Data Management and Engineering Tasks and KSAs

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Tasks SPECIFIC THINGS an entry level person would BE EXPECTED TO PERFORM on the job WITH LITTLE SUPERVISION.		
Monitor, Install, Configure, Maintain		
T-1	Support maintenance of database management systems software.	2.9
T-2	Assist with monitoring and maintaining databases to ensure optimal performance.	3.4
T-3	Monitor and report the usage of knowledge management assets and resources.	2.9
T-4	Support the installation and configuration of database management systems and software.	3.0
T-5	Access database performance.	3.2
T-6	Modify software programs to improve performance.	2.7
T-7	Implement security measures for computer or information systems.	3.1
T-8	Create databases to store electronic data.	3.6
T-9	Make and test modifications to database structure when needed.	3.3
T-10	Merge old databases into new ones.	3.1
Support Database Operations		
T-11	Assist with constructing access paths to suites of information (e.g., link pages) to facilitate access by end-users.	3.1
T-12	Support directory replication services that enable information to replicate automatically from rear servers to forward units via optimized routing.	2.6
T-13	Support information exchanges through publish, subscribe, and alert functions that enable users to send and receive critical information as required.	2.8
T-14	Support the management of compilation, cataloging, caching, distribution, and retrieval of data.	3.2
T-15	Perform backup and recovery of databases to ensure data integrity.	3.4
T-16	Support configuration management, problem management, capacity management, and financial management for databases and data management systems.	2.7
T-17	Support incident management, service-level management, change management, release management, continuity management, and availability management for databases and data management systems.	3.1
T-18	Assist in managing the indexing/cataloging, storage, and access of explicit organizational knowledge (e.g., hard copy documents, digital files).	2.7
T-19	Assist in data mining and data warehousing applications.	3.0
T-20	Update computer database information.	3.3
T-21	Write computer programming code (e.g., Python and R).	3.2
T-22	Support efforts for data consistency and integration including deduplication, standardization, combining records, and database comparison.	3.0
Research/Analysis and Recommendations		
T-23	Assist with analysis and plans for anticipated changes in data capacity requirements.	2.6
T-24	Assist with developing an understanding of the needs and requirements of information for end-users.	3.5
T-25	Provide recommendations on data structures and databases that ensure correct and quality production of reports/management information.	3.1
T-26	Provide assistance in the identification of recommendations on new database technologies and architectures.	2.5
T-27	Analyze data to identify trends or relationships among variables.	3.2
Administration		
T-28	Follow data management standards, requirements, and specifications.	3.1
T-29	Develop database parameters or specifications.	3.1
T-30	Provide input for development of guidelines for system implementation.	2.4

Knowledge Knowledge focuses on the understanding of concepts. It is theoretical. An individual may have an understanding of a topic or tool or some textbook knowledge of it but have no experience applying it. For example, someone might have read hundreds of articles on health and nutrition, many of them in scientific journals, but that doesn't make that person qualified to dispense advice on nutrition.		
K-1	Knowledge of computer networking concepts and protocols, and network security methodologies.	3.4
K-2	Knowledge of risk management processes (e.g., methods for assessing and mitigating risk).	2.8
K-3	Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy.	3.1
K-4	Knowledge of Data Governance topics and their relationship to Information Governance, IT Governance, IT Service Management, Business Management PMO, Business Operations, and Risk Management.	3.0
K-5	Knowledge of Overall Data Management Maturity Model.	3.3
K-6	Knowledge of ethics.	3.3
K-7	Knowledge of data architecture frameworks such as Zachman Framework for Enterprise Architecture.	2.9
K-8	Knowledge of data modeling techniques.	3.4
K-9	Knowledge of conceptual/logical modeling.	3.1
K-10	Knowledge of physical modeling.	3.0
K-11	Knowledge of how to document the model and its use as a data governance tool.	3.0
K-12	Knowledge of data storage and operations.	3.6
K-13	Knowledge of data integration and interoperability for both structured and unstructured data.	3.5
K-14	Knowledge of cybersecurity and privacy principles.	3.2
K-15	Knowledge of cyber threats and vulnerabilities.	3.3
K-16	Knowledge of specific operational impacts of cybersecurity lapses.	3.3
K-17	Knowledge of cyber defense and vulnerability assessment tools and their capabilities.	2.9
K-18	Knowledge of data administration and data standardization policies.	3.3
K-19	Knowledge of data backup and recovery.	3.7
K-20	Knowledge of data mining and data warehousing principles.	3.5
K-21	Knowledge of database management systems, query languages, table relationships, and views.	3.8
K-22	Knowledge of digital rights management.	2.6
K-23	Knowledge of recent streaming data frameworks and protocols AMQP, (e.g., Kafka, RabbitMQ).	2.6
K-24	Knowledge of network access, identity, and access management (e.g., public key infrastructure, OAuth, OpenID, SAML, SPML).	2.7
K-25	Knowledge of operating systems (Linux, UNIX, Windows).	3.0
K-26	Knowledge of policy-based and risk adaptive access controls.	2.6
K-27	Knowledge of query languages such as SQL (structured query language).	3.7
K-28	Knowledge of sources, characteristics, and uses of the organization’s data assets.	3.2
K-29	Knowledge of the capabilities and functionality associated with content creation technologies (e.g., wikis, social networking, content management systems, blogs).	2.7
K-30	Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines).	3.3
K-31	Knowledge of the capabilities and functionality of various collaborative technologies (e.g., groupware, SharePoint).	2.6
K-32	Knowledge of the characteristics of physical and virtual data storage media.	3.2
K-33	Knowledge of how IT supports the organization's core business/mission processes.	3.0
K-34	Knowledge of Cloud-based knowledge management technologies and concepts related to security, governance, procurement, and administration.	3.1
K-35	Knowledge of data classification standards and methodologies based on sensitivity and other risk factors.	3.1
K-36	Knowledge of database access application programming interfaces (e.g., Java Database Connectivity [JDBC]).	3.0
K-37	Knowledge of Personally Identifiable Information (PII) data security standards.	3.3
K-38	Knowledge of Payment Card Industry (PCI) data security standards.	2.5
K-39	Knowledge of Personal Health Information (PHI) data security standards.	2.8

K-40	Knowledge of current and emerging data encryption (e.g., Column and Tablespace Encryption, file and disk encryption) security features in databases (e.g., built-in cryptographic key management features).	3.2
K-41	Knowledge of current and emerging data remediation security features in databases.	3.0
K-42	Knowledge of use cases related to collaboration and content synchronization across platforms (e.g., Mobile, PC, Cloud).	2.7
K-43	Knowledge of an organization's information classification program and procedures for information compromise.	2.8
K-44	Knowledge of the principal methods, procedures, and techniques of gathering information and producing, reporting, and sharing information.	3.5
K-45	Knowledge of data mining techniques.	3.3
K-46	Knowledge of database theory.	3.5
K-47	Knowledge of maintaining databases (i.e., backup, restore, delete data, transaction log files, etc.).	3.5
K-48	Knowledge of understanding data ownership and data stakeholders.	2.7
K-49	Knowledge of database maintenance.	3.2
K-50	Knowledge of replication services.	2.8
K-51	Knowledge of scripting languages.	3.7
Skills The capabilities or proficiencies developed through training or hands-on experience. Skills are the practical application of theoretical knowledge. Someone can take a course on investing in financial futures, and therefore has knowledge of it. But getting experience in trading these instruments adds skills.		
S-1	Skill in allocating storage capacity in the design of data management systems.	3.1
S-2	Skill in conducting information searches.	3.4
S-3	Skill in conducting knowledge mapping (e.g., map of knowledge repositories).	3.0
S-4	Skill in conducting queries and developing algorithms to analyze data structures.	3.5
S-5	Skill in generating queries and reports.	3.7
S-6	Skill in maintaining databases (i.e., backup, restore, delete data, transaction log files, etc.).	3.4
S-7	Skill in optimizing database performance.	2.9
S-8	Skill in using knowledge management technologies.	2.8
S-9	Skill in problem solving from an entry-level viewpoint: Noticing a problem and figuring out the best way to solve it. Includes investigation and evaluation of new technology against core business processes and mission.	3.7
S-10	Skill in judgment and ethical decision making: Thinking about the pros and cons of different options and picking the best one.	3.4
S-11	Skill in systems evaluation: Measuring how well a system is working and how to improve it.	3.1
S-12	Skill in programming: Writing computer programs, including scripting.	3.0
S-13	Skill in consistency when modeling data (attention to data details).	3.3
S-14	Skill in using various operating systems (e.g., Linux, UNIX, Windows).	2.3
S-15	Skill in API design to retrieve data including languages such as REST, GraphQL, and capabilities such as Power BI and Tableau.	3.2
Abilities Abilities have historically been used to describe the innate traits or talents that a person brings to a task or situation. Many people can learn to negotiate competently by acquiring knowledge about it and practicing the skills it requires. A few are brilliant negotiators because they have the innate ability to persuade. In reality, abilities may be included under skills or may be separated out.		
A-1	Ability to match the appropriate knowledge repository technology for a given application or environment.	3.3
A-2	Ability to order and arrange information.	3.6
A-3	Ability to demonstrate self-driven inquisitive data discovery.	3.3
A-4	Ability to see systems holistically (data systems rarely exist in a silo).	3.2