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Data Design Level 3 Role

Overview

This sub-discipline is concerned with the competencies required to create, maintain and manage logical and physical data designs for information technology solutions to support the specific business needs represented in a Requirements Specification or Business Specification document, supported, where appropriate with the interrogation, use and application of information contained within conceptual data models or domain models produced by data analysis activities.

Data design includes identifying the data required by an information technology solution, confirming and enhancing information relating to data types and attributes, dealing with duplication and redundancy of data, ensuring data integrity by using business rules and other processing steps. As design activities progress through logical design through to physical design, the level and type of information recorded about items of data is enhanced and increased, with a view to supporting the practical data handling, security, privacy and integrity needs required within an IT/technology system.

Logical design involves the graphical organisation of data required by the IT/technology solution into a logical data model, a set of groups of data items which remain independent of their physical organisation and structure.

Physical data design involves the representation of this logical data model into a physical model and then further development into specific or organisational forms such as such as files, data base tables, object orientated and XML structures. These will be organised in a way which ensures integrity and efficiency of operation and enables them to interact with programs to perform specific functions required to meet a specific business purpose. Information relating to the data contained in the physical design of a database, including descriptions of the data, may be contained within a Data Dictionary.

In some organisations, typically those where rapid development approaches are used, data design may be undertaken in parallel with HCI design and systems design. Furthermore, in these organisations, an iterative process of data analysis and data design may also take place.

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Performance criteria

Collate specified information relating to data design activities

You must be able to:

P1 Accurately gather all relevant information during data design activities in order to specify precisely the data definition, organisation, storage and management within the target IT/technology system/solution/service, under direction

P2 Correctly source and gather all relevant information from data models and analysis deliverables

P3 Correctly source all relevant information in order to populate a data dictionary for a data design assignment

Contribute to producing and maintaining data designs

You must be able to:

P4 Critically interpret all necessary data analysis deliverables in order to produce logical and physical designs

P5 Correctly apply all data naming conventions and standards appropriately in data design activities, in line with organisational strategy, policy and standards, as directed

P6 Correctly apply all of the business requirements and any relevant business rules when producing logical and physical data designs

P7 Assist others in de-normalising data in order to maximise the efficiency and effectiveness of a physical design

P8 Assist others in the identification of any primary, secondary and foreign keys and indexes required

P9 Be fully accountable for the quality, effectiveness and integrity of own data design deliverables

Assist, under supervision, the management of data relating to data designs

You must be able to:

P10 Correctly identify and select any relevant file, data organisation and storage technologies that are available/in existence and can be used to define, organise, store and manage data

P11 Use appropriate logical and physical organisation structures in which to store data

P12 Correctly populate a data dictionary in support of any particular data design assignment

P13 Clearly document any logical and/or physical data designs to support a particular assignment

P14 Accurately document all of the needs of any external organisations or bodies with whom an organisation needs to exchange information and data together with information about the design considerations for data exchange with them

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Knowledge and understanding

Collate specified information relating to data design activities

You need to know and understand:

K1 Source and gather
K1.1 information from data models and analysis deliverables
K1.2 information during data design activities in order to specify precisely the data
K1.3 definition, organisation, storage and management systems, services and assets within the target IT/technology system/solution/service
K1.4 information in order to populate a data dictionary
K1.5 service management and operational performance requirements in order that they may be incorporated within physical data design deliverables
K1.6 information relating IT/technology architectures together with business, data and HCI analysis deliverables in order to inform data design activities and their deliverables
K2 The processes, tools and techniques which can be used to monitor the progress of any particular data design assignment

Contribute to producing and maintaining data designs

You need to know and understand:

K3 Use and apply
K3.1 business requirements when producing logical and physical data designs
K3.2 business rules that need to be incorporated into data designs
K3.3 appropriate logical and physical organisation structures in which to store data
K3.4 appropriate file, data organisation and storage technologies for any particular assignment
K3.5 the systems development lifecycle as appropriate to data design activities,
K3.6 data naming conventions and standards appropriately in data design activities, in line with organisational strategy, policy and standards
K3.7 Interpret data analysis deliverables in order to produce logical and physical designs
K3.8 Be accountable for the quality, effectiveness and integrity of own data design deliverables
K4 What is

K4.1 involved in logical data design
K4.2 involved in physical data design
K4.3 involved in data denormalisation
K4.4 the relationship between logical data design and physical data design
K4.5 meant by the terms primary, secondary and foreign keys
K4.6 meant by referential integrity
K5 What are the
K5.1 naming conventions and standards that apply to data design activities
K5.2 implications of unstructured data on data design activities
K6 The fact that
K6.1 data design activities need to align with the deliverables from data analysis activities
K6.2 physical data designs need to consider the integrity, privacy and security of data held within any physical data organisation structure
K7 Who
K7.1 needs to access data from both within and outside the organisation
K7.2 are providers of file and data handling/storage technologies
K8 The need for monitoring
K8.1 the progress of any particular data design assignment
K8.2 the accuracy, currency, completeness and appropriateness of any data design deliverables
K8.3 the alignment of data design deliverables with the business requirements

Assist, under supervision, the management of data relating to data designs

You need to know and understand:

K9 Identify and select which file, data organisation and storage technologies are available/in existence and can be used to define, organise, store and manage data
K10 Take action to populate a data dictionary in support of any particular data design assignment
K11 Document
K11.1 a logical and/or physical data design to support a particular assignment
K11.2 the needs of any external organisations or bodies with whom an organisation may need to exchange information and data
K11.3 information about the design considerations for data that may need to be exchanged with any external organisations, individuals or bodies
K12 The importance of
K12.1 using data naming conventions and standards in data design activities, in line with organisational strategy, policy and standards
K12.2 the systems development lifecycle as it relates to data design activities
K12.3 having an effective data dictionary
K12.4 data design activities and their deliverables being guided by and supporting the business needs

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	K12.5 verifying the accuracy, currency, completeness and relevance of information created, collected, used and documented during data design activities
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