

Department Of Computer Science and Engineering
Kathmandu University
Dhulikhel, Kavre



Subject: System Analysis and Design

Course: COMP 302

Level: B.E./B.Sc 3rd Year 2nd Semester

Credit Hours: 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. Waterfall model
 - b. Evolutionary model
 - c. Spiral Model

References

“System Analysis and Design” by Igor Hawryszkiewicz (IH)

“Modern System Analysis and Design” by Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich (JH)

“Software Engineering” by Ian Sommerville (IS)