Case Study: Database Development

Introduction:

The Software Development Life Cycle SDLC has various methodologies which have many tasks that could be performed to improve the data sets qualities. Also, there are actions that should be performed to optimize the record selections and to improve the database performance. The maintenance phase has many plans and activities that could be performed to improve the data quality. The one of the methodology method would be an efficient for planning proactive concurrency control methods and lock granularities. And, it can be used to minimize the database security risks that may occur within a multiuser environment. Also, the same method ensures that the number of transactions doesn't not produce record-level locking while the database is in operation. All these things will be produced and explained in this paper with some details.

The tasks that could be performed to improve the quality of datasets, using the Software Development Life Cycle (SDLC) methodology:

There are many tasks that could be performed to improve the data quality:

1. Detect and Correct: The developer must discover the data that is causing the failure points. After this detection, the developer must correct these data. Usually, the organization (company) can detect and correct the data by the hand ways or by a specialist companies. Also, the error detection is discovered through the working and after the production. When the company finds the poor quality data, it can know which data is needing the improve.

2. Examination: After the data is processed and stored, and through the test level, the auditor must audit the data that is recorded. If there is any fault, then it must be detected and corrected. This task must be achieved (after any processing) to improve and enhance the data working.

3. The Preventing: To ensure the integrity of data from any fault in the future, it must prevent the fault source. To achieve the quality data, it must enhance the user interface, keep the integrity constraints, or use the process controls. **(Even & Shankaranarayanan, 2009).**

The actions that should be performed to optimize record selections and to improve database performance:

To design high performance database, it must has many features: strong design, easy understand, and achieve the business needs. The developer must perform some strategies to improve the database performance:

- Using the (data clustering) which means collect the data together and in a few possible space in the disk. This ability (which is provided by the database management system DBMS) increases the database performance because it can submit the queries and update the data with a few space access.
- The Indexing (recording the data) increases the DBMS performance because it can access the data to update it or replay the queries without more effort.
- Using the Denormalization to increase the retrieval performance of the data from its tables. Denormalization can " involve returning 'repeating groups' to their master table or

(or relation). It can also mean joining two tables that can often queried together.". **(Gordon & Keith, 2013, pg# 55).**

Three (3) maintenance plans and three (3) activities that could be performed to improve data quality:

The maintenance phase is one of the database life cycle DBLC levels. In this phase, the developer must perform the some changes to enhance the DB performance. There are many maintenance plans to develop the DB:

- The Backup which causes the preventative maintenance.
- The Recovery which means some activities to correct the failures.
- The Adaptive which means "enhancing performance, adding entities and attributes, and so on". **(Coronel et al., 2013, pg# 412).**

  When the developer wants to improve the DB performance, he/she must put in his/her mind the technical perspectives and the customer satisfaction. There are some activities to evolve the database performance:

- Look at the quality of database architecture.
- correcting the data to be a good quality.
- Looking to the database "involves a set of techniques known as data profiling. This involves searching through the data looking for potential errors and anomalies such as similar data with different spelling...". **(Gordon & Keith, 2013, pg# 96)**

The method would be efficient for planning proactive concurrency control methods and lock granularities, and it can be used to minimize the database security risks that may occur within a multiuser environment:

UML is the unify of the visual modeling languages, and it is one of the object oriented methodology (OOM) languages. All the OOMs use the same diagram in essence but every methodology as its specific processing in its life cycle. UML has many characteristics such as the integration, unification, providing the autonomous processing. Therefore, it provides the security from the risks. "UML is now considered the de facto standard for object-oriented modeling and is constantly reviewed and revised under OMG's supervision.". (**Ramsin & Paige, 2008, pg# 5).**

How the verify method can be used to plan out system effectively and ensure that the number of transactions do not produce record-level locking while the database is in operation:

UML connects among its components together because it provides the relational database management system. It can be found as the file system and as the OODBMS. Also, it controls on the concurrency until the processes are completed. "Object-oriented software development methodologies (OOSDM) are specifically aimed at viewing, modeling and implementing the system as a collection of interacting objects, using the specialized modeling languages, activities and techniques needed to address the specific issues of the object-oriented paradigm. Originally based on concepts introduced in system simulation, operating systems, data abstraction, and artificial intelligence". **(Ramsin & Paige, 2008, pg# 4).**

Conclusion:

This paper produced the view of the SDLC methodologies, which has the many phases. Every phase has many steps, tasks, activities, and actions; Some of these tasks can improve the data sets qualities. The other actions has the abilities to optimize record selections and to improve database performance. The maintenance phase has many plans and activities that could be performed to improve the data quality. The Object Oriented OO methodology has the UML which would be an efficient method for planning proactive concurrency control methods and lock granularities. And, it can be used to minimize the database security risks that may occur within a multiuser environment. The UML ensures that the number of transactions does not produce record-level locking while the database is in operation. All these things were produced and explained in this paper with some details.

References:

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