



OLYMPIA BUSINESS SCHOOL

School of Computing & Information Science

DIPLOMA IN INFORMATION SYSTEMS

FILO-TEXT

Systems Analysis I

October , 1998
12 weeks

RAFFLES EDUCATION GROUP

Kuala Lumpur ♦ Petaling Jaya ♦ Penang ♦ Singapore ♦ Jakarta ♦ Bangkok ♦
Beijing ♦ London ♦ New-York

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INTRODUCTION

THE SUBJECT

SYSTEM ANALYSIS I

Welcome to System Analysis I

You have already studied programming methods during your previous semesters. Through your other subjects, you have also been exposed to principles of database management. Here, in System Analysis I, we will explore your responsibilities as a systems analyst.

In the world we live in today, we have come to rely very heavily on computers and other aspects of information technology. The machines that we normally see and use today, such as ATM machines, automated cash registers, and many others, function using systems that are made out of several programs working together. The functions taken over by these systems were previously done manually, by people, instead of computers. Thus, in order to create a computerized system, we will need to translate manual processes, standards and procedures into programs. This may sound easy – after all, since we (human beings) can do it, computers certainly can. Such a statement is not necessarily true, however. Humans have the capability of exercising their own judgement. Computers do not. Therefore, in order to design a reliable system, we need to analyze the current system in detail, and break them down to their most basic components. This is the first function of a systems analyst.

System Analysis I will show you how this is done. At the end of this subject, you will understand the tools for analyzing existing systems and designing new ones.

We wish you the very best in your endeavors!

HOW TO USE THE FILO-TEXT?

The Filo-text is a tool providing you guidance for this subject. It provides you a general information on the following:

- Assessment
- Attendance
- Fees
- Contact time
- The academic team
- The academic planner

For every week, it then provides you with the following information:

- The topic
- The objective(s) of the lecture
- The textbook and the chapter(s) and page(s) related to the given topic
- The other reference books available to you in the library
- Additional reference material for your own research
- The objective(s) of the tutorial
- Questions to prepare for discussion during the tutorial
- Questions for your personal research

Use the Filo-text to prepare yourself prior to the lecture, between the lecture and the tutorial and after the tutorial.

ASSESSMENT

Student assessment will be evaluated based on the following breakdown:

1) Individual Assignment	15 %
2) Mid-Term Examination	15 %
3) Team Project	20 %
4) Final Examination	50 %
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Total	100 %

INDIVIDUAL ASSIGNMENT

An individual assignment will be given to the student on the first week and will have to be returned no later than week 6. The marked assignment will be returned to the student by no later than week 8.

The assignment will be related to the topics covered between week 1 and week 4 inclusive. It will comprise a written report of approximately 500 words.

Should the student fail to submit his/her assignment on week 6, the result will automatically be nil.

MID-TERM EXAMINATION

A mid-term examination will be conducted during the lecture session of week 8. It will assess the students' knowledge and understanding of the topics covered up to week 6.

The results, together with the answer scripts, will be returned to the students no later than week 10.

Should a student be absent without a valid apology, the result will automatically be nil.

TEAM PROJECT

A team project will be assigned to students during the first week. The team will comprise of 4 to 6 students.

The report of the team project will have to be submitted to the subject lecturer by no later than week 10 and will be presented on week 11. Late submission won't be entertained and will automatically result in no marks being awarded.

FINAL EXAMINATION

The final examination will be conducted on week 13 or week 14 and its duration will be 3 hours.

Registration for the examination is open from week 3 and is closing on week 6. **Make sure you register on time.** No late registration will be entertained.

The format of the examination is as follows:

- | | |
|--------------------------------------|----------------------------|
| • Section A - Short Answer Questions | 5 * 4 Points |
| • Section B - Essay-type Questions | Any 4 out of 6 * 20 Points |
| <hr/> | |
| • Total | 100 Points |

ATTENDANCE

Attendance for both the lectures and the tutorials is compulsory. Any student not attending a class should provide a medical certificate or a written justification (signed by a parent or guardian in the case of a full-time student). Should a student fail to do so, he/she will be considered truant.

Should a student attendance for a given subject be lower than 70 %, he/she will not be allowed to sit for the final examination.

Punctuality is equally important. The lecturer is entitled to refuse entry into the classroom to any student that would present him/herself late.

FEES

The registration fee is to be paid upon registration.

The course fee is paid either in full, per semester or by instalments. For payments made in full, the payment is due before the first lecture. For payments made by semester, the payment per semester is due on the first day of the semester. For monthly instalments, the first payment is due on the first day of classes while the subsequent payments are due on the first day of each subsequent month.

Should any student have difficulty to pay his/her fees on time, he/she must meet with the (Deputy) Principal to arrange an alternative. Any student that would not have settled his/her fees and would not have met with the (Deputy) Principal will not be allowed to attend classes nor to sit for an examination.

CONTACT-TIME**FULL-TIME**

The duration of the classes is 12 weeks. Contact time consists of 1 1/2 hours of lecture and 1 1/2 hours of tutorial per week.

PART-TIME

The duration of the classes is 12 weeks. Contact time consists of 1 1/2 hours of lecture per week.

For each hour of contact, the student is expected to spend at least 2 hours of unsupervised work, be individually or in group.

THE ACADEMIC TEAM

At the beginning of the first lecture, please fill-in the following:

	Day	Time		Room
		Starting	Finishing	
Lecture				
Lecturer				
Consultation				
Tutorial				
Tutor				
Consultation				
Class Lecturer				
Consultation				
Lecturer-in-Charge				
Consultation				
Principal				
Consultation				
Head of Department				
Consultation				
Subject Representative				

THE ACADEMIC PLANNER

Here is an outline of the topics you will cover, week after week.

<u>Week</u>	<u>Date</u>	<u>Topic</u>
1		The Systems Development Life Cycle
2		Structured Methodologies: A Problem-Solving Approach
3		Modeling Tools for the Systems Analyst
4		Modeling Tools for the Systems Analyst
5		Preliminary Systems Analysis
6		Preliminary Systems Analysis
7		Detailed Analysis : Towards a Feasibility Study
8		Detailed Analysis : Analysis and Management
9		Prototyping and Fourth-Generation Languages
10		Designing & Prototyping Computer Outputs
11		Input Design and Data Collection Screens
12		Revision and Presentation of the Project
13 & 14		Final Examination

WEEK 1**Lecture's Subject: THE SYSTEMS DEVELOPMENT LIFE CYCLE****Lecture's Objectives:**

On completion of this lecture, the student will be able to:

- Define the word system and give at least three examples of common systems
- Explain how computer-based information systems benefit businesses
- Describe the relationship between the design of an organization and the design of the business systems that support that organization
- Explain the job roles of users and analysts as they relate to business systems
- Describe communication skills that are important to analysts
- State the four primary steps in the systems life cycle
- Know why it is necessary to design a "logical" version of a system before designing the "physical" version
- Describe how business systems have traditionally developed
- List four advantages of the CASE method of software development
- Describe modern methods for developing business systems, and explain how and why the new methods are better than the old ones

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	1	1-31

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: THE SYSTEMS DEVELOPMENT LIFE CYCLE**Tutorial's Objectives:**

On completion of this tutorial, the student would have:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals

Questions to prepare for discussion during the tutorial:

- 1) Some new systems will require new equipment. Does the analyst select new equipment during the analysis, design, or implementation phase?
- 2) Can an analyst design a system without performing a systems study? Explain.
- 3) Identify the characteristics of a good analyst.
- 4) Why would the study of psychology help a systems analyst?
- 5) Some MIS departments are attached to individual departments. Sketch an organization chart for such a structure. What is the name of such a structure?
- 6) List three disadvantages of structured methodology.

Questions available for self-assessment:

- 1) What does the word system mean? Give at least three examples of common systems
- 2) How do computer-based information systems benefit businesses?
- 3) What is the relationship between the design of an organization and the design of the business systems that support that organization?
- 4) What are the job roles of users and analysts as they relate to business systems?
- 5) Why is it necessary to design a "logical" version of a system before designing the "physical" version?
- 6) What are the four primary steps in the system life cycle?
- 7) How have business systems traditionally developed?
- 8) What are four advantages of the CASE method of software development?
- 9) Why are modern methods for developing business systems better than the old?
- 10) What communications skills are important to analysts?

WEEK 2

Lecture's Subject: STRUCTURED METHODOLOGIES: A PROBLEM-SOLVING APPROACH

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Explain the principle of functional decomposition
- Define a module and list the rules for composing one
- Explain the purpose of CASE software products
- Describe other tools available for the systems analyst
- Read the pseudocode for a problem
- Describe the purpose of a structured walkthrough

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	3	69-98

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: STRUCTURED METHODOLOGIES: A PROBLEM-SOLVING APPROACH**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) What are three goals of a structured methodology?
- 2) What constitutes a poor module?
- 3) Describe the tools that an analyst would use for design.
- 4) List six rules to follow when writing pseudocode.
- 5) Name three rules for conducting a structured walkthrough.
- 6) When do we hold walkthroughs?
- 7) When was the structured methodology first stated?
- 8) Write the pseudocode that compares the date of a transaction with today's date and determine whether payment is over 30, 60, or 90 days past due.

Questions available for self-assessment:

- 1) What is the principle of functional decomposition?
- 2) What are the rules for composing a module?
- 3) Why do we have CASE software products?
- 4) How do we read the pseudocode for a problem?
- 5) What is the purpose of a structured walkthrough?

WEEK 3

Lecture's Subject: MODELING TOOLS FOR THE SYSTEMS ANALYST

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Explain the purpose of modeling
- List the symbols used to draw physical data flow diagrams
- Read a physical data flow diagram
- Draw simple physical data flow diagrams
- Differentiate between a context and a leveled data flow diagram
- State at least five rules for drawing a physical data flow diagram
- Explain the benefits of modeling in terms of its impact on user involvement and on future system development

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	2	32-47

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: MODELING TOOLS FOR THE SYSTEMS ANALYST**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) What level number and name do we assign to the original data flow diagram?
- 2) Explain to an information systems recruiter what makes a physical data flow diagram physical. Explain why you should include implementation details when drawing a physical DFD. Doesn't it clutter the diagram? Can you think of any circumstances in which physical details might be distracting?
- 3) Explain why physical data flow diagrams are useful and how they are superior to flowcharts.
- 4) Concisely explain the symbolism and how to read a physical data flow diagram

Questions available for self-assessment:

- 1) What is the purpose of a model?
- 2) What are the benefits of modeling in terms of its impact on user involvement and on future system development?
- 3) What would a simple data flow diagram for a payroll system look like?
- 4) What is the difference between a context and a leveled data flow diagram?
- 5) What are the symbols used to draw data flow diagrams?
- 6) What are some rules for drawing a data flow diagram?
- 7) Why is a Data Flow Diagram called a process model?

WEEK 4

Lecture's Subject: MODELING TOOLS FOR THE SYSTEMS ANALYST

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Explain the purpose of modeling
- Draw data models using entity-relationship diagrams
- Explain the difference between an entity and an instance type of an entity
- Explain the benefits of modeling in terms of its impact on user involvement and on future system development

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	2	47-68

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: MODELING TOOLS FOR THE SYSTEMS ANALYST**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) Draw an ERD for this scenario: An organization purchases items from a number of suppliers. It keeps an inventory of each item type purchased from each supplier.
- 2) Draw an ERD for this scenario: Drivers take out vehicles to make deliveries- A vehicle may be taken out of any depot. It is possible for any vehicle to be taken out more than once in a given day. Any vehicle can be taken out by any driver any number of times a day.
- 3) Draw an ERD for a university registrar's office. Concentrate your modeling effort mainly on the academic registration activity.

Questions available for self-assessment:

- 1) What is the purpose of a model?
- 2) Draw a data model of any system of your choice, using an entity-relationship diagram
- 3) What are the benefits of modeling in terms of its impact on user involvement and on future system development?
- 4) Is there any difference between an entity type and an instance of an entity type?
- 5) Why is it necessary to supplement ERDs with mid-level data models?
- 6) Explain how the data modeling process can capture certain aspects of company business policy in ERDs.
- 7) What is the name of the ERD notational system in which relationships are shown in diamonds?

WEEK 5

Lecture's Subject: PRELIMINARY SYSTEMS ANALYSIS

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Describe preliminary analysis and the analyst's main function during this phase of the systems process
- Cite the five stages of an interview
- List four steps for setting up a meeting .

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	4	100-111

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: PRELIMINARY SYSTEMS ANALYSIS**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) List the inputs to the preliminary analysis
- 2) List the outputs from the preliminary analysis.
- 3) What should reported to management in the preliminary report ?
- 4) Who makes the final decision about continuing the analysis or terminating the analysis

Questions available for self-assessment:

- 1) What is preliminary analysis and what is the analyst's main function during this phase of the systems process ?
- 2) Which topics does the preliminary report to management cover ?
- 3) What are the five stages of an interview?
- 4) What are the four steps for setting up a meeting?
- 5) Which four factors will management usually take into account before allowing an analyst to proceed with a detailed analysis?

WEEK 6

Lecture's Subject: PRELIMINARY SYSTEMS ANALYSIS

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- List the topics that a preliminary report to management should cover
- Outline at least four factors that management will usually take into account before allowing an analyst to proceed with detailed analysis

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	4	112-133

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: PRELIMINARY SYSTEMS ANALYSIS**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

1. List the inputs to the preliminary analysis
2. List the outputs from the preliminary analysis.
3. What should reported to management in the preliminary report ?
4. Who makes the final decision about continuing the analysis or terminating the analysis

Questions available for self-assessment:

1. What is preliminary analysis and what is the analyst's main function during this phase of the systems process ?
2. Which topics does the preliminary report to management cover ?
3. What are the five stages of an interview?
4. What are the four steps for setting up a meeting?
5. Which four factors will management usually take into account before allowing an analyst to proceed with a detailed analysis?

WEEK 7

Lecture's Subject: DETAILED ANALYSIS: TOWARDS A FEASIBILITY STUDY

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Describe detailed analysis
- List the analyst's main functions during detailed analysis.
- Define fact finding.
- Outline methods for gathering data
- State the components of feasibility study

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	5	134-148

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: DETAILED ANALYSIS: TOWARDS A FEASIBILITY STUDY**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) List the inputs to the detailed analysis phase.
- 2) List the outputs from the detailed analysis phase
- 3) Make a list of dos and don'ts that you should follow when interviewing a user.
- 4) List three types of questionnaire formats

Questions available for self-assessment:

- 1) What is detailed analysis?
- 2) What are the analyst's main functions during detailed analysis?
- 3) Which methods does an analyst use to gather data?
- 4) What is fact finding?
- 5) What are the components of the feasibility study?
- 6) Who participates in a management review?
- 7) What are three different financial analysis techniques?
- 8) What are two reasons for management's investment opportunities?

WEEK 8

Lecture's Subject: DETAILED ANALYSIS: ANALYSIS AND MANAGEMENT

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Name three different financial analysis techniques.
- Explain two reasons for management's investment opportunities.
- List the participants in a management review

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	5	148-170

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: DETAILED ANALYSIS: ANALYSIS AND MANAGEMENT

Tutorial's Objectives:

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

1. List the inputs to the detailed analysis phase.
2. List the outputs from the detailed analysis phase
3. Make a list of dos and don'ts that you should follow when interviewing a user.
4. List three types of questionnaire formats

Questions available for self-assessment:

1. What is detailed analysis?
2. What are the analyst's main functions during detailed analysis?
3. Which methods does an analyst use to gather data?
4. What is fact-finding?
5. What are the components of the feasibility study?
6. Who participates in a management review?
7. What are three different financial analysis techniques?
8. What are two reasons for management's investment opportunities?

WEEK 9**Lecture's Subject: PROTOTYPING AND FOURTH-GENERATION
LANGUAGES****Lecture's Objectives:**

On completion of this lecture, the student will have acquired the following:

- Differentiate between a third-generation and a fourth-generation language
- Define a productivity tool
- Explain why prototyping is becoming the preferred way to build systems
- Explain the uses of prototyping tools
- Cite three advantages of 4GLs
- Name the four parts of most 4GLs
- Name three disadvantages of 4GLs
- Cite the features found in most CASE products
- Cite the two primary differences between 4GLs and CASE
- Name three disadvantages of CASE

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	6	171-214

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

**Tutorial's Subject: PROTOTYPING AND FOURTH-GENERATION
LANGUAGES****Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) Name four commercial CASE software packages.
- 2) Make a list of five essential words that the 4GL uses.
- 3) What are the major functions of any application?
- 4) List four 3GLs.
- 5) How many generations of computer languages have we experienced?
- 6) Why would an organization buy a 4GL?
- 7) What is the central component of a 4GL?

Questions available for self-assessment:

- 1) What is a productivity tool?
- 2) Why is prototyping becoming the preferred way to build systems?
- 3) What are two uses of prototyping tools?
- 4) What are the four parts of most 4GLs?
- 5) What features are found in most CASE products?
- 6) What are two primary differences between 4GLs and CASE?
- 7) What are three advantages of 4GLs?
- 8) What are three disadvantages of CASE?
- 9) What are three disadvantages of 4GLs?
- 10) What is the difference between a third-generation and a fourth-generation language?

WEEK 10

Lecture's Subject: DESIGNING & PROTOTYPING COMPUTER OUTPUTS

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- Establish the criteria for specifying a printer
- Summarize the characteristics of at least three kinds of printers
- Describe the basic report formats
- List the five types of reports
- Explain three design criteria for CRT reports
- Cite two reasons to prototype a system's reports and screen designs
- List three control techniques for monitoring system outputs
- Write a data dictionary definition for a report.

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	7	216-251

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: DESIGNING & PROTOTYPING COMPUTER OUTPUTS**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) If you needed to print over 100,000 pages per month, which kind of line printer would be the best choice? The worst choice?
- 2) Is a check a turnaround document?

Questions available for self-assessment:

- 1) What are the characteristics of a printer?
- 2) What are the five types of reports?
- 3) What are two basic report formats?
- 4) What are three design criteria for CRT reports?
- 5) What criteria are there for specifying a printer?
- 6) What are three control techniques for monitoring system outputs?
- 7) Why do we prototype a system's reports and screen designs?
- 8) List the outputs from output design and what happens to each of them.
- 9) What does "signing off" mean to the user and analyst?
- 10) Explain the five characteristics of a well-designed report.

WEEK 11

Lecture's Subject: INPUT DESIGN AND DATA COLLECTION SCREENS

Lecture's Objectives:

On completion of this lecture, the student will have acquired the following:

- List devices commonly used for data entry
- Distinguish between verification and validation
- Identify at least five types of validation
- Define a check digit and describe appropriate applications
- Discuss the advantages and disadvantages of terminals
- Design a data collection screen

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	8	252-291

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: INPUT DESIGN AND DATA COLLECTION SCREENS**Tutorial's Objectives:**

On completion of this tutorial, the student will be able to:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) List five design elements for screens.
- 2) Make a chart of the number of days in each month that would be necessary to properly validate a date entered in MMDDYY form. Don't forget to consider leap years in your chart.
- 3) Does an optical reader require verification of the data it reads?
- 4) What validation methods could be performed on a field that holds an amount of money?

Questions available for self-assessment:

- 1) What are some devices commonly used for data entry?
- 2) What is the difference between verification and validation?
- 3) What are some of the types of validations?
- 4) Why do we use a check digit?
- 5) What would a data collection screen designed to gather a person's Social Security number, name, address, date of birth, and telephone number look like?
- 6) What are the advantages of terminals over personal computers?
- 7) List the inputs to the input design phase.
- 8) List the outputs from the input design phase.
- 9) How much data can be displayed on a terminal screen? How many rows and columns are there?
- 10) Make a list of three types of menus.

WEEK 12

Lecture's Subject: REVISION AND PRESENTATION OF THE PROJECT

Lecture's Objectives:

On completion of this lecture, the student will reviewed all the syllabus covered and presented his/her project.

Textbook:

	Chapter(s)	Pages
Systems Analysis & Design, Perry Edwards, McGraw-Hill, 1993	1 to 8	4 to 291

Reference Books:

	Chapter(s)	Pages
Systems Analysis & Design Methods, Whitten, Bentley & Barlow, Irwin, 1989		

Tutorial's Subject: COMPUTER ARCHITECTURE**Tutorial's Objectives:**

On completion of this tutorial, the student will have acquired the following:

- Transformed the knowledge acquired during the lecture into a sound understanding of the topics covered.
- Compared the concepts taught during the lecture with concepts presented in other reference books.
- Applied the concepts taught during the lecture to the real life environment.
- Identified the relevance of the concepts taught during the lecture to the real needs of today's professionals.

Questions to prepare for discussion during the tutorial:

- 1) Define the following :
 - (a) Microcomputer
 - (b) Microprogramming
 - (c) Microprocessor
 - (d) Multiprocessor
- 2) Explain each of the following :
 - (a) Program counter
 - (b) Flag register
 - (c) Stack pointer
- 3) Show that the transfer statement
$$A \quad A + A$$
causes a SHIFT LEFT operation and explain exceptions.
- 4) If we use three binary digits in the instruction word to indicate which index register is used, or if one is to be used at all , how many index registers can be used in the machine?
- 5) Describe some advantages and disadvantages of multiple-accumulator systems (general-purpose registers) versus single-accumulator computer architecture. Include such factors as effects on instruction word length and convenience in programming.

Questions available for self-assessment:

1. Describe the advantages of multiple-accumulator system.
2. Discuss the advantages between *paging* and *indirect addressing* in a microcomputer.
3. Define microcomputer.
4. Define microprocessor.
5. Explain program counter and flag register.
6. What is the difference between an immediate, a direct, and an indirect address instruction word?
7. Give 3 examples of external interrupts and internal interrupts.
8. Write a program to display concentric circles.
9. Discuss the advantages and disadvantages for the following addressing strategies in a microcomputer :
 - (a) Paging
 - (b) Indirect addressing
 - (c) Index registers
10. Describe some advantages and disadvantages of multiple-accumulator systems (general-purpose registers) versus single-accumulator computer architecture . Include such factors as effects on instruction word length and convenience in programming.