Physical design of database

• Table and record specifications

• Data dictionary

• Database design

Physical DFM shows

• How data is actually processed and

• Where data is actually stored in the current system Logical DFM shows

• How data should be processed and

• Where the data should be stored in the proposed system Logical DFM consist of a set of DFDs and associated textual descriptions

LDM of the proposed system

• adds new entities required to support any new functionalities of the proposed system to the LDS

• provides logical data stores (entities) identified in the LDM for logical DFM

• removes any temporary data store that simply halts data temporarily

Logical DFM of the proposed system

• starts from elementary processes

• as location of a process only indicates a physical constraint, removes it from all processes

• as the person who actually did a process in physical DFM now feeds inputs to the corresponding process in the logical DFM, transforms the location into an external entity

• removes any purely human activity and replaces it with an external entity

• adds new processes required to support any new functionalities of the proposed system

• reconstructs the hierarchy by regrouping logical processes based on their functionality

• describes the functionality of elementary processes in pseudo code and write EPD

• tabulates a Table Specification and a Record Specification for each relation in the normalized relational schema

• provides physical design for the construction of the database

Physical Design of Database

Maps logical schema to relational schema

Logical Schema	Relational Schema
Entity	Table
Attribute	Field
Instance of an entity	Record of a table
Unique attribute	Primary key

- normalizes all the relations in relational schema to 3NF
- tabulates a Table Specification and a Record Specification for each relation in the normalized relational schema
- provides physical design for the construction of the database

Data Dictionary

- is an integral part of database
- holds information about the database and the data that it stores (data about data - metadata)
- contains the actual database descriptions used by the Database Management System (DBMS)

Testing Test Cases

A test case is a set of actions executed to verify a particular feature or functionality of a software application. Test cases are documented by the Quality Assurance team while the software development is going on.

Software testing techniques

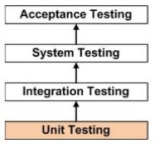
White box testing

• takes internal implementation of a software to derive test cases to test the software
• performed in the early stages of the testing process
• usually applied for testing relatively small program units
• analysis of the program code determines how many test cases are required to exercise all the internal components of the software (statements, branches, paths) adequately

Black box Testing

• software to be tested is treated as a black box and its behavior is examined by studying the inputs and outputs
• knowing the intended functionalities of a software, tests are conducted to see whether the software can deliver them
• test cases are derived from the requirement specification of the software to be tested

Software testing types



In software development,

• software systems are built with sub-systems
• sub-systems are built with individual program units such as functions or classes

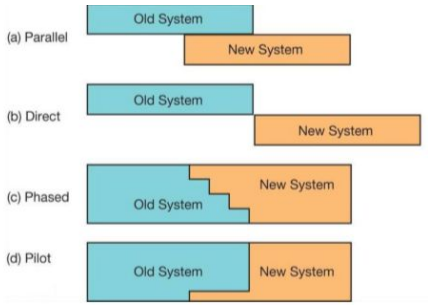
Therefore, software testing,

• starts with testing of these individual program units (Unit Testing, usually carried out by programmers, white box techniques are used)

• continues with the testing of the integration of these units (Integration Testing, usually carried out by integration testers or test teams, can either be white box or black box)
• and the testing of the system's functionality as a whole (System Testing, usually carried out by test teams independent of the programmers who developed the system, black box techniques are used)
• finally ends with testing to see whether the system is acceptable to the users (Acceptance Testing, usually carried out by test teams independent of the programmers and/or users who developed the system, black box techniques are used

Software deployment

Software deployment includes all the activities that make a software system available for use. The general deployment process consists of several interrelated activities with possible transitions between them. These activities can occur at the developer's side or at the user's side or both.



Parallel Deployment

Parallel deployment is a method of hardware or software migration that involves using the existing and new systems simultaneously until the implementation is judged to be completed and satisfactory. During the transition, users work with both systems as they gradually learn the new software. There is generally some duplication of effort as, for example, data must be entered in both systems. That duplication may lead to data quality issues. Parallel adoption is the most foolproof method. However, it can also be the most time-consuming option and is usually the most expensive

Direct Deployment

This is the simplest methods of deployment. Direct deployment is a hardware or software migration method that involves getting rid of the existing system and transferring all users to the new system simultaneously. Implementation is faster with direct deployment than other deployment methods. As the old system is no longer available, users cannot put off learning the new system. Furthermore, the complete and simultaneous implementation also avoids issues that can arise when users are working with different software or hardware. This is the least expensive migration method, assuming there are no major problems. On the negative side, however, it can be hard on users to have to learn the new system immediately. The method also involves a lot of problems that arise during implementation can be unpredictable, plentiful and serious, and fallback systems may be inadequate to deal with them. However, if the two systems are incompatible, direct deployment may be the only viable method.

Pilot Deployment

A pilot deployment is a hardware or software migration method that involves rolling out the new system to a small group of users for testing and evaluation. During the pilot implementation, the users of the test group can provide valuable feedback on the system to make the eventual rollout to all users go more smoothly. Once the test group has approved the system, it can be rolled out across the organization. The

testers can then help train other users for the new system. On the other hand, the test group could also determine whether the system is a viable option for the organization.

Phased Deployment

Phased deployment is a hardware or software migration method that involves incremental implementation of a new system. A phased migration might be conducted either by implementing the entire new system in some locations or business units or by implementing separate modules of the system independently until the implementation is complete. Because everything is not rolled out at once, the organization doesn't have to deal with all the potential implementation issues at the same time. Furthermore, information learned from early implementation stages can be applied to guide the rest of the process, so that there are fewer issues as the implementation continues. A phased rollout also allows users to adjust to the new system gradually. On the other hand, it can be confusing to have groups of users working with different systems or to have users working with elements of different systems. That confusion can also lead to data quality issues.

Maintenance

The maintenance phase of the SDLC occurs after the software is in full operation. The maintenance phase involves making changes to hardware, software, and documentation to support its operational effectiveness. It includes making changes to improve a system's performance, correct errors, deal with security issues, or address new user requirements. To ensure that the modifications do not disrupt operations or degrade a system's performance or security, organizations use change management standards and procedures.