



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

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FACULTY OF ENGINEERING, SCHOOL OF COMPUTING
SKUDAI, 81310 JOHOR BAHRU, JOHOR DARUL TAKZIM

(ISKANDAR MALAYSIA ECOLIFE CHALLENGE)

P2 : USER'S REQUIREMENT SPECIFICATION

SCSD2523-03: DATABASE

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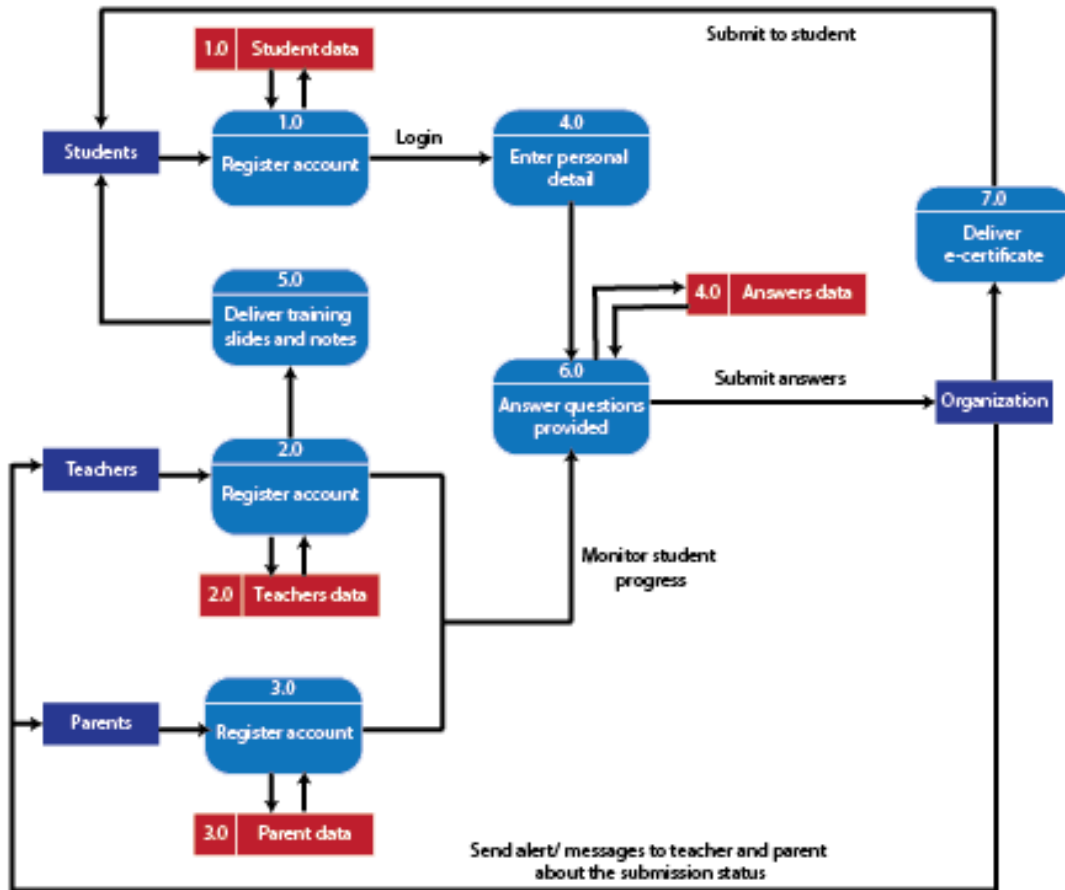
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DATA REQUIREMENTS

Data Flow Diagram of Iskandar Malaysia Ecolife Challenge Database



Data flow diagram (DFD) is drawn to represent the system of different levels of abstraction. It offers a more detailed look at the processes that make up an information system than a level-1 DFD does. It can be used to plan or record the specific framework of a system. Figure above shown level 2 DFD of Iskandar Malaysia Ecolife Challenge for students, teachers, parents and organization in raising the awareness of Low Carbon Society (LCS).

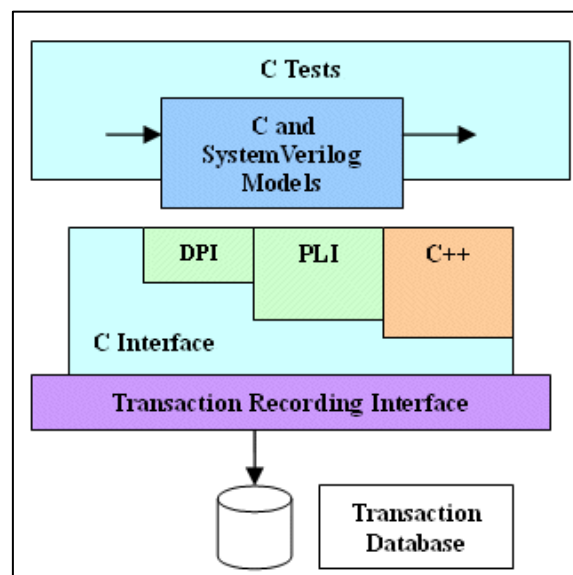
TRANSACTION DATABASE REQUIREMENT

A transactional database management system (DBMS) that has capability to roll back or undo a database transaction or operation if it is not completed appropriately.

Whenever information or data is stored, manipulated or managed in a database, the operation is considered to be a database transaction. The term indicates that there has been work accomplished within the database management system or in the database itself. In order to ensure security, a database transaction occurs separately from other transactions within the system to ensure that all information stored remains accessible, secure and coherent.

How Do Database Transactions Work?

A database transaction consists of any unit of work that is conducted inside of database management or equivalent system. The operation must be against a database and be treated as an independent operation from other transactions.

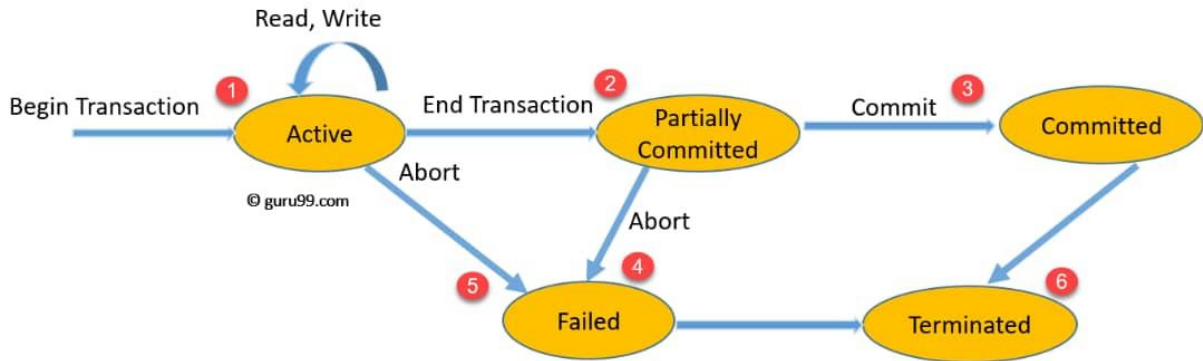


The primary two purposes of a transaction are :

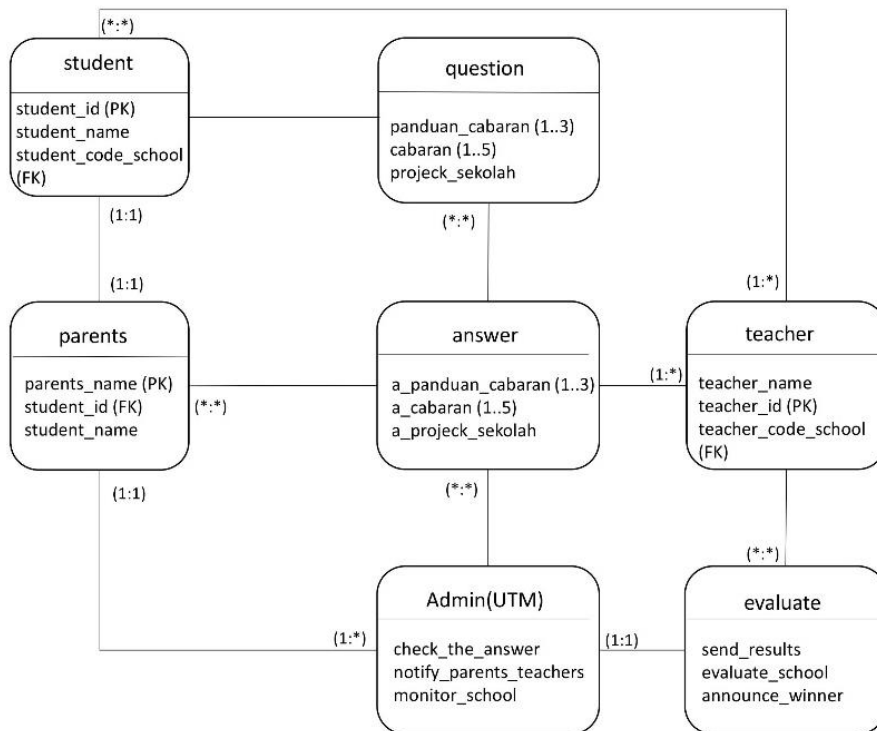
- 1- Providing reliable units of work that are able to recover correctly from failure.
 - 2- Keep a database consistent in all situations to include system failure, unexpected execution corruption and supporting numerous incomplete operations on the database.
- In order to be considered a database transaction, the operation must support the core principle of transactions to being atomic, consistent, isolated and durable. If a transaction is not completed the desired outcome of the operation will not be realized due to the requirements of database transactions.

Transactional Database Operations

A transactional database is a DBMS that supports the rolling back of transactions on the data stores if not completed properly. An interruption in the transaction can be caused by power loss or an interruption in connectivity to the data store. These operations can consist of one or many data manipulation queries or statements.



Transaction Requirement For IMELC



REQUIREMENTS

Students Login.

Step 1 – Students insert name, ID and school code.

Step 2 – Click login.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Students answer provided questions.

Step 1 – Open module online.

Step 2 – Answer all the questions. Insert the data.

Step 3 – Submit.

Step 4 – Commit the transaction and complete. Move to next questions.

Step 5 – If error occurs, roll it back and end the operation.

Students change their answers.

Step 1 – Open the questions.

Step 2 – Delete the answer. Drop the data.

Step 3 – Insert the new answer.

Step 4 – Submit.

Step 5 – Commit the transaction and complete.

Step 6 – If error occurs, roll it back and end the operations.

Students upload video or image.

Step 1 – Go to the question.

Step 2 – Click button upload.

Step 3 – Upload the image or video.

Step 4 – Click button submit.

Step 5 – Commit the transaction and complete.

Step 6 – If error occurs, roll it back and end the operations.

Teachers Login.

Step 1 – Teachers insert name, ID and teacher’s school code.

Step 2 – Click login.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Teachers monitor students answer.

Step 1 – Teachers go to assigned class.

Step 2 – Checking students answer.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Parents Login.

Step 1 – Parents insert name, student name and student’s ID.

Step 2 – Click login.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Parents monitor student.

Step 1 – Checking the student activities.

Step 2 – Commit the transaction and complete. Proceed.

Step 3 – If errors in transaction, roll it back and end the operation.

Parents receive notifications.

Step 1 – Admin will send alert if students did not active answering the questions provided.

Step 2 – Parents click notifications.

Step 3 – Go to the page where student need to answer.

Step 4 – Commit the transaction and complete. Proceed.

Step 5 – If errors in transaction, roll it back and end the operation.

Admin evaluates students.

Step 1 – Checking the student answer that participate.

Step 2 – Evaluate.

Step 3 – Proceed check next module.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Admin sends alert to teacher and parents.

Step 1 – Checking the student activities.

Step 2 – If the student did not active, send notification to teacher and parents.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Admin sends result to teacher.

Step 1 – Evaluate the student and school.

Step 2 – Send the result to teacher.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

Admin announce winner.

Step 1 – Evaluate all the schools that participate.

Step 2 – Announce the winner of the year.

Step 3 – Commit the transaction and complete. Proceed.

Step 4 – If errors in transaction, roll it back and end the operation.

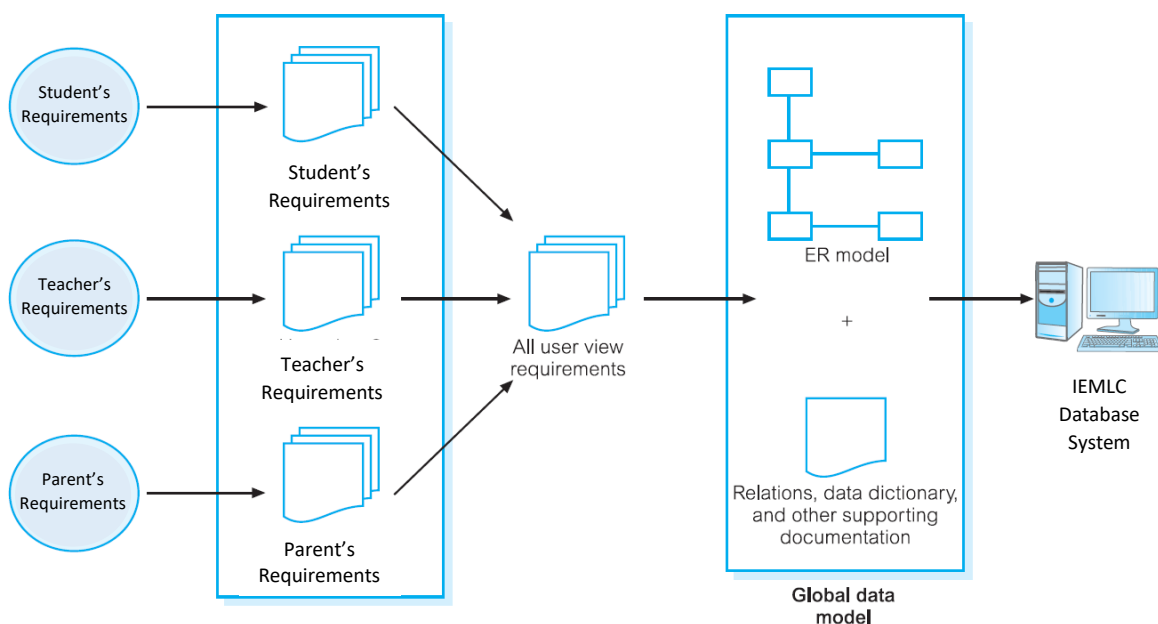
REQUIREMENTS COLLECTION AND ANALYSIS

User view defines what is required of a database application from the perspective of a particular job role (such as Manager or Supervisor) or an enterprise application area (such as marketing, personnel, or stock control).

In this case, it consists of the students, teachers and also the involvement of parents. Each user views have their own requirements in the process of the use of the IEMLC database system. With this process, we have two types of approach which is the centralized approach and the view integration approach. Both are described and drawn out with explanation.

CENTRALIZED APPROACH

- Requirements for each user view are merged into a single set of requirements for the new database system.
- A global data model is created based on the merged requirements (which represents all user views).
- Generally, this approach is preferred when there is a significant overlap in requirements for each user view and the database system is not overly complex.



VIEW INTEGRATION APPROACH

- Requirements for each user view are used to build a separate data model.
- Data model representing single user view is called a local data model, composed of diagrams and documentation describing requirements of a particular user view of database.
- Local data models are then merged to produce a global data model, which represents all user views for the database.

