


Chapter Twelve

Information System Development

Discovering Computers 2012
Your Interactive Guide to the Digital World
Chapter 12 Complete



What is the System Development Cycle?

- What is an **information system (IS)**?


Hardware, software, data, people, and procedures that work together to produce quality information

System—Set of components that interact to achieve common goal

Businesses use many types of systems

Next >

What is System Development?



System Development

- 1. Planning**
 - Review project requests
 - Prioritize project requests
 - Allocate resources
 - Form project development team
- 2. Analysis**
 - Conduct preliminary investigation
 - Perform detailed analysis activities
 - Study current system
 - Determine user requirements
 - Recommend solution
- 3. Design**
 - Acquire hardware and software, if necessary
 - Develop details of system
- 4. Implementation**
 - Develop programs, if necessary
 - Install and test new system
 - Train users
 - Convert to new system
- 5. Operation, Support, and Security**
 - Perform maintenance activities
 - Monitor system performance
 - Assess system security

Ongoing Activities

- Project management
- Feasibility
- Documentation
- Data/information gathering

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Figure 12-1
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What is the System Development Cycle?

- What is a **systems analyst**?

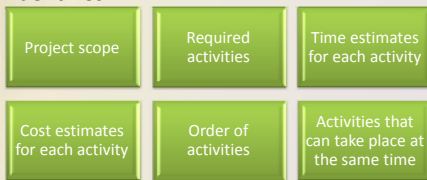
Responsible for designing and developing information system

Liaison between users and IT professionals

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What is System Development?

- **Project management** is the process of planning, scheduling, and then controlling the activities during system development
- To plan and schedule a project efficiently, the project leader identifies:



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What is the System Development Cycle?

- What is a Gantt chart?
 - Popular tool used to plan and schedule large, complex projects

ID	Task Name	Duration	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Planning	2w	1/20	2/1						
2	Analysis	12w		2/8			5/10			
3	Design	12w			3/20			6/15		
4	Implementation	7w						6/16		8/9

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Planning Phase

- The **planning phase** for a project begins when the steering committee receives a project request
- Four major activities are performed:



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Analysis Phase

- The **analysis phase** consists of two major activities:

Conduct a preliminary investigation

- Determines and defines the exact nature of the problem or improvement
- Interview the user who submitted the request

Perform detailed analysis

- Study how the current system works
- Determine the users' wants, needs, and requirements
- Recommend a solution

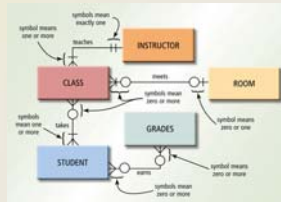
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Analysis Phase

- An **entity-relationship diagram** (ERD) is a tool that graphically shows the connections among entities in a system
- Entities are objects in the system that have data



Analysis Phase

- A **data flow diagram** (DFD) is a tool that graphically shows the flow of data in a system
 - Data flows
 - Processes
 - Data stores
 - Sources



Analysis Phase

- The **project dictionary** contains all the documentation and deliverables of a project
- Structured English is a style of writing that describes the steps in a process

Entering Class Semester Grades

For each semester class, perform the following steps:

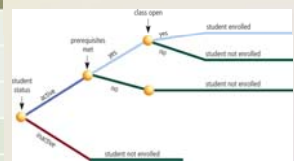
- For each student, perform the following steps:
 - Enter the grade earned.
 - Verify the entered grade.
 - Print the semester class entered grades.
 - Create a cover sheet for quality control.

Analysis Phase

Decision table
A decision table is a table that lists a variety of conditions and the actions that correspond to each condition

Decision tree
A decision tree also shows conditions and actions, but it shows them graphically

	Rules							
	1	2	3	4	5	6	7	8
Conditions								
Student status (A = Active; I = Inactive)	A	A	A	A	I	I	I	I
Prerequisites met?	Y	Y	N	N	Y	Y	N	N
Seats available?	Y	N	Y	N	Y	N	Y	N
Actions								
Student enrolled	X							
Student not enrolled		X	X	X	X	X	X	X



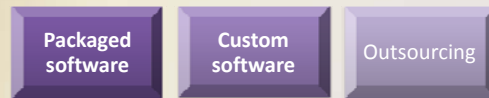
Analysis Phase

- The **data dictionary** stores the data item's name, description, and other details about each data item

Student ID	Student ID	Data Element
<p>Date: 12/31/2011 Project: HORIZON COMMUNITY COLLEGE Page: 11 Time: 10:36:28 AM Detailed Listing -- Alphabetically All Entries--Data Flow Diagrams</p>		
<p>Student ID Student File: Student ID</p>		
<p>Description: A unique identification number assigned to each student.</p>		
<p>Alias: Student Code</p>		
<p>Values & Meanings: Required element: Cannot be blank May not be duplicated</p>		
<p>Data element attributes: Storage type: Char Length: 7 Display Format: AAAAAA Null Type: NotNull</p>		
<p>Location: File --> Student File Date Last Altered: 12/31/2011 Date Created: 12/31/2011</p>		

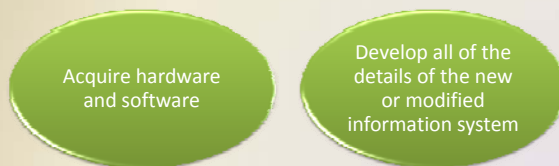
Analysis Phase

- The system proposal assesses the feasibility of each alternative solution
- The steering committee discusses the system proposal and decides which alternative to pursue



Design Phase

- The **design phase** consists of two major activities

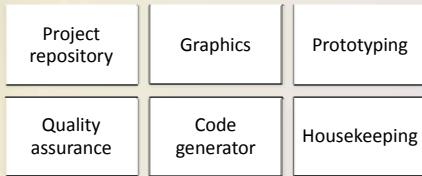


Design Phase

- A **prototype** (proof of concept) is a working model of the proposed system
 - Prototypes have inadequate or missing documentation
 - Users tend to embrace the prototype as a final system
 - Should not eliminate or replace activities

Design Phase

- Computer-aided software engineering (CASE) tools are designed to support one or more activities of system development
- CASE tools sometimes contain the following tools:



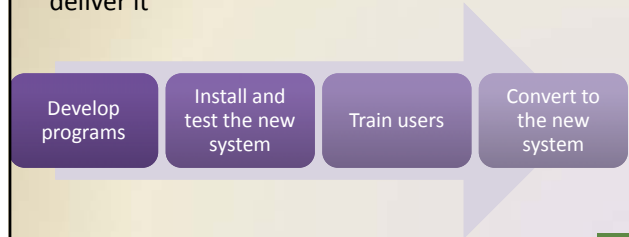
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Implementation Phase

- The purpose of the **implementation phase** is to construct the new or modified system and then deliver it



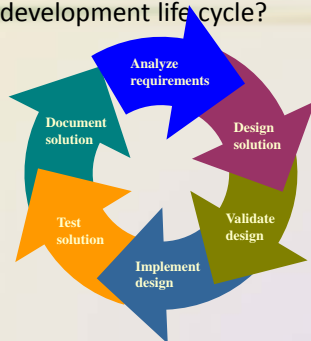
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Implementation Phase

- What is the program development life cycle?
 - Programmers write programs from specifications
 - Follows six steps



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Implementation Phase

- **Training** involves showing users exactly how they will use the new hardware and software in the system
 - One-on-one sessions
 - Classroom-style lectures
 - Web-based training



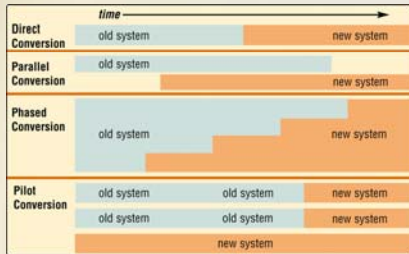
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Figure 12-21

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Implementation Phase

- One or more of four conversion strategies can be used to change from the old system to the new system



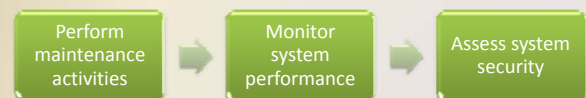
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Figure 12-22

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Operation, Support, and Security Phase

- The purpose of the **operation, support, and security phase** is to provide ongoing assistance for an information system and its users after the system is implemented



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Operation, Support, and Security Phase

- A **computer security plan** should do the following:



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