Systems Analysis and Design

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Chapter 14: Construction

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Construction

Chapter 14

Key Concepts

- Be familiar with the system construction process.
- Understand different types of tests and when to use
- Understand how to develop documentation.

Managing Programming

- Assigning Programmers
- Coordinating Activities
- Managing the Schedule

Coordinating Activities

- Regular Project Meetings
- Follow standards
  - File naming
  - Forms to be completed
  - Programming guidelines
- Coordinate traceability of implementation to requirements

Managing the Schedule

- Control scope creep
- Manage schedule slippage
- Create a risk assessment

Avoid Implementation Mistakes

- Research-oriented development
- Using low-cost personnel
- Lack of code control
- Inadequate testing

Designing Tests

- Unit tests
- Integration tests
- System tests
- Acceptance tests

Testing and Object Orientation

- Encapsulation and information hiding
- Polymorphism and dynamic binding
- Inheritance
- reuse

Unit or Class Tests

- Focus on a single unit – the class
  - Black-box Testing
  - White-box Testing
- Develop tests for each contract of a class
  - Test for initial conditions
  - Possibly test for random inputs

Integration Tests

- How a set of classes work together
- Classes pass unit tests first
- Interface testing
- Use-Case Testing
- Interaction Testing
- System Interface Testing

System Testing

- Requirements
- Usability
- Security
- Performance
- Documenation

Acceptance Testing

- Alpha
  - Conducted by users to ensure they accept the system
- Beta
  - Users use real data, not test data

Developing Documentation

- System Documentation
  - Produced by systems analysis and design process
  - Automate documentation for classes and methods
- User Documentation
  - User Manuals
  - Training Manuals
  - Online Help Systems

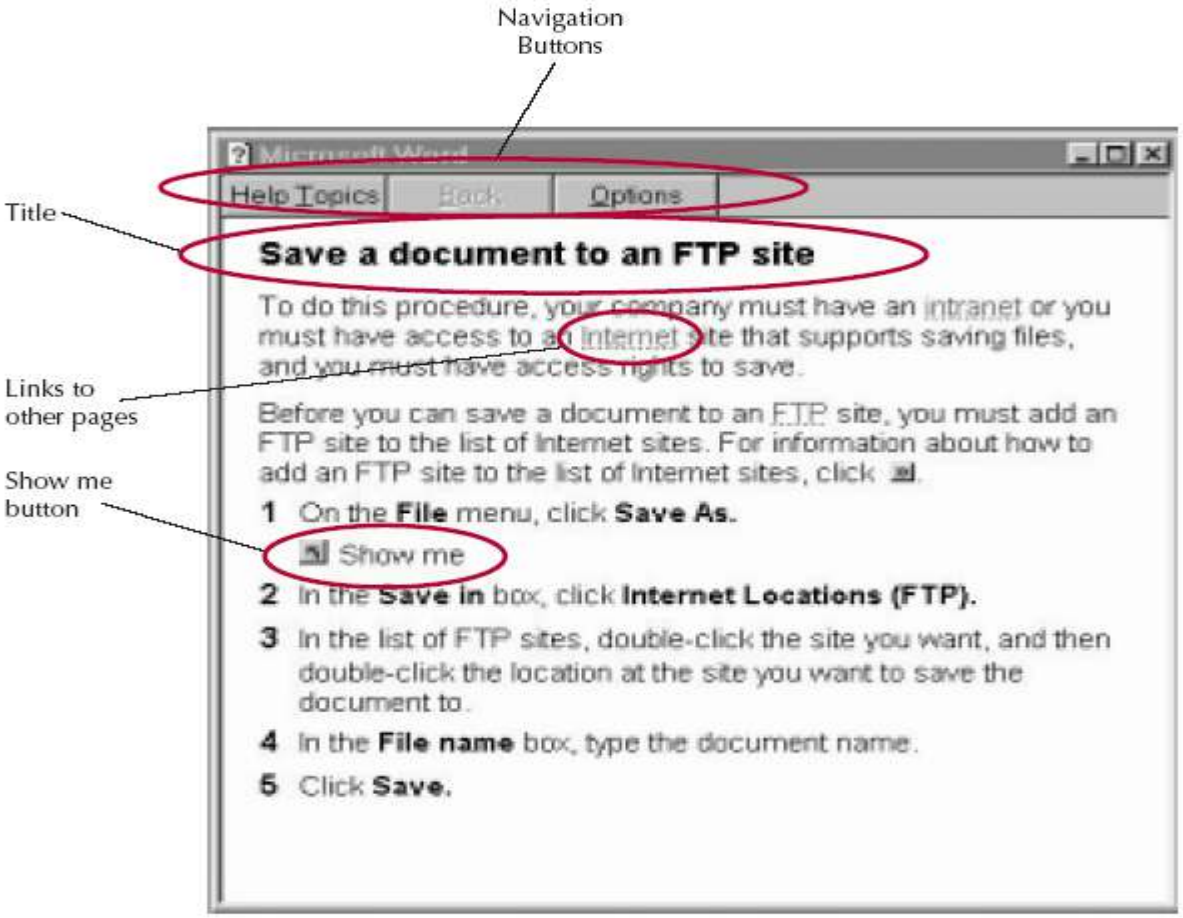
Online Documentation Strengths

- Facilitates searching
- Same information can be presented in different formats
- Provide interaction with users using links or "tool-tips"
- Less expensive to distribute

Designing Documentation Structure

- Table of Contents
- Navigation Controls lead user to Documentation topics
- How to perform certain tasks
- Definitions of important terms

Online Documentation Example



Documentation Writing

- Use Active Voice
- E-prime Style
- Consistent terms
- Simple language
- Friendly language
- Parallel grammatical structures
- Correct use of steps
- Short paragraphs

Applying Concepts at CD Selections

- Managing Programming
  - 3 programmers
- Testing
  - Unit Test – Blackbox tests
  - Integration – User Interfaces
  - System – Requirements, security, performance, and Usability
  - Acceptance – Alpha and Beta

Develop User Documentation

- Reference Documents for web interface and system management components
  - Help topics
- Documentation Component
  - Table of Contents
  - Index
  - Find or search
  - Links to definitions

Summary

- Assign programmers and coordinate their activities
- Plan for the testing of all aspects of the application
- Write the documentation for both the systems side and the user aspect