SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Outline: INTRO TO 4TH GENERATION LANGUAGES

Code No.:   EDP 227
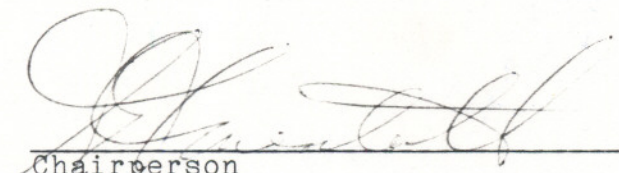
Program: PROGRAMMER/PROGRAMMER ANALYST

Semester: FOUR

Date: JANUARY, 1987

Author: R.D. LAILEY

New: _____   Revision: __X____

APPROVED: _____   _____
Chairperson   Date

INTRO TO 4TH GENERATION LANGUAGE   EDP 227
_____   _____
              Course Name   Course Number

Prerequisite: EDP 112 COBOL 1

AIMS AND OBJECTIVES:

This course is designed to examine the development of fourth-generation
languages. These languages have been developed to:
- speed up the application development process
- to create bug-free code
- to simplify and reduce the cost of modifications
- to make computing power directly accessible to end-users

Procedural and nonprocedural languages,   languages for data processing
professionals and languages for end-users, query languages and application
generators will all be examined.

The course will put fourth-generation languages into perspective,
discussing the mechanisms, uses, and future evolution of this new tool.
The specific product that will be examined and referenced is called
POWERHOUSE - developed by COGNOS Incorporated, a Canadian company.

Textbooks: "Fourth Generation Languages" by James Martin

MODULE DESCRIPTION:

MODULE 1 - overview of the fourth generation
           language "POWERHOUSE", and its component parts.
CH. 1&2
          - examine the need for the revolution from third generation
            languages to fourth generation languages.

          - compare procedural languages.

          - examine the various categories of languages.

At the end of this module the student must be able to:

1.   describe the evolution of 4GL's

2.   distinguish between procedural and nonprocedural languages

3.   discuss limited functionality of 4 GL's

4.   define monologue and dialogue programming

5. define the basic principles in the design of 4GL's

6. identify decision support tools

7. identify the various categories of users

8. identify properties of viable products for end user satisfaction

9. define basic characteristics of 4 GL's

10. identify properties and components of 4 GL's

11. name and describe the main components of POWERHOUSE

MODULE 2 - Discuss the most effective types of use of 4 GL'S.

CH. 3
- Define a data dictionary within PHD. (record stuctures and internal documentation)

- Identify problems within the Data Processing environment.

At the end of this module the student must be able to:

1. identify PHD enlies and their attributes

2. use PHD screens

3. define data with PHD

4. define a data dictionary

5. identify the way PHD assists in prototyping methodologies

6. distinguish between logical and physical entities.

7. distinguish between menu and entry screens

8. enter dictionary definitions

9. find, change, delete, add entries to the data dictionary

10. manipulate the fundamental PHD screens

11. report contents of the dictionary

12. standardize applications and identify shortcuts to entering definitions

13. explain the file screen and specify file attributes

MODULE 2 - cont'd

14. explain a number of problems within Data Processing as seen by others

15. describe the Data Processing problems with reference to application, backlog, maintenance, COBOL, the development process and formal specifications

16. describe a number of terms, methods, procedures, etc. that are evolving as new ways are found to meet the needs of end-users.

17. describe several ways in which the traditional development life cycle may be altered

MODULE 3 - Examine the effects of 4GL's on Data Processing productivity.

CH. 4,6 - Use the screen generation facility QUICK, and the report
 9 & 10 generator QUIZ, of POWERHOUSE.

At the end of this module, student must be able to:

1. explain the effects of the 4GL's on Data Processing productivity

2. identify factors other than the 4GL language which affects productivi

3. explain how the principle of minimum work can be applied to 4GL mechanisms regarding output formatting and code generation

4. describe and be able to explain at least 12 desirable human factoring properties of 4GLs

5. describe the advantages and disadvantages of natural English for queries

6. define the basic structure of a screen design

7. edit and validate data

8. place security on entry screens

9. control the visual appearance of the screen, including layout, highlighting, line drawing and data formatting option

10. show how to improve operator efficiency by repeating record layouts on the screen and by adding convenience options

11. design menu-driven systems

12. explain QUICK's counting, summing and balancing features

MODULE 3 - cont'd

13. write procedures and modify procedures to process screens

14. operate QUIZ and show how to report any information contained on file

15. individually style reports

16. show how to include summary information in reports

17. manipulate subfiles

MODULE 4 - Explore ways to help the analyst or end users proceed through
          the design process in a planned sequence. (prototyping)
CH. 16,19
  20,21 - Build a small system using the Powerhouse tool.

        - Examine the desirable properties of an ideal system developmen⁻
          facility

        - Examine selection criteria for a 4th GL.

        - Explore the future evolution of computer languages.

At the end of this module students must be able to:

1. highlight each step in a typical prototyping development sequence
    pointing out the kinds of opportunities/advantages that may arise

2. compare and contrast traditional system development methods with
    partial of full prototyping alternatives

3. describe a number of desirable properties of an ideal system
    development facility

4. define the documentation process with 4GL's

5. describe the selection criteria for 4GL's

6. describe the environment of combining 3rd GL's and 4GL's

7. outline checklists for selection of query languages, report generator
    graphics, linkages to other systems

8. explain the future evolution of computer languages

APPROXIMATE TIME FRAMES:

WEEK 1 - INTRODUCTION
- CHAPTER 1 FOURTH-GENERATION LANGUAGES
- CHAPTER 2

WEEK 2 - DISCUSSION OF CHAPTER MATERIAL
- POWERHOUSE DEMONSTRATION
- TEACHER NOTES

WEEK 3 - WALK THRU DEVELOPMENT OF RECORD STRUCTURES AND THEIR RELATIONSHIF
TO THE DATA DICTIONARY.
- DEVELOP AN ENTRY SCREEN USING THE QUICK FACILITY OF POWERHOUSE.

WEEK 4 - **ASSIGNMENT #1**
- DESIGNING REPORTS VIA THE REPORT GENERATOR QUIZ
- CHAPTER 3

WEEK 5 - REVIEW
- **TEST 1   (Modules 1 and 2)**
- DISCUSSION

WEEK 6 - EXAMINE PROCEDURAL CODING IN POWERHOUSE
- CHAPTERS 4 - 6
- TAKE UP TEST

WEEK 7 - PROJECT ASSIGNED
- DISCUSSION - Chapter 9
- **ASSIGNMENT #1 DUE**

WEEK 8 - ASSIGNMENT #2
- CHAPTER 10
- REVIEW

WEEK 9 - **TEST #2   (Module 3)**
- ASSIGNMENT/PROJECT REVIEW WEEK (make sure all students are movin₁
in the same direction and clear-up any problems)
- INTERVIEW INDIVIDUAL STUDENTS

WEEK 10 - CHAPTER 16
- DISCUSSION
- USING PHD AS A DICTIONARY MANAGER, EXPLORING THE HIERARCHICAL
STRUCTURING OF MENU AND ENTRY SCREENS
- TAKE UP TEST

WEEK 11 - SPECIAL SCREEN FEATURES
- CONTROL BREAKS
- **ASSIGNMENT #2 DUE**

WEEK 12 - ASSIGNMENT #3
        - **PROJECT DUE**

WEEK 13 - CHAPTERS 19 & 20
        - DISCUSSION

WEEK 14 - REVIEW
        - **ASSIGNMENT #3 DUE**

WEEK 15 - SUMMARY/CONCLUSION
        - CHAPTER 21
        - **TEST 3 (Module 4)**

STUDENT EVALUATION

a) The students final grade will be determined from the following
   components:

TESTS	3 @ 20%	= 60%
PROJECTS	1 @ 15%	= 15%
ASSIGNMENTS/QUIZZES		= 15%
PARTICIPATION/ATTITUDE		= 10%
		100%

b) Grading "A" = 80 - 100%
            "B" = 70 - 79%
            "C" = 55 - 69%
            "R" = 0 - 54%

NOTE: Students are expected to attend class regularly and to participate
in class discussion. They are also expected to treat their peers and
instructors in a professional business like manner during class time.
Late assignments are subject to a zero grade unless the student has PRIOR
permission to hand the assignment in at a later date from the instructor.