CSE1204 - Information Systems 1

Revision

Subject Overview
- System concepts and information systems
- Systems development and the SDLC
- Information gathering
- Modelling
- Process modelling using DFDs
- Low-level processes: minispecs

Types of Information Systems
- There is a range of information systems to serve the varied needs of users:
  - Transaction processing systems – sales, inventory control
  - Electronic commerce
  - Process control systems
  - Management support systems: Management information systems, Decision support systems, Executive information systems
  - Knowledge-based systems: Expert systems,
  - Multimedia systems
  - Office automation systems
  - Geographical information systems

Subject Overview
- Communicating using documentation and presentations
- Working in teams
- Ethics and professional practice
- Roles in the SDLC
- Quality - product and process

Systems development
- The need to build new information systems or change existing ones comes about because:
  - there are problems in the way in which existing systems operate
  - opportunities to improve things by doing them differently
  - there are external requirements or pressures

The Systems Development Life Cycle

The SDLC provides:
- a systematic and orderly approach to solving business problems
  - steps to be followed
  - deliverables
  - milestones - dates of completion of steps or deliverables
Data Gathering
The data gathered should include:
- **system description** - how things work or should work
- **system problems** - what is wrong or needs improvement
- **opportunities** - innovation or new ways of doing things
- what is technically possible
- what **constraints** exist

Data gathering techniques
- Interviews
- Questionnaires
- Observation
- Reports
- System Documentation eg. existing forms

Modelling
- Why do we do it?
- What do we model?
- How do we model?
  - different techniques for different purposes

Process modelling
- **principal techniques**
  - functional decomposition
  - data flow diagrams
- **associated techniques for modelling the details of low-level processes**
  - structured English
  - decision tables and decision trees
Data flow diagrams (DFDs)
- model the flow of data into, through, and out of an information system
  - show the processes that change or transform data
  - show the movement of data between processes

Guidelines for Drawing DFDs
- data flows are NOT permitted:
  - between external agents
  - between data stores
  - from an external agent to a data store

Levelling Data Flow Diagrams
- any "real" system is too large to represent as a single data flow diagram
- the solution is to decompose the system into a hierarchy of levels of processing
- the process model of the system then consists of a set of levelled data flow diagrams
- levelling of DFDs improves their readability and usefulness as a communication tool

Data Dictionary
- the data dictionary is a database or repository of information about objects identified during systems development
- every object (and each of its components) must have a definition in the data dictionary
- the data dictionary is a major source of documentation about the information system

Data Dictionary - data element entry
- **SALTWATER LIBRARY**
- **AUTHOR**: David Ross
- **DATE**: 14 Oct 2002

- **DATA ELEMENT**: Book_title
- **Alias**: title, name
- **Description**: Distinguishing name given to a book by its author/s
- **Data type**: characters & blank spaces
- **Values**: Combination of words & characters
Information Systems Documentation

- User Manual
- Systems Manual
- Data Manual
- Program Specification Manual
- Operations Manual

Effective documentation check list

- Objective clearly stated
- Target audience identified
- Consistent approach used (wording, structure, layout) - templates help
- The principles of documentation organisation and development have been followed
- Maintenance process in place
- Put yourself in the users’ position - can you easily find what you’re looking for?

Styles of Oral Communication

- Informative
- Persuasive
- Entertaining
- Educative

Presentation fundamentals

- avoid appearing nervous
- preparation and organisation are essential
- rehearse out loud and in the venue
- always test equipment at the venue
- believe that the audience wants to hear you

Teams in systems development

- systems development is a team effort
- teams are organised on a project basis

Characteristics of good teams

- Diversity (e.g. backgrounds, skills)
- tolerance
- communication
- trust (requires mutual respect)
- put the team first
- reward structure
  - (reward team members for effective contribution to the group)

(Hoffer et al. p 17, p 57)
Computing People in the SDLC
- Project manager
- Analysts/designers
- Programmers/database/network designers
- Operations/systems administration/data communications

The Role of the Systems Analyst
- to understand the business’s information needs
  - what information is needed?
  - for whom?
  - in what form?
  - when?
- to describe the business’s information flows
- to identify problems and opportunities
- to suggest possible system solutions

Ethical standards, Professional codes of ethics
- Issues in system design:
  - Privacy: security and confidentiality
  - Accuracy: for the client AND the customer
  - Property: data ownership
  - Accessibility: any restrictions policed
  ACS Code of Professional Conduct and Professional Practice

Quality in systems development
- the cost of detecting and correcting errors rises greatly during the SDLC
  - must be embedded in the systems development process: product and process

Quality in systems development
- Quality dimensions
- Quality process
  - Quality control
  - Quality assurance
- implementing quality: e.g. standards, technical reviews

Exam format
- 3 hour
- closed book
- 10 minutes for reading
- 9 multiple choice questions
- 6 main written answer questions
  - Some have sub-questions
    (10 sub-questions)
- There are 9 past exams at the Library database (access via IMS1001 or CSE1204) online