TRAINING PROGRAM

ADABAS

software ag

DATA BASE

FALL 1978

INTRODUCING OUR INSTRUCTORS

ROY C. WOOD, Vice President for Documentation and Education, joined s o f t w a r e   a g as Director of Training in 1976 and has developed a fully modular training program which can be taught at the customer's site on a customized basis. The training program is now offered publicly for customers, potential customers, and consultants.

Prior to joining s o f t w a r e   a g, Roy was a management consultant with Leo Cohen's Performance Development Corporation, which specializes in data base system consulting and training. He has also worked as a project leader for du Pont where he managed the development of a major corporate personnel data base system.

GARY D. BOWERS, Assistant Director of Education, joined s o f t w a r e   a g's technical staff in 1977 and was initially involved in the development of the ADABAS Data Dictionary. Since then Gary has developed the Data Base Administration Class and has assisted in the continuing review and improvement of existing classes.

Gary arrived at s o f t w a r e   a g after several years' experience with ADABAS as a systems analyst at the du Pont corporation.

DAVID M. DEL RIO, who was the original instructor for s o f t w a r e   a g and was repsonsible for the development of the original ADABAS INTERNALS course, has been with the company since 1973.

David received a B.A. degree in mathematics from Hunter College in New York in 1963, and in the years that followed he gained considerable experience both as a programmer/analyst and as an instructor. Since joining s o f t w a r e   a g, he has participated in over 100 installations of ADABAS. David now doubles as Regional Technical Director for the Western Region.

STEVE CARTER, who has been with s o f t w a r e   a g since 1975, now doubles as a technical support representative for the Northwest Region. An experienced instructor, Steve has been teaching introductory ADABAS courses since his first months with the company.

Prior to joining s o f t w a r e   a g, Steve had a wide variety of systems software applications experience over a period of twelve years.

TABLE OF CONTENTS

USING ADABAS

Day 1

INTRODUCTION AND CONCEPTS

Data Base Management System (DBMS) components are defined with an introduction to why organizations are moving toward DBMS. The ADABAS operating environment is explained relative to user programs, teleprocessing, utilities, ADASCRIPT+, etc. The ADABAS architecture is illustrated by examples of data storage and associator content. The latter includes definitions of address converter, descriptors (keys), and inverted lists. Logical relationship concepts are defined and illustrated with an explanation of file coupling. There are examples of host language programming via Direct Calls or ADAMINT. The procedural languages, ADASCRIPT+, and ADAWRITER, are described with several examples showing different features. The tools for administering the data base are presented in summary, with emphasis on utilities, security, performance, and data protection.

FILE DEFINITION

ADABAS file definition is presented from the standpoint of how to effectively and efficiently use the file definition features. The trade-offs associated with alternative file definitions and making fields descriptors (key fields) or not are discussed. The role of super, sub, and phonetic descriptors is explained. Techniques for eliminating data duplication using ADABAS are illustrated by category:

> Multiple Fields
> Periodic Groups
> Multiple Files
> Record Type/Header Records

Class problems reinforce class discussions.

Day 2

APPLICATION PROGRAMMING

The ADAMINT concepts of processing data at the host language level are defined, and include networks, hierarchies, logical records, run modes, etc. Four major data manipulation categories are explained:

> Data Selection and Retrieval
> Data Modification
> Control Processing
> Subroutines

The calling arguments are described along with specific techniques for using call functions singularly or in concert with other functions. Checkpoint restart and recovery are presented in detail. There are several class problems to be solved by writing programs using ADAMINT.

Day 3

DIRECT CALL PROGRAMMING

All of the syntax requirements are explained to enable users to write programs that process data through direct calls to ADABAS. At least one person from every installation should have some knowledge of direct call processing because all ADABAS peripheral products use direct calls. The concepts of record holding, file paths, finding set of records, competitive updates, and synchronized checkpoint are discussed. Each ADABAS direct call command is presented with an explanation of the six arguments (with the aid of decision tables). Every command option is described. Recovery/restart and security requirements are covered. Classroom discussion is reinforced with problems and examples.

WHO SHOULD ATTEND   PREREQUISITES

Everyone   None

ADABAS INTERNALS

2 DAYS

The internals course is provided so that the data base administrator will have a better understanding of how ADABAS and MPM function. Internal ADABAS file structures are described, followed by a discussion of the internal program architecture, control blocks, and detail command logic. Each aspect of the associator, data storage, work storage, and SIBA is diagrammed with data structure layouts. The mapping of the MPM control blocks (command queue, user queue, and ISN hold queue) is given along with layouts of the DVT and buffer pool management headers. Restart and recovery is presented from an internals point of view followed with a summary discussion of detail design consideration.

We recommend that all attendees have at least one month experience with ADABAS prior to class.

ADABAS INTERNALS CLASS OUTLINE (3.2.1)

Introduction

Internals Definitions

Associator Storage Layout

General Control Block

File Control BLock

Disk Space Management

- Physical Extent
- Logical Extent
- Common Free Extent
- Data Storage Free Space Table
- Disk Space Allocation

Associator Descriptor Structure

- Hyper Index
- Super Index
- Main Index
- Normal Index

Field Description Table

Data Storage

- File Layouts
- Compression
- Field Storage

Work Data Set Usage

MPM Program Structure

ADABAS Program Structure

Command Logic

- Read   - L1, L2, L3, L9
- Find   - S1, S2, S5
- Update - E1, A1, N1
- Process Control

Buffer Management

Internal Format Buffer

Data Protection

- Logging
- Autorestart
- MPM Recovery
- User Recovery

Nucleus Communication Table

WHO SHOULD ATTEND

Data Base Administrators and Staff

Data Base Systems Analyst

PREREQUISITE

DB Definitions

Direct Calls

(or equivalent experience)

DATA BASE ADMINISTRATION

2 DAYS

This class is designed to acquaint the Technical Data Base Administrator with the facilities provided by ADABAS to manage the organization's data. A brief overview introduction is given regarding the role of the DBA function within various organizations. Each of the ADABAS utilities is discussed in detail concerning syntax, how and when to use the utility, what to watch out for, and utility recovery/restart. The many aspects of the MPM and its parameters are reviewed with insights into what other users are doing. The role of ADABAS related software is reviewed and will include ADAWRITER, ADASCRIPT+, Data Dictionary System, etc. The class is concluded with a session on the ADAMINT MACROS and ADAMINT environment as well as recovery/ restart considerations for batch and teleprocessing applications.

COURSE OUTLINE

I.   Introduction

II. Data Base Loading and Definition

    Data Definition & Compression
    File Space Allocation
    Reruns/Restarts
    Load Files-Small/Large
    Planning for File Expansion
    Changing Definitions
       Create/Release DE's
       Adding New Fields
       Unload/Load
       DBMOD

III. Recovery

    Autorestart
    ADABAS Logging
    Recover from Hardware Failure
       Warmstart

       Backout
       Save/Restore
       Regenerate
       Recover Application Error
       Repair
       TP Interfaces

IV. Operations

    When to Use What Utilities
    Data Dictionary
    MPM Parameters
       Synchronous
       Tuning
       Miscellaneous Functions
    Partial Mounts
    Parallel Utilities

V.   Auditing & Control

    Audit Trail
    MPM Log
    ADIOC
    ADAREP
    Security

VI. ADASCRIPT+

    Hnames Macros
    Macro Installation

VII. ADAWRITER

    Directory
    Site Deck

VIII. ADAMINT Macro Generation

    Functions - FINDSET, READSET,
                  UPDATER, etc.
    Multiple Concept
    One Entry Point
    Linking Modules

       * * *

WHO SHOULD ATTEND

Data Base Administrators and Staff

Data Base Systems Analyst

PREREQUISITE

DB Definitions

Direct Calls

(or equivalent experience)

ADACOM

This is our newest report writing system, which will
be available in July.

Since this course is still in the design stages, the
course description and outline will be announced at
a later time.

ADABAS DESIGN CLASS

1 DAY

The ADABAS Design Class is a one day design workshop which provides an opportunity for the DBA or data base designer to review the techniques of ADABAS file design with emphasis on the tradeoffs in alternate design strategies. Included in the class is a discussion of the philosophy of data base system design and the importance of thorough analysis of system requirements. Also discussed are techniques used to improve program efficiency, as well as the importance of using certain ADABAS utilities to improve system efficiency.

Attendees of the ADABAS design class are encouraged to bring specific files to design, which can be analyzed in detail by all members of the class. Preparation of these questions should include a clear problem statement and all necessary supporting documentation. This should be prepared in advance and submitted to s o f t w a r e   a g's education staff two weeks prior to the class.

Since the ADABAS Design Class will include this indepth discussion of specific user problems, attendance must be restricted to a maximum of ten individuals.

COURSE OUTLINE

INTRODUCTION

DATA BASE DESIGN PHILOSOPHY

DATA BASE ANALYSIS

    System Requirements

        Identification of Services or Processes
        Efficiency vs. Ease of Use
        Interfaces
        Tradeoffs

    Data Base Mapping

        Major Constraints
        Files vs. Records
        File Coupling
        Record Layout (Field Location)
        Use of Group Fields

PROGRAMMING EFFICIENCIES

    Proper Use of Commands
    Search Algorithm Alternatives
    Restart/Recovery Considerations

UTILITIES

    Addload
    Filemod

DESIGN WORKSHOP

WHO SHOULD ATTEND

Technical Data Base Administration Staff
Data Base Systems Analyst

PREREQUISITE

Data Base Definition
ADABAS Internals