Administrator
   1. This job posting from Aretec looks for candidates with experience in database development and administration, focusing on tasks like optimizing database configuration, linking multiple instances, performing data backups, developing ETL processes, and creating custom web-based dashboards with automation capabilities.
   2. The ideal candidate has at least 3+ years of related experience, is a U.S. citizen with an active DoD TS/SCI clearance, and holds a current DoD 8570 IAT Level II certification, such as Security+CE, CCNA Security, or equivalent.
   3. The job location is not specified, and there is no information provided about salary or work preferences (in-person, hybrid, or virtual), but they are headquartered in Fairfax VA. Aretec focuses on technology solutions company specializing in data analytics, cybersecurity, and IT services for government and commercial clients.

**Entry Level Database Developer Interview Questions:**

1. Q: What is the ER Diagram, and what are its Components?
   1. An ER Diagram (Entity-Relationship Diagram) is a framework used to explain the relationships and logic between related data in a database. It helps identify the entities that should be represented in the database and shows how those entities are connected. The main components of an ER Diagram include entities (objects or things), relationships (how entities are linked), and attributes (properties of entities).
2. Q: What is Database Normalization?
   1. Database normalization is the process of dividing large tables into smaller, manageable ones and linking them using relationships. This process will help reduce redundancy and improve data integrity. The goal is to ensure that each piece of data is stored in only one place, which makes the database more efficient and easier to maintain.
3. Q: Explain Normal Forms pertaining to Normalization?
   1. Normalization typically follows a set of rules called "normal forms" to achieve this structure. This includes following the rules of the 3 (sometimes 4) of Normal Form: 1NF be sure to eliminate duplicate entries and ensure unique rows, 2NF will ensure all non-key attributes are fully dependent on the primary key and 3NF will ensure no non-key attribute depends on another non-key attribute.
4. Q: What is DBMS and RDBMS?
   1. DBMS stands for Database Management System and describes a platform that is used to manage, manipulate, store and retrieve data. A DBMS will have basic features while a Relational Database Management System (RDBMS) is a step higher and allows users to represent relating data through keys and other restraints. It will utilize SQL and PL/SQL.
5. Q: How do you stay updated with the latest SQL practices?
   1. I follow relevant pages on social media looking for more trusting sources as well as participate in relevant activities and projects.

**PL/SQL Database Developer Interview Questions:**

1. Q: What is PL/SQL?
   1. PL/SQL stands for Procedural Language/ Structured Query Language. It is the language used in database software such as MySQL, MS Access, Oracle, etc. to work with data.
2. Q: What is the difference between SQL and PL/SQL?
   1. SQL is a basic version of PL/SQL. SQL allows database developers to interact with and manipulate data in a straightforward way, like modifying, inserting, and updating records, while PL/SQL takes it a step further by adding things like loops and variables to make more complex tasks easier to manage.
3. Q: What are Attribute Constraints?
   1. They are rules or restrictions applied to the attributes. When managing data you want to be sure that you have consistent and accurate information. Constraints define what kind of data can be stored in a column, how it can be modified, and if any specific conditions must be met. You don’t want missing values or duplicate data or inconsistent entries/data types. Using these restrictions allows users to enforce specific arguments like not null or default, the former making sure a column cannot have a NULL column and the latter ensuring a default value if there is no data there.
4. Q: What is the difference between primary key and foreign key?
   1. A primary key is an unique ID for each row in a table, making sure no two rows have the same value in that column. It can’t be empty, so every record has a clear identifier. A foreign key is a column in one table that links to the primary key of another table, helping to connect the data between them. It allows us to keep the relationship between tables intact, but it can have repeated values.
5. What is the structure of PL/SQL code blocks?
   1. A basic PL/SQL code block will have a declaration / declare section where the user will declare the variables and data types, that’s used throughout the block. Next will contain the BEGIN script which will begin the main code block. Here you will input what you want the DBMS to query or do. And END; / will execute the code.

**References:**

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