CUC

TECHNICAL INFORMATION SERVICE

SENIOR TECHNICAL STAFF BULLETIN
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CONTENTS THIS ISSUE

THE INDUSTRY, GENERAL

SHARE MEMBERSHIP AND ACTIVITIES. As a member of SHARE, Computer Usage Company is eligible to participate in the organization's activities and to receive the products of its cooperative programs.

SHARE was originally an informal group of early users of the IBM 704 who met to consider standardization. Membership now includes a substantial percentage of the major users of high-speed digital computing equipment. Their joint requests and recommendations to IBM for changes and standardization, and the exchange of information among SHARE members represents the main streams of development of computer usage. Richard Auerbach, New York office, is the CUC representative to SHARE. Harry Leslie is the alternate representative.

SHARE MEMBERSHIP AND ACTIVITIES (cont'd)
The Technical Information Service receives all material
distributed by SHARE to its members. The project acti-
vity reports cited in this bulletin have been selected
as being of particular interest to company operations.
Contact TIS for copies of these and any other SHARE
publications, and for assistance in obtaining documen-
tation and programs from their library. Visit your
local 7040, 7090 users if you're interested in familiar-
izing yourself with SHARE materials and information.

GOVERNMENT ELECTRONIC DATA PROCESSING SYSTEMS. Hearings
before the Subcommittee on Census and Statistics of the
Committee on Post Office and Civil Service, House of
Representatives, 89th Congress, 2nd Session, June 1966;
Robert N. C. Nix, Chairman. 516 p. Copies available
from the Chairman's office.

A review of electronic data processing systems - uses,
capabilities, software, hardware, management, personnel -
as presented in the testimony of representatives of many
Federal agencies and state and local governments.

MANAGEMENT

IBM SYSTEM 360 DATA PROCESSING STANDARDS. Written and
originally published by IBM United Kingdom Ltd. as
"Management Standards for Data Processing." The standards
in the manual are slanted toward a System/360 16-32K
Storage, Disk or Tape and using Basic Operating System.
However, it could be used as a generalized manual as in-
dicated by the original British title. Detailed standards
are presented under the broad headings of (1) Management
(2) Machine Configuration (3) Systems Analysis (4) Pro-
gramming, and includes a summary of documentation aids.

TIS has copies available for on demand dissemination. A
limited number of copies were made available through U. S.
IBM channels - Form No. F10-0001.

APPLICATIONS

USING COMPUTER GRAPHICS IN COMMUNITY RENEWAL. Urban
Renewal Administration, Housing and Home Finance Agency.
Superintendent of Documents, Washington, D. C. $1.50.

The manual describes computer methods of graphing, data
processing and symbolic mapping used in preparing a
Community Renewal Program for Spokane, Washington.
(Available on loan from TIS).

TIME SHARING is the major topic in the August 1966 issue
of "RCA Computer Systems Information-Management Consultants
Bulletin."

CONTENTS

COMPUTER CONTROL OF INDUSTRIAL PROCESSES. Emanuel S. Savas.
McGraw-Hill, 1965. 400 p. $16.00.

Information is presented on computer control from both appli-
cation and production oriented viewpoints. Selected topics:
Computer control concepts, Mathematical models, Steady-state
optimization and control, Instrumentation for computer control,
Programming for computer control, and 13 short reviews of in-
dustrial applications, e.g., chemicals, gas, steel, paper, food.

CONSTRAINTS, WEIGHTS AND MULTIPLE DEPENDENT VARIABLES IN
NONLINEAR ESTIMATION, by Donald W. Marquardt, Du Pont
Engineering Department. SHARE Secretary Distribution
154, July 8, 1966. 9 p. The paper contains a number of
important special techniques which are useful in handling
nonlinear problems. It was prepared as documentation for
the following programs:

Marquardt, D. W., "Least-Squares Estimation of
Nonlinear Parameters," A Computer Program in
FORTRAN IV Language; IBM Share Library, Distri-
bution Number 3094, March, 1964; (Successor to
Distribution Number 1428) Write-up includes
theory of confidence region calculations.

Marquardt, D. W., and Ruby M. Stanley, "NLIN 2 -
Least-Squares Estimation of Nonlinear Parameters,"
"Supplement to SDA 3094 (NLIN)," Mimeo Manuscript,
11/20/64. Available on request.

BIOMEDICAL COMPUTER APPLICATIONS

BIOMEDICAL ELECTRONICS is a new monthly newsletter from
the publishers of EDP Weekly, Industry Reports, Inc.,
514 10th Street, N. W., Washington, D. C. Single sub-
scriptions $30.00 per year. Its format is that of EDP
Weekly. The contents include a digest of current de-
velopments in all areas of medical electronics, bionics,
bioastronautics, cyrobiology, nuclear medicine, biomedi-
cal engineering, and biophysics, plus technical descrip-
tions and applications, reports on research, and listings
of grants and contract awards, etc.

TIS recently sent sample copies of the August issue to
the following offices for evaluation: Washington, Balti-
more, Boston, Houston, Palo Alto. Other offices please
indicate interest.

BIOMEDICAL APPLICATIONS FOR AN IBM DATA ACQUISITION SYSTEM.
New IBM Manual - E20-0118. Contains basic material on the
application of computers to medical data acquisition, labora-
tory automation, and data screening, reduction and analysis.

SURVEY OF LIFE SCIENCES COMPUTER PROGRAMS. Final Technical
Documentary Report 15 July 1963 - 14 July 1964. IBM,
Thomas J. Watson Research Center. 181 p. AD 627152.
Available from Clearinghouse for Scientific and Technical
Information, Springfield, Virginia - $5.00, or on loan
from TIS.

This report attempts to provide the
information necessary to locate and

SURVEY OF LIFE SCIENCES COMPUTER PROGRAMS (cont'd)

request programs or program descrip-
tions and listings. Typical appli-
cations in the life sciences are de-
scribed for general programs on in-
formation retrieval, cross-tabulation
of data, tests of statistical hypo-
theses, regression analysis, multi-
variate analysis, time series analy-
sis, analysis of variance and covari-
ance, mathematical diagnosis, linear
programming, simulation, numerical
techniques, and matrix algebra. In
addition to these general purpose
programs, many special purpose pro-
grams exist which are applicable
within the gamut of research problems.

COMPUTERS IN BIOMEDICAL RESEARCH. Edited by Ralph W.
Stacy, University of North Carolina, and Bruce Waxman,
National Institutes of Health. 2 vols. Academic Press,
1965. Vol. 1 - $20.00, Vol. 2 - $14.00.

Contents - Volume One

Computers and Mathematics In The Life Sciences
Computer Simulation of Life Processes
Computer Analysis of Specific Biosystems
Computer Uses In Neurophysiology
Computers In Clinical Medicine
Computation In Psychology and Psychiatry

Contents - Volume Two

Computer Technology In The Life Sciences
Programming For Life Sciences Research
Biological and Physiological Applications of Computers
Computers In Hospital Automation
Computers In Psychology and Psychiatry

MATHEMATICS AND COMPUTER SCIENCE IN BIOLOGY AND MEDICINE.
Edited by the Medical Research Council, 1965. 311 p.
$12.00. Not available TIS, but we'll place order for
you with the British Information Service, New York, N. Y.

Contains papers from a symposium sponsored by the Medical
Research Council and Ministry of Health, July 1964.

MATHEMATICS AND COMPUTER SCIENCE IN BIOLOGY AND MEDICINE (cont'd)

Topics include: computer diagnostic procedures, automatic
data processing of hospital medical records, pattern recog-
nition procedures.

PROGRESS IN MEDICAL COMPUTING 1965. 80 p. Describes a
more recent U. K. conference covering topics similar to
item above. Publication available from the Medical Auto-
mation Unit at University College Hospital, London.

Conferences on DATA ACQUISITION AND PROCESSING IN BIOLOGY
AND MEDICINE have been held since 1961 at the University
of Rochester. Three volumes of papers and edited dis-
cussions have been published. Selected papers from the
1964 conference published by Pergamon Press: Computer-
oriented study of human metabolism, Use of a computer
for the reduction of ultracentrifuge data, Computer-based
colony records system for the Oregon Regional Primate
Research Centre, Retrieving and processing medical
measurement data, and Computerization of a pharmaceutical
manufacturer.

PROGRAMMING TECHNIQUES

DETAB-65 Preprocessor. TIS recently obtained the basic
documation for this program from the SHARE Program Library.
Copies are available for on demand dissemination.

The DETAB-65 Preprocessor converts limited-entry
decision tables contained within the programs
into a form acceptable by a COBOL compiler. The
preprocessor itself was written in required
COBOL-61 and was designed to facilitate easy
modification for various COBOL implementations.
It can either be used alone or incorporated in-
to a COBOL compiler. The preprocessor has been
successfully compiled and executed upon the IBM
7040, 7044, and 7090/94 computers. The pre-
processor package consists of the following-
abstract... the DETAB-65 users manual... a de-
cision table bibliography...Preprocessor card
deck and listing...test deck and listing.

DETAB-65 Preprocessor (cont'd)

DETAB is a decision table language extension to COBOL-61
for automatic compilation into an object program. It is
a supplement to, not a replacement of, COBOL-61. For
additional information on the origins of DETAB-X (De-
cision Tables, Experimental) reference should be made to
Solomon Pollack's paper, "What is DETAB-X" which is in-
cluded in the proceedings of the SYMPOSIUM ON DECISION
TABLES held September 20, 1962 in New York. (available
TIS)

Presentations at this symposium and other reports on the
subject are included in the bibliography to Paul Nixon's
article, "Decision Tables and Their Application," (Com-
puters and Automation, April 1964), cited in our bulletin
to the Senior Technical Staff 4 May 1966. See also "Use
of Decision Tables in Computer Programming," H. W. Kirk,
JACM, January 1965, p. 41-43; and "Conversion of Decision
Tables to Computer Programs," L. I. Press, JACM, June
1965, p. 385-390.

A STUDY OF REPLACEMENT ALGORITHMS FOR A VIRTUAL-STORAGE
COMPUTER, L. A. Belady, appears in the current issue of
IBM Systems Journal, vol. 5, no.2, 1966 p. 78-101.
(TIS will provide copies if you need them.)

> The study is based on a virtual-
> storage concept that provides for
> automatic memory allocation.
> Several algorithms for the re-
> placement of current information
> in memory are evaluated. Discussed
> is the simulation of a number of
> typical program runs using differing
> replacement algorithms with varying
> memory size and block size. The
> results are compared with each
> other and with a theoretical optimum.

FORTRAN Language Standards, X3.9 (1966) has just been
published by the American Standards Association. The
price is $4.80 a copy. Order from the ASA, 10 East
40th Street, New York, N. Y. 10016. Delivery is very
slow. We've been waiting one month for our copy.

PROGRAMMING TECHNIQUES (cont'd)

The JOVIAL Manual. Part II. The JOVIAL (J3) grammar
and lexicon. M. H. Perstein, SDC. 20 October 1965.
142 p. Available from the Clearinghouse for Technical
and Scientific Information, Springfield, Virginia as
AD 623 861 for $4.00; or on loan from TIS.

A SYNTAX-ORIENTED TRANSLATOR, by Peter Z. Ingerman, RCA.
Academic Press, 1966. 131 p. $5.95. The publisher's
blurb suggests that the professional computer programmer
will find in the book an exposition of compiler techniques
available nowhere else. Recommended by CUDC personnel
who have examined it.

COMPARISON OF IBM 360 TAPES AND DIRECT ACCESS STORAGE
DEVICES (DASD). A report from the SHARE Removable
Data Set Storage Committee OS/360 Hardware Configuration
Project. June 24, 1966. 12 p. includes charts. Remova-
ble data set storage devices discussed are the IBM 2311
disk pack, IBM 2314 disk cluster, IBM 2321 data cell, and
the IBM 2400 series tape.

FINAL REPORT OF THE SHARE AD HOC COMMITTEE ON GRAPHIC
REQUIREMENTS. July 1, 1966. 17 p. The committee con-
cluded that a set of requests and requirements would be
premature at this time. This report contains a survey
or sampling of current and future applications and tech-
niques that indicates the breadth of the subject. An
attempt has been made to explain how a graphic system
should be structured and to describe some of the im-
plications. The result is a set of basic considera-
tions and important points to compare with currently
available support, future announcements and installa-
tion generated requirements.

Appendix items include: (1) OBJECTIVES OF A GRAPHIC
SUPPORT SOFTWARE SYSTEM, (2) POTENTIAL GRAPHIC APPLI-
CATION AREAS, (3) CURRENT APPLICATIONS AND FEASIBILITY
STUDIES.

SHARE PROGRAM LIBRARY. The SHARE Library consists of
program packages submitted by membership installations.
The Contributed Programs (Type IV) are included in the
IBM Catalog of Programs for the various processing sys-
tems, listed below, and are available from:

SHARE PROGRAM LIBRARY (cont'd)

DP Program Information Department
International Business Machines Corporation
40 Saw Mill River Road
Hawthorne, New York 10532

Orders should be sent on General Program Request cards
(Form 120-1145) which are available from your IBM sales
office. Contact TIS if you encounter any procedural
difficulties.

Title	Catalog Form No.
Catalog of Programs for IBM 1240, 1401, 1420, 1440, and 1460 Data Processing Systems	C20-1601
Catalog of Programs for IBM 705, 1410, 7010, 7070, 7072, 7074, 7080, 7740 and 7750 Data Processing Systems	C20-1602
Catalog of Programs for IBM 1620 and 1710 Data Processing Systems	C20-1603
Catalog of Programs for IBM 704, 709, 7040, 7044, 7090 and 7094 Data Processing Systems	C20-1604
Catalog of Programs for IBM System/360	C20-1619
Catalog of Programs for IBM 1130 Computer System and IBM 1800 Data Acquisition and Control System	C20-1630

NEW AND REVISED IBM MANUALS

TITLE	CATALOG FORM NO.
IBM System/360 Bibliography Accumulative Index of Publications and Programs	A22-6822-7
to above	N20-0360.27 (Aug. 15)
IBM System/360 Project Control System	H20-0222
IBM System/360 Operating System ALGOL Language	C28-6615
General Purpose Simulation System/360	H20-0186-1
System/360 Scientific Subroutine Package	H20-0166-1
System/360 FORTRAN IV Language	C28-6515-4
IBM System/360 Principles of Operation	A22-6821-3
Numerical Control System/360 APT	H20-0181-1

LITERATURE AND ANNOUNCEMENTS FOR OFFICE LIBRARIES

IBM PERIODICALS TO CUDC OFFICES. All CUDC offices are on IBM's distribution lists to receive the following titles as they are issued.

> IBM SYSTEMS JOURNAL - quarterly
>
> IBM JOURNAL OF RESEARCH AND DEVELOPMENT - bimonthly
>
> IBM COMPUTING REPORT FOR THE SCIENTIST AND ENGINEER
> - irregular
>
> DATA PROCESSOR - quarterly

If you haven't already received the current issue of each of the magazines, we've been assured you will have the next ones.

LITERATURE AND ANNOUNCEMENTS FOR OFFICE LIBRARIES (cont'd)

COLLECTED ALGORITHMS FROM COMMUNICATIONS OF THE ACM.
Beginning June 1966, the ACM inaugurated an Algorithm
looseleaf service. Subscription includes every algo-
rithm published in CACM from 1960 through June 1966
and one year's updating service. Price to ACM members
and subscribers to Communications of the ACM - $15.00;
non-members - $25.00.

KWIC INDEX to IBM MARKETING PUBLICATIONS.
Form No. 320-1621-12. Released this week. Obsoletes
the Index of May 15, 1966 and its updates.

PROGRAMMING THE IBM SYSTEM/360, by the Staff of Computer
Usage Company. The publisher, John Wiley, released the
third printing last month. This printing corrects the
errors in the original printings. Ascher Opler, CUE,
will welcome the identification of other errors which
come to your attention.

TECHNICAL INFORMATION SERVICE

TO: Eleanor Crouse - TIS, Mount Kisco

FROM: _____   DATE _____

SUBJECT: Request for items announced in STS Bulletin 10-96