CHAPTER 2:
SYSTEM DEVELOPMENT LIFE CYCLES (SDLC)

Course : Information system engineering

Course code: CIS 111

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LEARNING OUTCOMES

- Students will learn what is information system engineering?
- Why this is necessary for the organizations
- What is system development life cycle and different phases of it
- Details about SDLC phases

WHAT IS INFORMATION SYSTEM ENGINEERING

- The process by which information systems are designed, developed, tested, and maintained. The technical origins of information systems engineering can be traced to conventional information systems design and development, and the field of systems engineering.
- On other words, information system engineering is the intelligent use of data, information, and knowledge to enable automated decision system for the business organizations.

WHAT IS SDLC?

- A system development life cycle (SDLC) is the series of identifiable stages that a software product undergoes during its lifetime
- SDLC Models emphasize on the need to follow some structured approach towards building new or improved system.
- Systems development life cycle (SDLC) - a structured step-by-step approach for developing information systems
- Typical activities include:
  - Determining budgets
  - Gathering business requirements
  - Designing models
  - Writing user documentation

SDLC MAJOR PHASES

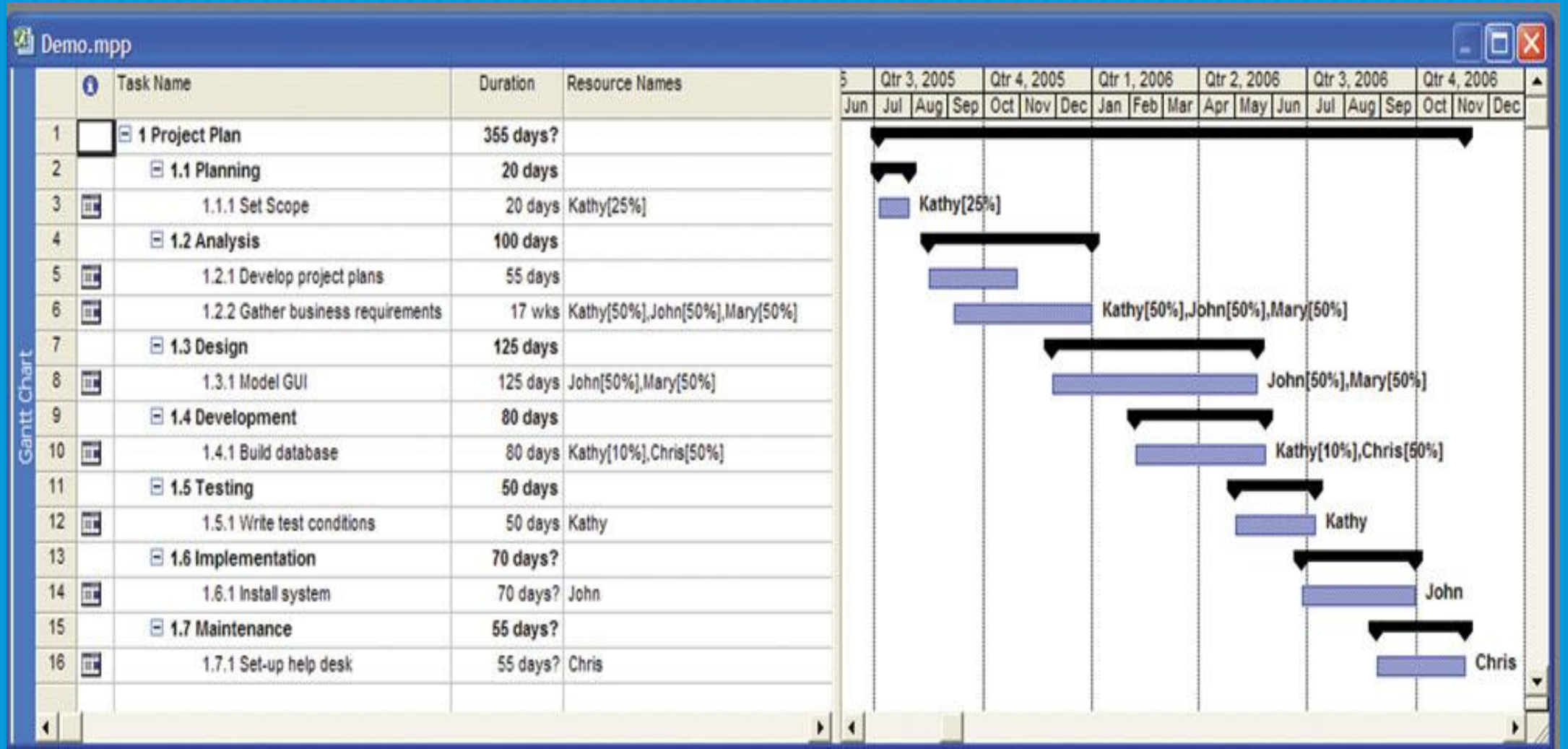
SDLC PHASES AND KEY ACTIVITES

SDLC PHASE	ACTIVITIES
1. Planning	•Define the system to be developed •Set the project scope •Develop the project plan
2. Analysis	•Gather business requirements
3. Design	•Design the technical architecture •Design system models
4. Development	•Build technical architecture •Build databases and programs
5. Testing	•Write test conditions •Perform testing
6. Implementation	•Write user documentation •Provide training
7. Maintenance	•Build a help desk •Support system changes

1ST PHASE-PLANNING

- This is the first phase in the systems development process. It identifies whether or not there is the need for a new system to achieve a business strategic objectives.
- This is a preliminary plan (or a feasibility study) for a company's business initiative to acquire the resources to build on an infrastructure to modify or improve a service
- The purpose of this step is to find out the scope of the problem and determine solutions. Resources, costs, time, benefits and other items should be considered at this stage.

EXAMPLE OF PLANNING



2ND PHASE-ANALYSIS

- After preliminary investigation, analysis phase begins.
- Analysis is a detailed study of
  - the various operations performed by the system,
  - relationships among the various sub systems or functional units
  - and finally the relationships outside the system.
- Many tools are used during analysis. Data flow diagrams, on-site observations, and questionnaires are some examples.
- Detailed work of analysis is kept as a record in a Specification Document.

3RD PHASE-DESIGN

- After the system has been analyzed by the analyst, the design stage of system life cycle begins.
- In design phase, the structure or design for the proposed system is finalized.
- Structure of files, databases, input, output, processes, and screens(interfaces) are decided.
- After design is finalized, it is clearly documented in what is called Design Document.

4TH PHASE-DEVELOPMENT

- In this phase, the actual development of the system takes place.
- That is, design representations are translated into actual programs.
- Software developers may install (or modify and then install) purchased software or they may write new, custom-designed programs.
- Programmers are also responsible for documenting the program, providing an explanation of how procedures are coded.

5TH PHASE-TESTING

- After a system has been developed, it is very important to check if it fulfills the customer requirements. For this purpose, testing of the system is done.
- Testing may be repeated, specifically to check for errors, bugs and interoperability. This testing will be performed until the end user finds it acceptable.
- There are various types of tests which are used to test the system. These include unit, integration, and acceptance testing.

6TH PHASE-IMPLEMENTATION

- Implementation of system means putting up system on user's site.
- This phase involves the actual installation of the newly-developed system. It puts the project into production by moving the data and components from the old system and placing them in the new system via a direct cutover.
- While this can be a risky (and complicated) move, the cutover typically happens during off-peak hours, thus minimizing the risk.

7TH PHASE-MAINTENANCE

- Like any system, there is an aging process. Therefore, the system requires periodic maintenance.
- Maintenance can be for software or hardware. User priorities, changes in organizational requirements, or environmental factors call for system enhancements.
- This is very crucial for the system's life.

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MORE REFERENCES

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