A COMPUTER ASSISTED INSTRUCTION SERIES
for
INTRODUCTION TO COMPUTER
PROGRAMMING

developed
by
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Project Report
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Requirements for the Degree of
Master of Science

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INTRODUCTION

The purpose of these Computer Assisted Instructional (CAI) programs is to prepare a beginning student of computer science for instruction in computer languages. The using student will be given an introduction to computing machinery, problem logic, programming languages and flowcharting. The student should achieve a general understanding of the purpose and functioning of simple computers and an appreciation of the logic and charting techniques involved in producing computer programs.

The project consists of a series of modules written in the COMMON PILOT language. PILOT is a computer language developed for the handling of computer assisted instructional techniques; i.e., displaying instructions and questions and accepting and evaluating student answers. The instructional technique presupposes a beginning student interactins with a computer terminal to receive personal tutoring, to engage in drill and practice and to complete the tests.

The individual modules of the project progress through the following topics:

1. Student introduction to the program.
2. Definition, function and parts of a simple computer.
3. Definition and purpose of programs and languages.
   Introduction to programming and languages.
4. Simple non-computer logic. Forming and following recipes, directions and instructions.
5. Simple flowcharting and introduction to computer logic.

6. Flowcharting structures.

The sessions are designed as building blocks in that each session is a completely contained instructional package with each session being a prerequisite for the section following. Each session guides the student through a tutorial part, a drill and reactive part, and a simple testing part. Student performance at each session will produce the key to the next session or ask the student to repeat the session if he has not done well.
COURSE OVERVIEW

In all lessons an attempt is made to set a tone of individual personality for the program 'instructor'. At each session the students name is determined and used throughout the lesson. The instructor will be the opposite sex of the student and considerable flirting and innuendo is used as interest motivation.

The early sessions are short and confined to very basic concepts. In the first sessions, considerable testing is done on each point as presented and the topic repeated until the student has mastered the concept. Later sessions are somewhat longer with reviews utilized in place of the individual topical testing. Diagrams and drawings are used where ever possible to enhance the learning process through the visual sense.

An examination at the end of each lesson determines the student's understanding of the topics presented. If the student has not done well, the instructor asks the student to repeat the same lesson on the next visit. If the test result is satisfactory, the student is congratulated and given the key to the next lesson.

1. Lesson One. BEGIN.

The first session is strictly an introductory session. It is short and sets the tone for the followings instructional periods. The student is greeted by the instructor who immediately determines the gender of the student. The instructor then introduces him/her self by name: Sylvia if the student is male or Malcolm if female.
The remainder of the first session is for the purpose of motivation and instructing the student on how to respond to the printed messages and request on the screen.

2. Lesson two. DEFINE.

In the session, a basic computer is defined as a group of connected devices that perform the function of input, processing, and output. Each of the functions is defined and its purpose is explained. Then the parts of a basic computer are given. The functioning of the parts are presented along with examples.

3. Lesson three. PROGRAM.

The concept of a program is presented as a set of sequenced instructions that, when followed, will accomplish an objective. Human language programs are presented. A transition is made to machine language programs. High-level languages are presented as a bridge between people language and machine language. No actual language is taught, but examples are used.

4. Lesson four. LOGIC.

The development of the concept of programming is continued by presenting the step by step nature of simple instructions and recipes. The concepts of decision, loopings, repetition and execution are introduced. The idea of an algorithm as a set of problem solution steps is formulated.

5. Lesson five. COMLOG.

The conversion of written steps to graphical presentation is developed. The most common standard flow charting symbols are
Presented with examples of use. The simple ideas of sequence, decision and repetition are amplified.

6. Lesson six. FLOCHART.

The student is introduced to structured programming by the presentation of the standard constructs of SEQUENCE, IF-THEN-ELSE, DO-UNTIL and DO-WHILE.