Unit 1 Research Project

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Software Development Life Cycle

       The systems development life cycle (SDLC) is a phased-based software development strategy to increase quality throughout the lifespan of software. To achieve these increased levels of quality, SDLC uses a diverse set of models, known as predictive models. There are five predictive models of SDLC–they are waterfall, spiral, incremental build, prototyping, and rapid application development (RAD). Each of the predictive models share common stages in the software develop process, such as planning, analysis (gathering requirements), design and development, implementation, testing and integration, evaluation, release, and finally support (Benta & Nitchi, 2008). These SDLC phases have become standard iterative steps seen throughout various implementations of the model itself. The summary of the phases and the respective actions can be seen below (University of Texas at El Paso, n.d.):

SDLC PHASE	ACTION(S)
Planning	Perform the initial assessment Perform the feasibility study
Analysis	Gather user requirements Evaluate current systems Document logical system design
Detailed systems analysis	Document detailed system specification

Implementation	Perform coding, testing, and debugging Complete installation, and fine-tune the software
Maintenance	Continue to perform evaluations, maintenance, and enhancements.

Just like the SDLC model uses various phases to guide the development of software, when designing databases, there are also stages that guide the actions of design. And, in the same way that the SDLC model uses a top-down, iterative approach, the database life cycle (DBLC) also employs the use of a modeled strategy to increase the quality of a database. It is important to note that that DBLC and SDLC models are closely related, and the DBLC can usually fit into the SDLC model. The comparison of the two models is significant because if the SDLC model is already being utilized by an organization, designing a database could be easily adapted to the already known phases–thus, increasing the overall quality and efficiency of database design. The common DBLC phases are outlined as follows (University of Texas at El Paso, n.d.):

DBLC PHASE	ACTION(S)
Database initial study	Analyze current situation at company Clearly define the problems and constraints Define the objectives Define the scope and boundaries

Database design	Create the conceptual design of the database Select the DBMS software Create the logical design of the database Create the physical design of the database
Implementation and loading	Install the DBMS Create all database(s) Load and/or convert the data into databases
Testing and evaluation	Perform database testing Perform the database fine-tuning Perform database and application evaluations
Operation	Document the flow of information
Maintenance and evaluation	Perform change control Add features and functions

The final thought on the DBLC model is that its use in database design can lead to the successful

implementation of a database. This is accomplished by reducing problems associated with poor

design, such as not clearly defining objectives, scope, and boundaries relative to database design.

Database Career Role

When considering database careers, there are many different types of job roles that a

person can select from the database job market. These roles include database developer, database

designer, database administrator, database analyst, database architect, database consultant, database security officer, or data manager. The job role that has been chosen to elaborate here is the database developer role. A database developer performs an important role within an organization by managing, maintaining, designing, and implementing data structures relative to databases (Careerbuilder.com, 2014). Specifically, a database developer will optimize database schemas, design and implement new features and functions of a database or databases, perform database testing, and perform maintenance and apply updates to existing databases (Careerbuilder.com, 2014.). However, a database developer not only works directly with databases, they also coordinate the design, testing, and implementation of database efforts with employees, customers, project sponsors, product managers, and anyone else involved in the life cycle of the database. When it comes to a database developer's rank within an organization, they will normally report to an IT manager or supervisor, and they usually will not manage employees themselves. However, there are senior-level database developer positions where the developer will act as a team leader or manage junior-level database developers.

By referencing job websites, it can be observed that there is no exact or fixed set of development skills that are required of database developers. For example, from the IT Business Edge job website, the job advertisement suggests that the prospective candidate have a minimum of five years of experience developing projects using SQL Server 2005 and 2008. Additionally, the advertisement states hands-on experience is required for SQL-XML, XML extraction and transformation, and XML databases and indexing, search, and Lucene (IT Business Edge, 2014). From the careerbuilder.com job site, one advertisement reads SQL and T-SQL experience is required; however, a long list of other technologies is also required. The list of job requirements from the advertisement are SQL and T-SQL, SQL Server 2008 and 2012, ORM frameworks, and

ADO.net patterns within .Net Web applications, just to name a few (Careerbuilder.com, 2014).

By comparing these two advertisements, it can be observed that the database developer skillset is

not a set of static skills, but includes a wide-range of technologies and responsibilities. On a final

note, the database developer position would be considered a high-end, high-paying IT job role in

the United States. One job website suggests the typical salary range of a database developer is

$62,000-$100,000 (Indeed, 2014).

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