a choice of two preconference tutorials

9:00 a.m. – 4:00 p.m. Tuesday, October 12

DATA BASE MANAGEMENT

Instructor: Dennis Tsichritzis, Univ. of Toronto
with the assistance of D.D. Chamberlin and
R.W. Taylor, IBM San Jose

- historical and future trends in DBMS
- models of data: hierarchical, network, and relational
  models, with comparison of similarities and differences

SOFTWARE DESIGN TECHNIQUES

Instructor: Peter Freeman, U.C. Irvine
with the assistance of Anthony I. Wasserman,
U.C. San Francisco

- the importance of design and specification; differences between
design and programming
- basic design techniques: abstractions, representation, structure diagrams,
metacode, with examples

Call for evening sessions: People interested in proposing and organizing evening sessions
please contact Dr. Herb Hecht, evening sessions coordinator,
by September 20, 1976. Please call (213) 648-6260
WEDNESDAY October 13, 1976

8:45 A.M. (JOINT SESSION) SOFTWARE REQUIREMENTS AND SPECIFICATIONS
Chairman: D. Ross, SofTech Inc.
Discussants: J.H. Burrows, USAF; R.R. Brown, Hughes Aircraft; Donn Comelic, ITT Europe; J.W. Brackett, SofTech Inc.; C.R. Vick, BMD

10:30 A.M. REQUIREMENTS AND SPECIFICATIONS
"PSL/PSA A COMPUTER-AIDED TECHNIQUE FOR STRUCTURED DOCUMENTATION AND ANALYSIS OF INFORMATION PROCESSING SYSTEMS," Daniel Teichroew, Univ. of Michigan

10:30 A.M. PROGRAM SYNTHESIS TECHNIQUES
"DESIGN OF PSI PROGRAM SYNTHESIS SYSTEM," C. Green, Stanford Univ.
"OBSERVATIONS ON THE INTERACTION BETWEEN CODING AND EFFICIENCY KNOWLEDGE IN THE PSI PROGRAM SYNTHESIS SYSTEM," D.R. Barstow and E. Kant, Stanford Univ.
"IS 'SOMETIMES' SOMETIMES BETTER THAN 'ALWAYS'?" INTERMITTENT ASSERTIONS IN IMPROVING THE CORRECTNESS OF PROGRAMS," Z. Manna and R. Waldinger, SRI

10:30 A.M. OPERATING SYSTEMS
"AN ACCESS CONTROL FACILITY FOR PROGRAMMING LANGUAGES," A. Jones, CMU and B.H. Liskov, MIT
"VERIFICATION OF FAIRNESS IN AN IMPLEMENTATION OF MONITORS," R.A. Karp and D.C. Luckham, Stanford Univ.
"SIGNALLING IN MONITORS," J.H. Howard, Univ. of Texas
"VERIFICATION OF A MONITOR SPECIFICATION," A.R. Saxena, Stanford Univ. and T.H. Bredt, Univ. of Colorado

1:45 P.M. SOFTWARE REQUIREMENTS AND SPECIFICATIONS
"SOFTWARE DEVELOPMENT SYSTEM," C. Davis, U.S. Army Ballistic Missile Defence Advanced Technology Center
"SPECIFICATIONS - A KEY TO EFFECTIVE SOFTWARE DEVELOPMENT," P.C. Belford et al, CSC
"EXTENSIBLE APPROACH TO COMPUTER-AIDED SOFTWARE REQUIREMENTS ENGINEERING," T. Bell, TRW
"A REQUIREMENTS ENGINEERING METHODOLOGY FOR REAL-TIME PROCESSING REQUIREMENTS," M. Alford, TRW
"ADAPTIVE TESTING," D.W. Cooper, General Research
"A LAB FOR THE DEVELOPMENT AND EVALUATION OF BALLISTIC MISSILE DEFENSE SOFTWARE QUALITY ENHANCEMENT TECHNIQUES," J.T. Benson, General Research
"RESEARCH TOWARDS A TECHNOLOGY TO SUPPORT SPECIFICATIONS OF DATA PROCESSING SYSTEM PERFORMANCE REQUIREMENT," E. Balkovitch, General Research

1:45 P.M. EDUCATION (panel)
Chairman: R.T. Yeh, Univ. of Texas, Austin
"ESSENTIAL ELEMENTS OF SOFTWARE ENGINEERING CURRICULA," R.E. Fairley, Texas A&M; Peter Freeman, U.C. Irvine; Anthony I. Wasserman, UC San Francisco
Panel Discussants: G.M. Hopper, U.S. Navy
S. Jeffrey, National Bureau of Standards
H.D. Mills, IBM
A. Perlis, Yale Univ.
T. Steele, Equitable Life Insurance Co.
M. Wilkes, Cambridge Univ.

1:45 P.M. OPERATING SYSTEMS AND NETWORKS
"THE STRUCTURE AND CHARACTERISTICS OF DISTRIBUTED SYSTEMS," C.V. Ravi, U.C. Berkeley
"RIG, ROCHESTER'S INTELLIGENT GATEWAY; - A SYSTEM OVERVIEW," E. Ball, J. Feldman, J. Low, R. Rashid, and P. Royner, Univ. of Rochester

1:45 P.M. PERFORMANCE EVALUATION
"AN OVERVIEW OF PERFORMANCE EVALUATION," J.C. Browne, Univ. of Texas, Austin

"AN EXPERIMENT IN PROGRAM RESTRUCTURING FOR PERFORMANCE ENHANCEMENT," D. Ferrari, and E. Lau, UC Berkeley
"A DATA STRUCTURE AND DRIVE MECHANISM FOR A TABLE-DRIVEN SIMULATION SYSTEM EMPLOYING MULTILEVEL STRUCTURAL REPRESENTATION OF DIGITAL SYSTEMS," N. Billawala, S.A. Szyndera and E.W. Thompson, Univ. of Texas, Austin
"AUTOMATIC ANALYSIS AND EVALUATION," M.V. Zelkowitz, Univ. of Maryland

8:00 P.M. REQUIREMENTS AND SPECIFICATIONS
"PROCESS DESIGN ENGINEERING - A METHODOLOGY FOR REAL-TIME SOFTWARE DEVELOPMENT," Gauding et al, Texas Instruments
"PROCESS DESIGN SYSTEM AND INTEGRATED SET OF SOFTWARE DEVELOPMENT TOOLS," R.G. Koppang, Texas Instruments
"A METHODOLOGY FOR DECOMPOSING SYSTEM REQUIREMENTS INTO DATA PROCESSING REQUIREMENTS," K.G. Salter, Ford Aeronutronics

8:00 P.M. PROGRAMMER’S WORKBENCH
"AN INTRODUCTION TO THE PROGRAMMER’S WORKBENCH," T.A. Dolotta and J.A. Mashey, Bell Labs
"USING A COMMAND LANGUAGE AS A HIGH-LEVEL PROGRAMMING LANGUAGE," J.R. Mashey, Bell Labs
"DOCUMENTATION TOOLS AND TECHNIQUES," J.R. Mashey and D.W. Smith, Bell Labs
"THE LEAP LOAD AND TEST DRIVER," T.A. Dolotta
J.S. Liwinko, R.E. Menninger, and W.D. Roome, Bell Labs
"A MODIFICATION REQUEST CONTROL SYSTEM," D.B. Knudsen, A. Barofsky and L.R. Satz, Bell Labs
"A USER’S VIEWPOINT ON THE PROGRAMMER’S WORKBENCH," M.H. Bianchi and J.L. Wood, Bell Labs

THURSDAY, October 14, 1976

8:45 A.M. (JOINT SESSION) SOFTWARE DESIGN AND DEVELOPMENT
Chairman: B.W. Boehm, TRW
"AN OVERVIEW OF DESIGN METHODOLOGIES," D. Gries, Cornell Univ.
"AN EVALUATION OF STRUCTURED PROGRAMMING," H.D. Mills, IBM

10:30 A.M. DESIGN PRINCIPLES OF LARGE PROGRAMS
"THE ROLE OF SOFTWARE IN SUCCESSFUL COMPUTER APPLICATIONS," W.J. Black, Chas. T. Main, Inc.
"THE PRELIMINARY DESIGN AS A KEY TO SUCCESSFUL SOFTWARE DEVELOPMENT," J.M. Drayefus and P.J. Karaconcy, TRW
"AN ENGINEERING VIEWPOINT OF SOFTWARE DESIGN," R. White and L. Booth, Univ. of Connecticut

10:30 A.M. PROGRAMMING LANGUAGES
"PROGRAMMING AS AN EVOLUTIONARY PROCESS," F.L. Bauer, Institut fur Informatik, Der Technischen Universitat Munchen
"EXTENDING CONCURRENT PASCAL TO ALLOW DYNAMIC RESOURCE MANAGEMENT," A. Silberschatz and R. B. Kieburtz, SUNY Stonybrook
"NEW LANGUAGES FROM OLD: THE EXTENSION OF PROGRAMMING LANGUAGES BY EMBEDDING, WITH A CASE STUDY," M. Feldman, Univ. of Rochester

10:30 A.M. SOFTWARE MODELLING
"STRUCTURED MODELS FOR SOFTWARE RELIABILITY PREDICTION," M. Shooman, Polytechnic Institute of New York
"SPECIFICATIONS AND IMPLEMENTATION OF THE TRIGGER SUBSYSTEM IN A DATA BASE SYSTEM," K. Eswaran, IBM San Jose
"A MODEL OF ROLLBACK/RECOVERY WITH MULTIPLE CHECKPOINTS," E. Gelenbe, IRIA-LABORIA, France
"ON THE EFFECTIVENESS OF SET ASSOCIATIVE PAGE MAPPING AND ITS APPLICATION TO MAIN MEMORY MANAGEMENT," A.J. Smith, UC Berkeley

1:45 P.M. DESIGN SPECIFICATION AND MANAGEMENT
"INTRODUCING A SOFTWARE DESIGN LANGUAGE," Y. Chiu, Univ. of Maryland
"FORMAL SPECIFICATION BY ATTRIBUTE GRAMMARS AND AUTOMATIC PROGRAMMING," J. Jazayri, Univ. of North Carolina
"MANAGEMENT APPROACH TO THE DEVELOPMENT OF COMPUTER-BASED SYSTEMS," R. Turn, Rand Corp.
"AN ANALYSIS OF THE SAFEGUARD SYSTEM SOFTWARE DEVELOPMENT COST," W.E. Stephenson, Bell Labs
1:45 P.M. PROGRAMMING LANGUAGES AND SYSTEMS
"HOW TO DESIGN LANGUAGES TO MAKE PROGRAMMING AS DIFFICULT AS POSSIBLE," R.L. Wexelblat, Bell Labs
"ON THE TRANSFORMATIONAL IMPLEMENTATION APPROACH TO PROGRAMMING," R. Balzer, USC
"DECISION TABLE PROGRAMMING AND RELIABILITY," A. Lev and D. Tamanaha, Univ. of Hawaii

1:45 P.M. SOFTWARE MODELLING
"ON THE MODELLING, ANALYSIS, AND DESIGN OF A SPECIAL CLASS OF SOFTWARE STRUCTURES," M.G. Gonda and E.G. Manning, Univ. of Waterloo
"ON RELIABLE TOPOLOGIES FOR COMPUTER NETWORKS," J. Rubin, UNC
"ON MODELLING SEAT-OF-THE-PANTS DESIGN PROCESSES VIA DECISION THEORY," K.M. Chandy, Univ. of Texas, Austin

3:30 P.M. SOFTWARE DESIGN (Panel)
Chairman: L.K. Belady, IBM
"PROGRAM EVOLUTION AND ITS IMPACT ON SOFTWARE ENGINEERING," M.M. Lehman and F.N. Parr, Imperial College of Science and Technology, London

3:30 P.M. SOFTWARE ENGINEERING IN THE DEPARTMENT OF DEFENSE
"A DEFENSE VIEW OF SOFTWARE ENGINEERING," W.A. Whittaker, Advanced Research Projects Agency
"SOFTWARE ENGINEERING IN THE DEVELOPMENT OF THE TRIDENT FIRE CONTROL SYSTEM," R.M. Pollock, Naval Service Weapons Center, Dahlgren Laboratory
"STRUCTURED PROGRAMMING FROM THEORY TO PRACTICE," J.C. Carrow, United States Army Computer Systems Commands
"DYNAMIC SOFTWARE ENGINEERING: AN EVOLUTIONARY APPROACH TO AUTOMATED SOFTWARE DEVELOPMENT AND MANAGEMENT," J. Greene, Headquarters, Strategic Air Command
"SOFTWARE RESEARCH IN THE DEPARTMENT OF DEFENSE," W.E. Carlson, Advanced Research Projects Agency

3:30 P.M. SOFTWARE TESTING: THEORY AND PRACTICE (Panel)
Chairman: J.C. Rault, Thomson - CSF
Panel Discussants: H. Trauboth, Univ. of Karlsruhe, Germany E. Miller, Science Applications, Inc. R. Klier, EDP Consultant

8:00 P.M. SOFTWARE DISTINCTNESS: A TUTORIAL ON DUAL PROGRAMMING AND HUMANIZED INPUTS
A tutorial on the application of the principles of distinctness to dual program code and to dual data structures for automatic error detection and correction, increased programmer productivity, and other interesting attributes. Theory and practical experiences will be discussed.
Chairman: H. Hecht, The Aerospace Corp.
Principal Speaker: T. Gilb, EDP Consultant, Norway

8:00 P.M. STUDENT SESSION ON SOFTWARE ENGINEERING
Call for Student Papers: Students are invited to give short presentations on software engineering ideas at the student session. A prize will be given for the best idea. Send 150-word abstract to Mr. Frank Ho, Computer Science Department, UC Berkeley, Berkeley, Ca. 94720. Deadline for receipt of abstracts: September 7, 1976.

FRIDAY, October 15, 1976

10:30 A.M. THEORETICAL ASPECTS OF SOFTWARE ENGINEERING
"A PROGRAM COMPLEXITY MEASURE," T. Maccabe, DOD
"THE DESIGN OF A TEMPLATE STRUCTURE FOR A GENERALIZED DATA STRUCTURE DEFINITION FACILITY," B. Claybrook, Virginia Polytechnic Institute and State University
"THE DESIGN OF SOFTWARE STRUCTURE SPECIFICATIONS," J. Guttag, E. Horowitz, and D. Musser, USC

10:30 A.M. SOFTWARE FAULT TOLERANCE
"AN OVERVIEW OF SECURITY IN OPERATING SYSTEMS," P. Neumann, SRI
"RECOVERY BY INTERRUPTION: A SYSTEM SUPPORTING HIGH RELIABILITY," T. Anderson and R. Kerr, Univ. of Newcastle upon Tyne
"THE DESIGN, ANALYSIS AND VERIFICATION OF THE SIFT FAULT TOLERANT SYSTEM," J.H. Wensley et al., SRI

1:45 A.M. VALIDATION AND TESTING
"HOW TO DESIGN A SYSTEM IN WHICH MODULES CAN BE CHANGED ON THE FLY," R.S. Fabry, UC Berkeley
"TEST PROCEDURES: A NEW APPROACH TO SOFTWARE VERIFICATION," D.L. Panzl, GE
"THE DIMENSIONS OF MAINTENANCE," E.B. Swanson, UCLA
"A SOFTWARE RELIABILITY ASSESSMENT BASED ON A STRUCTURAL AND BEHAVIORAL ANALYSIS OF PROGRAMS," S. Pimont, Thomson-CSF

1:45 P.M. DATA BASES
"TRANSLATION AND COMPATIBILITY OF DATA BASE QUERY LANGUAGES," D.J. McLeod, MIT
"A FRAMEWORK FOR DATA BASE SEMANTIC INTEGRITY," M.M. Hammer and D.J. McLeod, MIT
"SOME_considerations_in_database_application_programming," R.C. Lee, J.R. Slagle, and C.T. Wong, National Tsing Hua University, Taiwan
"A COMPARISON OF THE USE OF LINKS AND SECONDARY INDICES IN A RELATIONAL DATA BASE SYSTEM," M. Stonebraker, UC Berkeley
"A SYNTHETIC ENGLISH QUERY LANGUAGE FOR A RELATIONAL ASSOCIATIVE PROCESSOR," L. Kerschberg, E.A. Ozkarahan, and J.E.S. Pacheco, Univ. of Toronto
"IMPROVED UPDATING IN RELATIONAL DATA BASE SYSTEMS BY DEUTER-SHERE ALGORITHMS," P. Kummel, Univ. of Stuttgart

1:45 P.M. CASE STUDIES
"A PRINCIPLE FOR RESILIENT SHARING OF DISTRIBUTED RESOURCES," P. Alsberg, Univ. of Illinois
"DESIGN EVALUATION OF THE COMPUTER GENERATING SYSTEM MUGI," R. Wilhelm, Technical Univ.of Munich
"AN ENVIRONMENTAL SIMULATOR FOR THE FDNY COMPUTER AIDED DISPATCH SYSTEM," J. Mohan, New York City Fire Department
"DATA FLOW, ACT AND CASES, AND SPECIFICATIONS FOR COMMUNICATIONS SWITCHING SYSTEMS," K. Shanker and C.S. Chandersekaran, Burroughs Corp.
"QUANTITATIVE EVALUATION OF SOFTWARE QUALITY," B.W. Boehm, J. Brown, M. Lipow, and T. Thayer, TRW
"ASPECTS ON DESIGN, TEST, AND VALIDATION OF THE SOFTWARE FOR A COMPUTERIZED REACTOR PROTECTION SYSTEM," U. Vogues, Nuclear Research Center, Karlsruhe
"PROGRAM ANALYSIS - A METHOD FOR THE VERIFICATION OF COMPUTER SOFTWARE FOR THE CONTROL OF A NUCLEAR REACTOR," W. Ehrenberg and G. Rauch, Technical University of Munich

3:30 P.M. SOFTWARE AUTOMATED TOOLS
"THE DETECTION OF ANOMALOUS INTERPROCEDURAL DATA FLOW," L. Hendrick, Univ. of Colorado
"ATLAS - AN AUTOMATED SOFTWARE TESTING SYSTEM," J. Kane, Bell Labs
"ON THE AUTOMATED GENERATION OF PROGRAM TEST CASE," C.V. Ramamoorthy, S.F. Ho, and W.T. Chen, UC Berkeley
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