

COMP 302: System Analysis and Design

Credit: 3 Chapter 1. Introduction to System Analysis and Design

- 1.1. Introduction
- 1.2. Development Process
 - a. Emergent System Properties
 - b. System Engineering
- 1.3. Management Process
- 1.4. Supporting Processes
- 1.5. System Structure
- 1.6. Types of Information Systems
 - a. Transaction Processing System
 - b. Management Information System
 - c. Decision Support System

Chapter 2. Concept Formation

- 2.1. Identifying and Selecting the System Development Projects
- 2.2. Corporate and Information Systems Planning
- 2.3. Finding the Problem
- 2.4. Justifying a Solution
- 2.5. Generating broad alternative solution
- 2.6. Evaluating the proposal
- 2.7. Economic Feasibility
- 2.8. Selecting an alternative
- 2.9. Preparing statement of a User Requirement

Chapter 3. Requirement Analysis

- 3.1. Functional and non-functional requirement
- 3.2. User requirements
- 3.3. System requirements
- 3.4. Interface requirements
- 3.5. Gathering Information by Asking Questions
 - a. Questionnaires
 - b. Electronic Data gathering
- 3.6. Gathering Information by Observation
 - a. Using Ethnography
 - b. From observation to design
- 3.7. Gathering Information by Prototyping
 - a. Interface Prototyping
 - b. Prototyping Processes
- 3.8. Interviewing
- 3.9. Software requirement document

Chapter 4. Data Flow diagram (DFD)

- 4.1. Introduction
- 4.2. DFD symbols
- 4.3. Describing systems by DFD
- 4.4. Logical and Physical DFDS
- 4.5. Convention for good DFDS

4.6. DFDS Leveling

Chapter 5. Process Descriptions

- 5.1. Process descriptions method
- 5.2. Structured English
- 5.3. Decision tables
 - a. Extended Decision tables
 - b. Establishing logical correctness of Decision tables
 - c. Using Karnaugh maps to detect logical errors in decision tables
 - d. Eliminating redundant specifications

Chapter 6. Designing Databases

- 6.1. Data Dictionary
- 6.2. E-R model
- 6.3. Transforming E-R diagram into Relations
- 6.4. Normalization
 - a. Data redundancies
 - b. Second normal form
 - c. Third normal form
 - d. Boyce-codd Normal form

Chapter 7. Object Modeling

- 7.1. Introduction
- 7.2. Object environment
- 7.3. Object structures
- 7.4. Modeling behavior in object modeling
 - a. Class object diagram
 - b. Use case diagram
 - c. State diagram
 - d. Sequence diagram

Chapter 8: Quality Assurance: Reviews, Walkthroughs and inspections

- 8.1. Introduction
- 8.2. Implementing quality assurance
- 8.3. Inspections
- 8.4. Walkthroughs

Chapter 9. Introduction to Software Engineering

- 9.1. Introduction
- 9.2. Difference between hardware and software engineering
- 9.3. Software development process
 - a. Water Fall model
 - b. Evolutionary model
 - c. Spiral Model

References

- **“System Analysis and Design”** by Igor Hawryszkiewicz
- **“Modern System Analysis and Design”** by Jeffrey A. Hoffer, Joey F. George, Joseph S.

Valacich

- **“Software Engineering”** by Ian Sommerville