Institute for Computer Sciences and Technology Publications, 1966-1976

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Washington, D.C. 20234

January 1978

Issued April 1978
Preface

This bibliography contains references to publications in various areas of computer science and technology by personnel of the Institute for Computer Sciences and Technology (ICST), National Bureau of Standards (NBS). ICST authors publish in a variety of media, including technical journals, conference proceedings, and NBS publications series: technical notes (TN's), special publications (NBS-SP's), informal reports (NBSIR's), monographs, and others. Only the material published by ICST authors in the NBS publications series is covered in this bibliography.

This listing covers the period 1966, when the Center for Computer Sciences and Technology (now ICST) was established, through 1976. An addendum lists the first 16 documents in the new Series on Computer Science and Technology, (NBS Special Publication 500-), which was initiated in January 1977. Readers are also referred to NBS Publications List 84, which lists publications by ICST personnel in all media for 1974-76 and all Federal Information Processing Standards (FIPS) publications in effect. A copy of NBS PL 84 can be obtained by writing to ICST, Room B260, Technology Building, National Bureau of Standards, Washington, D.C. 20234. ICST plans to keep current such lists of publications by the staff, for ease of reference by colleagues in the computer field.

Copies of the documents listed in this bibliography may be consulted in the Information Technology Division, Room B250, Technology Building, National Bureau of Standards (in Gaithersburg, Maryland). (For information or directions, call (301) 921-3517.) Inquiries about individual papers may be addressed directly to the authors at the Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234. (Readers are advised, however, that older publications are generally out of print and are available only for consultation at the Information Technology Division, as noted above.)

This compilation was prepared by Addie G. Chattic, assisted by Martha M. Gray and Jacqueline B. Jones of the Information Technology Division. The manuscript is computer produced except for a few typed pages prepared by Barbara Peterson of the Division. Comments on this and suggestions for future bibliographies will be welcomed by the Information Technology Division, ICST, NBS.
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INSTITUTE FOR COMPUTER SCIENCES
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Abstract

This bibliography consists of the publications authored by personnel in the Institute for Computer Sciences and Technology (ICST), National Bureau of Standards (NBS), from 1966 through 1976. The references, which total more than two hundred, are to publications in NBS media only. There are three cross-reference indexes to the bibliography: personal author index, key word index, and key word out-of-context (KWOC) index. Also included is a list of publications in the recently established National Bureau of Standards Special Publication 500-series.

Key Words: Bibliography; computer literature; computer science publications; Institute for Computer Sciences and Technology publications

INTRODUCTION

The Institute for Computer Sciences and Technology (ICST), National Bureau of Standards, conducts research and provides technical services designed to aid Government agencies in improving cost effectiveness in the selection, acquisition, and utilization of automatic data processing equipment (Public Law 89-306); provides advisory and consultative services to other agencies of Government to support the formulation of ADP management and procurement policies and to assist in solving specific computer application problems; and develops and recommends Federal Information Processing Standards. In the course of discharging these responsibilities, ICST staff members prepare technical reports, technology assessments, computer technology policy analyses, and summaries or proceedings of conferences and symposia which the Institute sponsors or conducts. Such publications may appear in NBS publications media, in professional or technical journals, or as separate volumes such as proceedings or monographs.

The Information Technology Division has prepared this listing of NBS publications by ICST staff members as a service to colleagues in the computer field. In order to improve its utility, the listing is accompanied by computer-produced indexes. Thus each document was cataloged and the data recorded in machine-readable form through the use of EDTEXT, a word-processing computer program for the NBS Univac 1108 computer. The data file resulting from this procedure was run through a special set of programs developed and operated by the Computer Information Section, Information Technology Division, to produce the indexes and the bibliographic listing described below.
HOW TO USE THE INDEXES

Bibliographic Index

This index is the major reference point, to which all other indexes refer. The index contains bibliographic citations ordered by their date of publication. The first item in each citation is the accession number, the first two digits of which represent the year of publication (for example, 66000001 means that the report was published in 1966). The complete annotation for each document follows the accession number.

Personal Author Index

Each author is listed only once in this index. Under each author's name are listed the titles of that author's works, followed by the accession number of the documents. The accession number is used as a cross-reference to the bibliographic index for complete citations.

Key Word Index

This index contains key words that were assigned to the documents by the author or cataloger. Under each key word is a list, alphabetically arranged, of titles followed by their accession number. This index cross-references the bibliographic index through accession numbers.

Key Word-Out-of-Context (KWOC) Index

This index consists of significant words from the title of each report. This index differs from the others in that the titles have not been truncated: if the title is too long to fit on one line, it continues on a second line and is followed by the accession number. This index cross-references the bibliographic index by accession number.

Addendum: Additional ICST Publications

This addendum lists three reports which were omitted from the main bibliography, as well as the publications in the NBS SP 500-series, accompanied by the personal author index (which cross references the bibliographic listing in the addendum only).
BIBLIOGRAPHIC INDEX
6600001  RANKIN, KIRK, STEPHANIE SIEGEL, ANN MCCLELLAND, JAMES L. TAN. A GRAMMAR FOR COMPONENT COMBINATION IN CHINESE CHARACTERS. DIV. 640, 1966, TN-296, 118P, 5 REFS

A LINGUISTIC ANALYSIS OF ONE ASPECT OF THE STRUCTURE OF CHINESE CHARACTERS IS PRESENTED. THE ANALYSIS IS AN EXTENSION INTO TWO DIMENSIONS OF A GENERAL APPROACH TO ONE-DIMENSIONAL LANGUAGE STUDY. RESULTS OF THE ANALYSIS ARE IN THE FORM OF A THREE-LEVEL GENERATIVE GRAMMAR. THE FIRST LEVEL FORMALIZES RESTRICTIONS GOVERNING THE GENERAL COMPLEXITY OF WELL-FORMED CHINESE CHARACTERS; THE SECOND LEVEL FORMALIZES CO-OCCURRENCE CONSTRAINTS AMONG CHARACTER COMPONENTS AND THE PARTICULAR SPATIAL ARRANGEMENT OF THESE COMPONENTS IN CLASSES OF CHARACTERS; THE THIRD LEVEL CONSTITUTES A PROCEDURE FOR SELECTING ACTUAL COMPONENTS FROM A LEXICON. FINALLY AN EVALUATION OF THE GRAMMAR IS PRESENTED, IN TERMS OF CRITERIA USED IN EVALUATING NATURAL LANGUAGE GRAMMARS.

66011701  BOYLE, DON R., PHILIP G. STEIN. VERY HIGH SPEED TRANSIENT RECORDER. DIV. 650, 17 JAN 66, NBSR 9032, 10P

THE PROMPT EFFECTS OF A HIGH ALTITUDE NUCLEAR DETONATION RESULT IN NEAR-SIMULTANEOUS TRANSIENTS WHICH MAY BE OBSERVED OVER LARGE PORTIONS OF THE SPECTRUM. AS A RESULT, THE STUDY AND ANALYSIS OF COINCIDENTIAL DISTURBANCES OCCURRING IN MULTIPLE GEOPHYSICAL SENSOR CHANNELS IS IMPORTANT TO THE VELA PROGRAM.

THIS REPORT DESCRIBES A SYSTEM FOR DETECTING COINCIDENTAL TRANSIENTS WHICH MAY OCCUR IN A NUMBER OF INDIVIDUAL SENSOR CHANNELS, IDENTIFYING THE SPECIFIC SENSORS CONTRIBUTING TO THE N-FOLD COINCIDENCE AND RECORDING THE TRANSIENT WAVEFORMS OF SELECTED CHANNELS.

66040001  PRZYBYLIK, ANDREW T., A PUNCED PAPER TAPE TO DIGITAL MAGNETIC TAPE CONVERTER. DIV. 650, APR 66, NBSR 9325, 26P, 5 REFS

IT IS THE PURPOSE OF THIS REPORT TO DESCRIBE A PUNCED PAPER TAPE-TO-DIGITAL MAGNETIC TAPE CONVERSION SYSTEM, WHICH IS NOW IN OPERATION AS AN EXPERIMENTAL FACILITY. THE DATA CONVERTER SYSTEM IS CONSTRUCTED OF ELECTRONIC MODULES WHICH WERE DESIGNED FOR FLEXIBLE INTERCONNECTION. THE CONTROL PROGRAM FOR THE SYSTEM IS DESIGNED ON A REMOVABLE PATCHBOARD. EACH MODULE HAS A SPECIFIC FUNCTION TO PERFORM IN A CONTROL PROGRAM, AND TO ACHIEVE THIS FUNCTION THE MODULE MUST BE PATCHED BY MEANS OF ITS CONTROL AND DATA CONNECTIONS ON THE PATCHBOARD.

A DESCRIPTION OF THE PATCHBOARD AND EACH OF THE MODULES IS GIVEN, ALONG WITH A DETAILED EXPLANATION OF TWO EXAMPLE CONTROL PROGRAMS. PATCHING DIAGRAMS ARE INCLUDED TO SHOW THE LOCATION OF CONTROL AND DATA CONNECTIONS FOR EACH MODULE. A GENERAL OUTLINE OF THE PROGRAM PATCHBOARD SHOWS THE RELATIVE POSITION OF THE MODULE UNITS. PATCHING OF AN EXAMPLE CONTROL PROGRAM IS EXPLAINED AND ILLUSTRATED WITH A DIAGRAM SHOWING THE PRIMARY CONTROL CONNECTIONS.

66040002  HALL, ORRINGTON R., MOBIDIC - TELTYPE INTERFACE. DIV. 650, APR 66, NBSR 9338, 12P

THIS DOCUMENT IS A DETAILED ENGINEERING REPORT CONCERNING A DEVICE WHICH IS SPECIFICALLY DESIGNED TO FURNISH A LOGIC AND ELECTRONIC INTERFACE BETWEEN THE MOBIDIC B TWIN DIGITAL COMPUTER AND A STANDARD EIGHT-LEVEL CODE TELTYPEWRITER. AMONG THE FEATURES EMBODIED IN THE UNIT ARE FACILITIES FOR HANDLING A FULL 'ASCII' CHARACTER AND A MEANS OFF CHECKING THE CHARACTER MOST RECENTLY TRANSMITTED TO THE TELTYPE. THIS LATTER FEATURE, WHICH WILL BE REFERRED TO HEREAFTER IN THIS REPORT AS AN 'ECHO' CHECK, MAY BE IMPLEMENTED IN EITHER A FULL-DUPLEX OR HALF-DUPLEX SYSTEM.

IN EITHER MODE OF OPERATION, RANDOM MANUAL DEPRESSION OF A TELTYPE KEY WHILE THAT TELTYPE IS RECEIVING INFORMATION WILL RESULT IN A DISPARITY BETWEEN THE CHARACTER TRANSMITTED AND THE CHARACTER REMAINING IN THE INTERFACE AT THE END OF TRANSMISSION. UPON DETECTION OF SUCH A DISPARITY, AN APPROPRIATE RESPONSE MAY BE OBTAINED FROM THE SYSTEM. THIS FEATURE AFFORDS THE OPERATOR AT THE REMOTE TELTYPE THE ABILITY TO COMMUNICATE WITH THE SYSTEM DURING A LONG SYSTEM-TO-REMOTE-STATION-TRANSMISSION AND THUS HAS CONSIDERABLE UTILITY. TWO OF THESE UNITS WERE OPERATING ON A FULL-TIME BASIS SINCE THE SECOND WEEK OF AUGUST 1965. DETAILS OF THEIR OPERATION HAVE BEEN RECORDED IN THE SYSTEM ENGINEERING LOG, AND SUBSTANTIAL USEFUL INFORMATION HAS BEEN DERIVED THEREFROM.

66040101  PYKE, THOMAS N., JR., THE NBS CORD TIME SHARING SYSTEM. DIV. 650, 1 APR 66, NBSR 2339, 18P

1966 THRU 1976 ICST BIBLIOGRAPHY
CORO IS AN OPERATING SYSTEM FOR A COMPUTER WITH ON-LINE REMOTE DEVICES. THE SYSTEM CONSISTS OF AN EXECUTIVE PROGRAM DESIGNED TO ENABLE THE DUAL-PROCESSOR OR MOBICOM COMPUTER FACILITY WITH MULTIPLE REMOTE TERMINALS TO OPERATE IN A TIME-SHARED MODE, AT EACH OF A NUMBER OF REMOTE TERMINALS, INCLUDING TELETYPES AND DISPLAY SUBSYSTEMS. PROGRAMS AND DATA CAN BE ENTERED INTO THE SYSTEM. PROGRAM EXECUTION INITIATED, AND RESULTS RETURNED TO THE TERMINALS. A DATA BASE IS AVAILABLE TO ALL USERS THROUGH THE SYSTEM. THE CONTENTS OF THIS MANUAL DESCRIBE THE SYSTEM IN OPERATIONAL STATUS AT NBS AS OF MARCH 1966.

66052801 STEIN, PHILIP G., TRANSISTORIZED BUILDING BLOCKS FOR DATA INSTRUMENTATION, DIV. 650, 28 MAY 66, TN-268, 118P

A FOURTH FAMILY OF ETCH-O-CIRCUIT LOGIC CARDS HAS BEEN DEVELOPED AT THE NATIONAL BUREAU OF STANDARDS. IT CLOSELY PARALLELS THE DESIGN CRITERIA AND PHILOSOPHY EMBODIED IN PREVIOUS WORK, BUT DIFFERS IN MANY RESPECTS. EACH CIRCUIT DESCRIPTION IS SEPARATED PHYSICALLY FROM THE OTHERS TO FACILITATE USE AS AN APPLICATION MANUAL. SPECIFICATIONS, TYPICAL USES, GRAPHIC SYMBOLS AND RELIABILITY ARE DISCUSSED IN BRIEF.

66051501 HENDERSON, MADELINE M., JOHN S. MOATS, MARY ELIZABETH STEVENS, SIMON M. NEWMAN, COOPERATION, CONVERTIBILITY, AND COMPATIBILITY AMONG INFORMATION SYSTEMS: A LITERATURE REVIEW, DIV. 600, 15 JUN 66, NBS MISC. PUBL. 276, (LC 66-60028), 140P, 660 REF.

THE PURPOSE OF THE STUDY OF THE LITERATURE ON WHICH THIS REPORT IS BASED WAS TO EXAMINE THOSE PROBLEMS IN THE FIELD OF DOCUMENTATION AND IN THE OPERATION OF INFORMATION SYSTEMS WHICH COULD POSSIBLY BE SOLVED OR ALLEVIATED BY SOME GREATER MEASURE OF COOPERATION, CONVERTIBILITY, OR COMPATIBILITY AMONG SYSTEMS, PARTICULARLY THOSE SYSTEMS FOR HANDLING SCIENTIFIC AND TECHNICAL INFORMATION SUPPORTED IN WHOLE OR IN PART BY THE UNITED STATES GOVERNMENT. AN ACCOUNT IS GIVEN OF EARLY DEVELOPMENTS AND GENERAL BACKGROUND INFORMATION ABOUT ORGANIZATIONS ACTIVE IN COOPERATIVE DOCUMENTATION EFFORTS. CURRENT COOPERATIVE ACTIVITIES ARE THEN DISCUSSED IN TERMS OF DISSEMINATION AND PUBLICATION OF SECONDARY SOURCES, ACQUISITION AND EXCHANGE OF PUBLICATIONS, ANILYSIS AND IDENTIFICATION, SYSTEMATIZATION AND TERMINOLOGY CONTROL, STORAGE AND SEARCH, AND STANDARDIZATION. GENERAL PROBLEM AREAS, SPECIAL PROBLEMS CREATED BY CHANGES IN THE NATURE OF THE DOCUMENTARY MATERIALS TO BE HANDLED AND SPECIAL PROBLEMS RAISED BY THE PROSPECTS FOR MECHANIZATION ARE THEN DISCUSSED. A FINAL SECTION RAISES QUESTIONS WITH REGARD TO THE IMPLICATIONS FOR FUTURE PROGRESS.


THIS REPORT DESCRIBES THE INITIAL STEPS IN THE DEVELOPMENT OF A METHOD FOR DETERMINING THE ATTRACTIVENESS TO ATTACK, BY A COST AND VALUE CONSCIOUS ENEMY, OF COMMUNICATIONS ELEMENTS IN A COMMAND NETWORK. THE NETWORK IS REPRESENTED IN ABSTRACT TERMS AND TECHNIQUES ARE OUTLINED FOR PROCEEDING FROM MEASURES OF (I) ATTACK COSTS (TO AN ENEMY) AND (II) ATTACK CONSEQUENCES, TO (III) MEANINGFUL MEASURES OF DURABILITY OF NETWORK ELEMENTS, (IV) CALCULABLE 'OPTIMIZATION' RULES WHICH A COST AND VALUE CONSCIOUS ENEMY MIGHT USE IN SELECTING ELEMENTS FOR ATTACK, AND (V) CRITERIA FOR THE ADEQUACY OF THE STRENGTH OF THE COMMUNICATIONS NETWORK DERIVED FROM THE ATTACK RULES.

66072201 WEGSTEIN, J. H., JOHN F. RAFFERTY, J. CUNNINGHAM, PROGRAMMED TEACHING AND TESTING WITH A DIGITAL COMPUTER, DIV. 600, 22 JUL 66, NBSR 9372, 6P

THE TIME-SHARED CENTRAL COMPUTER SERVING A NUMBER OF REMOTE STATIONS, SUCH AS TELETYPEWRITERS, APPEARS TO BE COMING OF AGE. WHILE SOME OF THESE SYSTEMS ARE DEDICATED TO SPECIAL APPLICATIONS SUCH AS AIRLINE RESERVATIONS, OTHERS ARE GENERAL PURPOSE. IN ADDITION TO SERVING AS GLORIFIED CALCULATORS, SOME CAN ACCEPT FILES OR NAMED BLOCKS OF INFORMATION. SEATED AT A REMOTE STATION, A USER CAN STORE, RETRIEVE, AND MANIPULATE INFORMATION AND THIS FACILITY LEADS TO NEW AND PROMISING COMPUTER APPLICATIONS. THIS PAPER DESCRIBES ONE SUCH APPLICATION.

66080001 GLOBER, GEORGE E., JR., PROGRESS REPORT ON THE DEVELOPMENT OF AUTOMATED INFORMATION STORAGE, SELECTION AND RETRIEVAL SYSTEMS FOR THE OUTDOOR RECREATION AREAS IN THE U. S., DIV. 640, AUG 66, NBSR 9414, 5P

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IN EARLY 1964, THE BUREAU OF OUTDOOR RECREATION (BOR), U. S. DEPARTMENT OF INTERIOR, WITH THE ASSISTANCE OF NBS, INITIATED A PROJECT TO DEVELOP AN AUTOMATED INFORMATION PROCESSING SYSTEM DESIGN FOR COLLECTING AND DISSEMINATING DATA ON ALL PUBLIC U. S. RECREATION AREAS. THIS SYSTEM DESIGN IS INTENDED TO HELP BOR FORMULATE A NATIONAL RECREATION PLAN.

THIS REPORT DISCUSSES THE WORK WHICH HAS BEEN DONE TO DATE ON THIS PROJECT BY PERSONNEL OF THE SYSTEM RESEARCH AND DEVELOPMENT DIVISION, CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY, NBS. SPECIAL FORMS WERE DESIGNED TO COLLECT THE INFORMATION BOR DECIDED WAS NEEDED. SAMPLES OF THE FORMS AND TABLES GENERATED FORM THE COLLECTED DATA ARE INCLUDED AS APPENDICES TO THE REPORT.

6608022 FORBES, E. J., THOMAS C. BAGG, REPORT OF A STUDY OF REQUIREMENTS AND SPECIFICATIONS FOR SERIAL AND MONOGRAPH MICRORECORDING FOR THE NATIONAL LIBRARY OF MEDICINE, DIV. 650, AUG 66, NBSR 9446, 100P

THIS INVESTIGATION HAS CONSIDERED THE PHOTOMETRIC CHARACTERISTICS OF THE INFORMATION TO BE RECORDED, AS WELL AS THE SIZE, CONDITION, AND USAGE OF THE COLLECTIONS OF THE NATIONAL LIBRARY OF MEDICINE (NLM) WHICH MUST BE MICROFILMED FOR PRESERVATION PURPOSES.

SINCE HIGH QUALITY COMMERCIAL MICROPHOTOGRAPHIC PRODUCTION CAPABILITIES WILL BE NEEDED FOR THE LIBRARY'S PRESERVATION MICRORECORDING, IT WAS NECESSARY TO STUDY THE PRODUCTION PERFORMANCE OF NLM'S MICROFILMING EQUIPMENT AND THAT OF TWO OTHER LARGE-VOLUME HIGH QUALITY MICROFILM PRODUCTION SYSTEMS IN THE FEDERAL GOVERNMENT, THE MICROCORO INSTALLATIONS OF NBS'S FEDERAL CLEARINGHOUSE FOR SCIENTIFIC AND TECHNICAL INFORMATION (DIAZO MICROFICHE) AND OF THE ATOMIC ENERGY COMMISSION (SILVER HALIDE MICROFICHE). THEIR PRODUCTION PERFORMANCE WAS MEASURED AND THE RESULTS COMPARED WITH THE PERFORMANCE PREDICTED FOR THE WIDE VARIETY OF NLM MATERIALS.

THE REPORT CONCLUDES WITH A DESCRIPTION OF THE NECESSARY STEPS FOR IMMEDIATE IMPLEMENTATION AND WITH PROPOSED SPECIFICATIONS FOR THE NLM MICROCORO PREPARATION. A MAXIMUM ALLOWABLE MICROREDUCTION OF 12X AND AMERICAN STANDARDS ASSOCIATION 35MM MICROFILM FORMATS 2A, 2B, AND 1A ARE RECOMMENDED. COMPATIBILITY WITH THE COSATI MICROFICHE AND WITH 16MM FILM SYSTEMS ARE POSSIBLE.

6608301 MONTAGUE, N. CARLTON, EXPERIMENTAL DISPLAY SUBSYSTEM, DIV. 650, 1 AUG 66, NBSR 9345, 22P

THE COMPUTER TECHNOLOGY SECTION OF THE CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY HAS IMPLEMENTED AN EXPERIMENTAL DISPLAY SUB-SYSTEM UNDER THE PARTIAL SUPPORT OF NASA. THE PRIMARY PURPOSE OF THIS SUB-SYSTEM IS TO INVESTIGATE VARIOUS DIGITAL AND ANALOG CIRCUITS AND DISPLAY MEDIA.

THE SYSTEM IS IMPLEMENTED AROUND A SMALL CORE MEMORY WITH AN OSCILLATOR CONTROLLED DRIVING SYSTEM. THE WORD ORGANIZATION IS 512 SIX-BIT WORDS. A SMALL KEYBOARD WITH ONLINE INDICATORS FURNISHES A FLEXIBLE MEANS OF ENTRY AND MODIFICATION OF MEMORY INFORMATION. THE PRIMARY PURPOSE OF THIS REPORT IS TO DOCUMENT THE ENGINEERING DETAILS OF THE MAJOR COMPONENTS AND OPERATION OF THE SUBSYSTEM.

66092201 PYKE, THOMAS N., JR., CORD--A TIME-SHARING EXECUTIVE FOR A RESEARCH FACILITY, DIV. 650, 22 SEP 66, NBSR 9423, 11P

COR D IS AN OPERATING SYSTEM FOR A COMPUTER WITH ON-LINE REMOTE DEVICES. IT IS AN EXECUTIVE PROGRAM FOR A TIME-SHARED COMPUTER SYSTEM WHICH SERVICES SEVERAL REMOTE TERMINALS OPERATING IN A RESEARCH AND DEVELOPMENT FACILITY. A GENERAL EXECUTIVE THAT SATISFIES THE REQUIREMENTS OF A VARIETY OF EXPERIMENTAL TERMINALS HAS BEEN DEVELOPED. THE GENERALIZED SYSTEM PROVIDES THE FLEXIBILITY NECESSARY FOR RESEARCH IN MAN-MACHINE COMMUNICATION UTILIZING A VARIETY OF DEVICES CONNECTED TO A COMPUTER SYSTEM.


THIS REPORT DESCRIBES THE PROGRESS MADE DURING THE PERIOD OF SEPTEMBER 1965 TO SEPTEMBER 1966 IN A PROGRAM FOR THE DEVELOPMENT OF TECHNIQUES TO FACILITATE THE AUTOMATIC STORAGE, MANIPULATION, AND RETRIEVAL OF CHEMICAL INFORMATION. WORK 1966 THRU 1976 ICST BIBLIOGRAPHY
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DESCRIBED IN THIS REPORT INVOLVED BOTH CONCEPTUAL WORK AND PRACTICAL EXPERIMENTATION WITH COMPUTERS. MUCH OF THE WORK WAS DONE WITH THE NBS PILOT COMPUTER FACILITY, PART WITH AN IBM 1410 AND, MORE RECENTLY, WITH AN IBM 360/40.

67010701  REITWIESNER, GEORGE W., A COMPUTER TEST PROGRAM TO ASSESS ADROITNESS IN INDEXING OPERATIONS. OIV, 660, 3 JAN 67, NBSR 9470

THIS REPORT DESCRIBES A TEST PROGRAM FOR A COMPUTER. IT IS CONCERNED NOT WITH SPECIFIC MEASUREMENTS TAKEN, BUT RATHER WITH A PROCEDURE FOR MAKING A MEASUREMENT REGARDING A SPECIFIC PROPERTY OF COMPUTER OPERATION. THE OBJECT OF THE TEST IS TO ACCESS ADROITNESS IN CERTAIN INDEXING OPERATIONS. ASSESSMENT IS ACCOMPLISHED BY MEASURING TIME OF EXECUTION OF A PARTICULAR RECURSIVE PROGRAMMING LOOP.


CORO IS AN OPERATING SYSTEM FOR A COMPUTER WITH ON-LINE REMOTE DEVICES. THE SYSTEM CONSISTS OF AN EXECUTIVE PROGRAM DESIGNED TO ENABLE THE DUAL-PROCESSOR MOBIUS COMPUTER FACILITY WITH MULTIPLE REMOTE TERMINALS TO OPERATE IN A TIME-SHARED MODE. AT EACH OF A NUMBER OF REMOTE TERMINALS, INCLUDING TELETYPES AND DISPLAYS, PROGRAMS AND DATA CAN BE ENTERED INTO THE SYSTEM, PROGRAM EXECUTION INITIATED, AND RESULTS RETURNED TO THE TERMINALS. A DATA BASE IS AVAILABLE TO ALL USERS THROUGH THE SYSTEM.

THIS REFERENCE MANUAL CONTAINS ALL THE NECESSARY INFORMATION FOR USE OF THE CORO SYSTEM FROM A TELETYPE TERMINAL. ALTHOUGH DESIGNED TO BE ACCOMPANIED BY A SHORT COURSE ON THE SYSTEM, MOST OF THE MANUAL IS SELF-EXPLANATORY.

67030101  SEVERO, ARMANOD, MAI LII IS JOEL, SYSTEMS DESIGN FOR THE SELECTIVE INFORMATION EXTRACTOR PROTOTYPE. OIV, 640, NBSR 9536, 50P, 6 REFS

THIS REPORT DESCRIBES THE SYSTEM DESIGN FOR THE SELECTIVE INFORMATION EXTRACTOR PROTOTYPE. THE PURPOSE OF THIS SYSTEM IS TO PROVIDE A SIMPLE LANGUAGE TO ENABLE NON-PROGRAMMER USERS OF LARGE FILES TO QUERY THEIR FILES AND TO PRODUCE OUTPUT IN ORDER TO ACHIEVE MACHINE-INDEPENDENCE THE SIE SYSTEM IS BEING PROGRAMMED IN COBOL.

67040001  RANKIN, KIRK, STEPHANIE SIEGEL, CHINESE CHARACTER ANALYSIS. OIV, 640, NBSR 9537, 191P, 9 REFS

THE RESEARCH DESCRIBED IN THIS REPORT DEALS WITH THE TASK OF ANALYZING THE PICTORIAL STRUCTURE OF CHINESE CHARACTERS. THE APPROACH TOWARD THE PROBLEM IS ESSENTIALLY THAT OF LINGUISTIC ANALYSIS, AS PERFORMED IN NATURAL LANGUAGE STUDY. THE RESEARCH INCLUDES THE FOLLOWING AREAS: (1) CONSTRUCTION OF GRAMMARS FOR GENERATING CHINESE CHARACTERS IN TERMS OF THE COMBINATION OF COMPONENTS, (2) AN EXTENDED STUDY OF COMPONENT COMBINATION INVOLVING THE FORMULATION OF TWO DIFFERENT TYPES OF STRUCTURAL DESCRIPTIONS FOR CHINESE CHARACTERS, (3) ANALYSIS OF CHINESE CHARACTERS VIA A CENTER/ADJUNCT DESCRIPTIVE FRAMEWORK, (4) LINGUISTIC ANALYSIS OF STROKE PHENOMENA IN CHINESE CHARACTERS.


THIS REPORT DESCRIBES THE CURRENT STATE-OF-THE-ART IN AUTOMATION OF GRAPHIC ARTS COMPOSITION. STARTING FROM EITHER OF TWO SOURCES: (1) KEYBOARD ENTRY OF MANUSCRIPT MATERIAL, OR (2) MECHANIZED INPUT IN THE FORM OF AVAILABLE PERFORATED TAPES OR MAGNETIC TAPES, THE GAMUT IS COVERED FROM ONE EXTREME IN WHICH A SKILLED KEYBOARD OPERATOR PERFORMS ALL OF THE COMPOSITOR FUNCTIONS REQUIRED TO OPERATE A TYPESetting MACHINE TO THE OTHER EXTREME IN WHICH THE INPUT MERELY PROVIDES TEXT WHETHER OR NOT INCLUDING DESIGNATION OF DESIRED FONT CHANGES, FOLLOWED BY A HIGH DEGREE OF AUTOMATION THROUGH ALL OPERATIONS LEADING TO TYPE SET FOR PRINTING. INTERMEDIATE AUTOMATIC AID S FOR THE COMPOSITOR FUNCTIONS, INCLUDING CHARACTERISTICS OF SPECIAL-PURPOSE DIGITAL COMPUTERS AND FUNCTIONS PERFORMED BY TYPGRAPHY PROGRAMS FOR GENERAL-PURPOSE DIGITAL COMPUTERS, ARE REVIEWED.

CHARACTERISTICS OF AUTOMATICALLY OPERATED TYPESETTING MECHANISMS, INCLUDING HOT METAL CASTING MACHINES AND

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Photocomposers slow, medium and high speed, are outlined. Applications of new techniques for typographic-quality automated composition that are of interest in scientific and technical information centers, libraries and other documentation operations include sequential color camera listings, computer-generated kwic indexes, photocomposition of technical journals, automatic composition of books containing both computer-produced tabular data and natural language texts, and the incorporation of mechanized processes throughout the publication cycle from the author's original manuscript preparation to the final printing. A bibliography of 363 references is included.

67052601 Boyle, Oon R., Robert J. Carpenter, Wide Band, Large Dynamic Range EMP Receiver. OIV, 650, 26 May 67, NBSR 9556, 20p

In order to collect information on naturally occurring electromagnetic pulse signals having similar characteristics, a wide band, large dynamic range EMP receiver was built. Its passband is approximately 100kHz to 100MHz with a 60 dB dynamic range. This report gives a general description of the EMP receiver, discusses the calibration of the EMP system and gives a detailed description of the antenna, antenna coupler, power divider, wide band amplifier, signal sampling 'T', threshold determination, test signal generator and the panel layouts.

67061301 Steen, Philip G., Automatic Data Gathering in Precise Laboratory Experiments. OIV, 650, Jun 67, NBSR 9555, 46p

After a brief treatment of the mathematical foundations of automatic measurements, this paper surveys these automatic measurement instruments as they now exist and investigates areas in which further work might improve their performance. The paper also discusses the uses of computers in the laboratory, the functions they now are able to perform and some of the functions which may be performed in the future.

67080001 Steen, Philip G., Shifting Buffer Module. OIV, 650, Aug 67, NBSR 9602, 34p

This report describes various aspects of a shifting buffer module including its function, construction, installation, operation and maintenance. This module stores 64 bits of binary information, using high-speed electronic storage circuits (flip-flops). These bits are normally considered to be in groups of 4 each, and such groups are referred to as characters.

67080002 Steen, Philip G., Buffer Multiplexer Module. OIV, 650, Aug 67, NBSR 9603, 31p

This buffer multiplexer module is used as a digital data switch. It can accept four binary or binary-coded-decimal words of up to 32 bits (eight four-bit characters, with complements), and connect any one, or none of them to its output. The switching configuration is that of a 64-pole, 4-position plus off switch, since all switching is done with digital logic circuits. It is not suitable for use with analog data. The function of the module, its construction, components, principles of operation and maintenance are described in this report.


Part I of NBS Technical Note 413 describes the general numeric compressor (NUPAK) algorithm for automatically compressing (encoding) or decoding compressed numerical information, which may of course have come from graphical information. The amount of compression achieved is determined by the 'lowest limit of significance,' the range, and the sequential patterns of the data to be stored. The encoded information can be stored in memory or on external storage devices in a small fraction of the space normally required, and can be expanded (decoded) item-by-item whenever needed by the system.

Part II describes an algorithm for compressing alphanumeric information. Unlike other methods which depend upon frequency of occurrence of words in a particular class of publications, this scheme is language and content independent since the information for compression is obtained from the text itself. The compressed bit stream is preceded by sufficient information for automatic reconstruction of the original bit stream whenever the system requires it, even with this additional information required for expansion. Compression rates approaching

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40% HAVE BEEN ACHIEVED, BECAUSE THIS ALPHANUMERIC COMPRESSOR (ANPAK) IS FULLY AUTOMATIC AND SELF-ORGANIZING. IT CAN OPERATE ON INFORMATION WHICH HAS ALREADY BEEN COMPRESSED VIA THE NUMERIC COMPRESSOR (NUPAK).

67081503 CURTIS, C. A.: CAS - THE CORD ASSEMBLY SYSTEM, ASSEMBLY LANGUAGE FOR THE NBS CORD TIME-SHARING SYSTEM. DIV. 650, 15 AUG 67, NBSR 9641, 66P

CAS (CORD ASSEMBLY SYSTEM) IS A CONVERSATIONAL ASSEMBLER WHICH HAS BEEN IMPLEMENTED ON THE NBS CORD TIME-SHARING SYSTEM AND WHICH RUNS UNDER THE CORD EXECUTIVE SYSTEM. SOME SPECIFIC FEATURES OF CAS ARE ITS ABILITY TO ASSEMBLE SYSTEM COMMAND CALLS AND THE DYNAMIC ALLOCATION OF MEMORY FOR SYMBOL, LITERAL AND FORWARD REFERENCE LISTS. IT IS ALSO ABLE TO HANDLE FORWARD REFERENCING AND IS A RE-ENTRANT SYSTEM. THIS REPORT DESCRIBES THE BASIC FEATURES OF CAS INCLUDING THE USER'S VIEW OF CAS, THE CAS INPUT FORMAT AND THE IMPLEMENTATION OF THE ASSEMBLY PROCESS.


A SURVEY OF THE LITERATURE ON EVALUATION OF INFORMATION SYSTEMS HAS BEEN CONDUCTED BY THE TECHNICAL INFORMATION EXCHANGE, CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY, NATIONAL BUREAU OF STANDARDS. DURING THE EARLY STAGES OF THE SURVEY, THE LITERATURE WAS DIVIDED AMONG DESCRIPTIONS OF PROGRAMS WHICH COMPARED THE PERFORMANCE OF TWO OR MORE INFORMATION SYSTEMS, ACCOUNTS OF PROGRAMS WHICH STUDIED THE PERFORMANCE OF ONE SYSTEM, PAPERS AND REPORTS WHICH DISCUSSED THE PROBLEMS OF EVALUATION PROGRAMS, AND DOCUMENTS WHICH PROPOSED NEW TECHNIQUES FOR EVALUATION OF SYSTEMS. FROM THE TOTAL LITERATURE COLLECTED, THOSE REFERENCES WHICH WERE JUDGED TO BE MOST DIRECTLY CONCERNED WITH THE SUBJECT OF EVALUATION OF INFORMATION SYSTEMS WERE SELECTED AND ABSTRACTED. THE ABSTRACTS ARE DESIGNED TO GIVE A SUMMARY OF THE CONTENT OF THE CORRESPONDING PAPER; THE AUTHOR'S OWN WORDING WAS USED EXTENSIVELY, IN ORDER TO AVOID MISINTERPRETATION. ALL OF THE REFERENCES COLLECTED ARE LISTED, IN ALPHABETIC ORDER OF AUTHORS' NAMES, IN THE APPENDIX TO THE MAIN BODY OF THIS PUBLICATION.

67120002 STEIN, PHILIP G.: A COMPUTER-CONTROLLED CALIBRATOR FOR RADIO-FREQUENCY RECEIVERS. SYSTEM CONSTRUCTION AND OPERATION, DIV. 650, DEC 67, NBSR 9663, 118P

THIS REPORT DESCRIBES THE TECHNICAL DETAILS OF A COMPUTER CONTROLLED CALIBRATOR FOR RADIO-FREQUENCY RECEIVERS CONSTRUCTED AT NBS. IT IS INTENDED TO BE USED IN CONJUNCTION WITH THE FOLLOWING NBS REPORTS: 'A COMPUTER CONTROLLED CALIBRATOR FOR RADIO-FREQUENCY RECEIVERS' (NBSR 9662), 'SYSTEM DESCRIPTION AND PROGRAMMING' (NBSR 9652) AND 'BUFFER MULTIPLEXER MODULE' (NBSR 9603).

67120010 STEIN, PHILIP G.: A COMPUTER-CONTROLLED CALIBRATOR FOR RADIO-FREQUENCY RECEIVERS. SYSTEM DESCRIPTION AND PROGRAMMING, DIV. 650, DEC 67, NBSR 9662, 14P

A COMPUTER-CONTROLLED RF SIGNAL GENERATOR HAS BEEN BUILT AT THE NATIONAL BUREAU OF STANDARDS. IT IS CAPABLE OF GENERATING A SERIES OF PROGRAMMED FREQUENCIES, EACH FOR A PROGRAMMED LENGTH OF TIME. UP TO 24 RECEIVERS MAY BE ACCOMMODATED. THE SYSTEM OPERATES UNDER DIRECT COMPUTER SUPERVISION, OR IN A STAND-ALONE MODE IN WHICH ALL NECESSARY CALIBRATION INFORMATION IS READ FROM PUNCHED PAPER TAPE. A DESCRIPTION OF THE SYSTEM INCLUDING PROGRAMMING AND CONSTRUCTION INFORMATION IS GIVEN IN THIS REPORT.

67121301 PALOMBO, LOUIS J.: TELETYPE WAVEFORM RECEIVING SYSTEM. DIV. 650, 13 DEC 67, NBSR 9807, 22P

THE TELETYPE WAVEFORM RECEIVING SYSTEM PROVIDES A MEANS FOR RECEIVING ANALOG WAVEFORM RECORDS OVER CONVENTIONAL TELETYPEWRITER CIRCUITS IN ADDITION TO NORMAL TWO-WAY ALPHANUMERIC COMMUNICATIONS, TWO MODES OF OPERATION ARE PROVIDED. IN THE NORMAL (PRINT) MODE, THE USUAL KEYBOARD-TELEPRINTER OPERATIONS ARE PROVIDED. IN THE PLOT MODE, THE WAVEFORM INFORMATION IS DISPLAYED DIRECTLY ON A STRIP CHART RECORDER. THE SYSTEM IS COMPOSED OF COMMERCIAL AVAILABLE COMPONENTS MODIFIED BY THE ADJUSTMENT OF A 'STUNT BOX'. THE WAVEFORM RECEIVER, THE ACCOMMODATES THIS MODE SHIFING AND CONTROL FUNCTIONS THE DIGITAL-TO-ANALOG CONVERSION OF INCOMING

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DATA. THE SYSTEM PROVIDES A MEANS FOR REMOTELY DISPLAYING COMPUTER GENERATED GRAPHS ON WAVEFORM RECORDS AND HAS POTENTIAL UTILITY IN MANY TYPES OF REMOTE TERMINAL DATA PROCESSING APPLICATIONS.

68010001  ST. CLAIR, J. MICHAEL, THE ORGANIZATION AND PROGRAMMING OF A COMPUTER CONTROLLED SCANNER (FOSDIC VII). OIV. 650. JAN 68, NBSR 9800. 44P. 17 REFs

THE FOSDIC VII ELECTRONIC SCANNER SYSTEM (FILM OPTICAL SENSING DEVICE FOR INPUT TO COMPUTERS) IS A GENERAL PURPOSE COMPUTER-CONTROLLED FLYING-SPOT SCANNER. THE CENTRAL ELEMENT OF FOSDIC VII IS AN ELECTRONIC SCANNING ASSEMBLY. THE SYSTEM HAS COMPATIBILITY WITH THE FOSDIC V SCANNER INCORPORATED IN THE ACCESS (AUTOMATIC COMPUTER CONTROLLED ELECTRONIC SCANNING SYSTEM) FOR DATA ACQUISITION FROM QUESTIONNAIRE TYPE DOCUMENTS. FOSDIC VII IS ALSO CAPABLE OFscanning TWO-DIMENSIONAL INFORMATION OF A MORE GENERAL NATURE. THIS REPORT DISCUSSES THE SCANNING CAPABILITIES, SYSTEM ORGANIZATION, INTERFACE REQUIREMENTS, CONVERSATIONAL PROGRAMMING LANGUAGE, PROGRAMMING TECHNIQUES AND APPLICATIONS OF FOSDIC VII.


TEN-NINE PAPERS WERE PRESENTED AND ARE PUBLISHED IN THIS PROCEEDINGS. THEY INCLUDE A DIVERSE GROUP BY INDUSTRY REPRESENTATIVES REPORTING RECENT TECHNOLOGICAL ADVANCEMENTS IN THE FIELD. SEVERAL PAPERS DEFINE GOVERNMENT POLICY AND DESCRIBE THE NEW LINDBIN SYSTEM OF PHOTOCOMPOSITION AT THE GOVERNMENT PRINTING OFFICE; ANOTHER SERIES IS DEVOTED TO NONGOVERNMENT APPLICATIONS AND RESEARCH; AND A FINAL GROUP DETAILS SPECIFIC APPLICATIONS WITHIN SEVERAL GOVERNMENT AGENCIES.

68030001  MOORE, R. T., K. M. GRAY, ELECTROMAGNETIC PULSE SIGNALS CLASSIFICATION AND IDENTIFICATION OF NEARBY SFERICS IN THE HIGH ALTITUDE NUCLEAR DETECTION STUDIES (HANOS) PROGRAM - VOLUME II. OIV. 650. MAR 68. NBSR 9639. 58P

ELECTROMAGNETIC PULSE SIGNALS FROM CERTAIN CLASSES OF NUCLEAR EVENTS, IN TERMS OF HEIGHT OF BURST AND DISTANCE, HAVE FEATURES WHICH AFFORD A MEANS OF RECOGNITION. SIMILAR FEATURES ARE ALSO OBSERVED IN ATMOSPHERICS, BUT THESE HAVE A SMALLER NORMALIZED SOURCE FUNCTION AMPLITUDE. AN EXPERIMENT WAS CONDUCTED TO INVESTIGATE THE FEASIBILITY OF MEASURING THE DISTANCE TO NEARBY SFERICS USING AZIMUTH AND AMPLITUDE DATA OBSERVED AT TWO SITES SEPARATED BY A FEW KILOMETERS.


68030002  WEGSTEIN, J. H., A COMPUTER ORIENTED SINGLE FINGERPRINT IDENTIFICATION SYSTEM. OIV. 600. MAR 63. TN-443. 27P

A PROCEDURE IS DESCRIBED FOR COMPUTING A SET OF NUMERICAL DESCRIPTORS THAT IDENTIFY A SINGLE FINGERPRINT. THE PROCEDURE STARTS WITH X AND Y COORDINATES AND THE INDIVIDUAL ORIGINS OF THE MINUTIAE (RISE ENDS AND BIFURCATIONS) OF A FINGERPRINT IMPRESSION. SETS OF DESCRIPTORS ARE COMPUTED CORRESPONDING TO GROUPS OR CONSTELLATIONS OF THESE MINUTIAE. DESCRIPTORS CORRESPONDING TO VARIOUS FINGERPRINT IMPRESSIONS ARE STORED ON MAGNETIC TAPE. A FRAGMENT OF A FINGERPRINT IMPRESSION SUCH AS OCCURS IN A LATENT FINGERPRINT MAY ALSO BE USED.

A SECOND COMPUTER PROGRAM READS THE DESCRIPTORS CORRESPONDING TO TWO DIFFERENT FINGERPRINT IMPRESSIONS FROM MAGNETIC TAPE. A SCORE IS COMPUTED THAT INDICATES HOW WELL THE TWO IMPRESSIONS MATCH. PRELIMINARY EXPERIMENTAL RESULTS SUGGEST THAT THIS PROCEDURE MIGHT BE SUITABLE AS A BASIS FOR A SINGLE-FINGERPRINT CLASSIFICATION SYSTEM.

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68050001 WORDEL, ROY W., ROBERTA M. LARKIN, STUDY OF AND EXPERIMENTATION IN COMPUTER COMPOSITION OF LIBRARY MATERIALS, OIV. 650, MAY 68, NBSR 9598, 76P
A PROJECT WAS ESTABLISHED BETWEEN THE COUNCIL ON LIBRARY RESOURCES AND NBS TO PROMOTE A COMPUTER TYPESETTING PROGRAM AND TO STUDY OTHER ASPECTS OF AUTOMATING LIBRARY PROCEDURES INCLUDING AUTOMATED PRINTING OF CATALOG CARDS AND OTHER PUBLISHED LIBRARY MATERIAL. THE REPORT DESCRIBES THE RESULTS OF 1) EXPERIMENTS IN THE APPLICATION OF BASIC AUTOSET COMPUTER TYPESETTING PROGRAMS TO A VARIETY OF LIBRARY PUBLICATIONS, 2) INVESTIGATION ON THE USE OF THE GOVERNMENT PRINTING OFFICE LINOTRON SYSTEM FOR LIBRARY APPLICATIONS, 3) CONSIDERATIONS FOR THE DESIGN OF FUTURE LIBRARY INFORMATION PHOTOCOMPOSITION SYSTEMS AND 4) EVALUATION OF CURRENTLY USED PHOTOCOMPOSITION EQUIPMENT AND SYSTEMS.

68070001 WEGSTEIN, J. H., JOHN F. RAFFERTY, WALTER J. PENCAK, MATCHING FINGERPRINTS BY COMPUTER, OIV. 600, JUL 68, TN-466, 16P

THIS REPORT IS A PROGRESS REPORT OF THE WORK ACCOMPLISHED ON A PHARMACOLOGICAL FILES PROJECT DURING FISCAL YEAR 1968. THE GOAL OF THE PROJECT WAS TO LOOK AT THE PROBLEM OF FACILITATING ACCESS TO CHEMICAL AND RELATED BIOLOGICAL INFORMATION BY EXPERIMENTAL CHEMISTS, BIOCHEMISTS AND PHARMACOLOGISTS. THIS REPORT INCLUDES A PHARMACOLOGICAL TERMINOLOGY WHICH WAS DEVELOPED AND A LISTING OF COMPUTER ROUTINES WHICH WERE OPERATIONAL IN FY 68.

68090332 FRACTION, GEORGE F., JUSTIN C. WALKER, STEPHEN J. TAUBER, CONNECTION TABLES FROM WISSESSER CHEMICAL STRUCTURE NOTATIONS--A PARTIAL ALGORITHM, OIV. 640, SEP 68, TN-432, 63P
AN ALGORITHM HAS BEEN DEVELOPED FOR TRANSFORMING CERTAIN TYPES OF WISSESSER ORGANIC STRUCTURE NOTATIONS INTO CONNECTION TABLES. ACRYLIC AND BENZENE STRUCTURES ARE TREATED, AND PROVISION HAS BEEN MADE FOR ALL OF THE TYPES OF CONTRACTIONS USED BY THE WISSESSER NOTATION SYSTEM. A SEPARATE ALGORITHM IS PRESENTED FOR TREATING LINEARLY FUSED RING AGGREGATES. A SYNTAX HAS BEEN DEVELOPED TO DESCRIBE THOSE PORTIONS OF WISSESSER NOTATIONS WHICH REFER TO NON-BENZENE RING SYSTEMS.

68090003 O'NEAL, P. A. O., INPUT/OUTPUT PACKAGES FOR THE SYSTEMS 360 ASSEMBLY LANGUAGE PROCESSOR, OIV. 640, SEP 68, TN-433, 12P
THREE INPUT-OUTPUT (I/O) SOFTWARE PACKAGES FOR USE WITH THE ASSEMBLY LANGUAGE PROCESSOR (ALP) OF THE SYSTEMS 360 ARE DESCRIBED. THEY ARE FOR CARD READ, ON-LINE PRINT AND CARO PUNCH OPERATIONS. A SINGLE PSEUDO-OPERATION STATEMENT, WHICH CONTAINS ALL REQUIRED FORMATS AND ADDRESSES, SUFFICES FOR THE EXECUTION OF EACH INPUT-OUTPUT PACKAGE. PRINTED ERROR AND MESSAGE MESSAGES ARE INCLUDED IN PROGRAM DEBUGGING. IN ADDITION TO THE CONVENTIONAL FORMATS (A, I, P AND E), SYSTEMS 360 COLUMN BINARY (X) AND HEXADECIMAL (J AND B) ARE PERMITTED. WITH A SINGLE PSEUDO-OPERATION THESE I/O PACKAGES CAN HANDLE UP TO EIGHT INDIVIDUAL ITEMS OR ARRAYS OF ANY LENGTH IN A SINGLE OR MIXED FORMAT.

68092401 HOBBBS, ARTHUR M., L. JOEL, USERS' MANUAL FOR THE PATHFINDING IMPORTANCE NUMBER GENERATOR, OIV. 630, 24 SEP 68, NBSR 9924, 44P
THE PURPOSE OF THE PROGRAMS DESCRIBED IN THIS REPORT IS TO GENERATE WHAT WILL BE CALLED IMPORTANCE NUMBERS FOR EACH OF THE ELEMENTS OF A COMMUNICATION GRID. THESE NUMBERS ARE BASED ON THE NETWORK CONFIGURATION AND ON COMMAND VALUES ASSIGNED BY THE USER OF THE PROGRAM TO EACH COMMANDER-SUBORDINATE PAIR OF SUBSCRIBERS WHO USE THE NETWORK FOR COMMUNICATIONS. THE NUMBERS GENERATED ARE CONSIDERED REPRESENTATIVE OF THE IMPORTANCE OF NETWORK ELEMENTS, AT LEAST WITH

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RESPECT TO A RANK ORDERING.

68110001 PYKE, THOMAS N., JR., MAN-MACHINE SYSTEM ORGANIZATION, FINAL REPORT - PHASE I, DIV. 650, NDV 68, NBSR 10 051, 49P, 10 REF

A PROJECT WAS ESTABLISHED TO SUPPORT WDPK IN COMPUTER GRAPHICS CONCERNED WITH HARDWARE AND SOFTWARE TECHNIQUES FOR IMPLEMENTING GRAPHICALLY-ORIENTED TIME-SHARING SYSTEMS AND THE USE OF POINTING DEVICES FOR INPUT WITH SUCH SYSTEMS. THIS REPORT CONTAINS OBSERVATIONS MADE DURING THE FIRST PHASE OF THE PROJECT INCLUDING ANALYSIS OF SYSTEMS FOR COMPUTER GRAPHICS, DATA MANAGEMENT IN SUPPORT OF COMPUTER GRAPHICS AND THE NBS COMPUTER RESEARCH FACILITY. OF PARTICULAR INTEREST IS A SUMMARY OF CONSIDERATIONS AFFECTING THE USE OF LOCAL COMPUTERS TO DRIVE GRAPHICAL DISPLAYS, INCLUDING THE USE OF ANTICIPATORY TECHNIQUES.

68110002 STEVENS, MARY ELIZABETH, NONNUMERIC DATA PROCESSING IN EUROPE: A FIELD TRIP REPORT, DIV. 600, NDV 68, TN-462, 63P


68110101 STEIGLER, RICHARD A., THE CL6 CONVERSATIONAL LIST PROCESSING SYSTEM--A USER'S MANUAL, DIV. 650, I NOV 68, NBSR 9966, 64P, 2 REF

CL6 IS A LIST PROCESSING SYSTEM IMPLEMENTED UNDER THE NBS CORD TIME-SHARING SYSTEM. IT IS A CONVERSATIONAL VERSION OF L6, THE LOW-LEVEL LINKED LIST LANGUAGE, DEVELOPED BY BELL TELEPHONE LABORATORIES. CL6 INCORPORATES COMPILATION, EXECUTION AND DEBUGGING FACILITIES EMBEDDED IN AN INTERACTIVE SUPERVISORY SYSTEM. THIS USER'S MANUAL GIVES A DESCRIPTION OF THE LANGUAGE INCLUDING DATA STRUCTURE AND NOTATION, LITERALS, CONDITIONS, LITERALS, DATA STRUCTURE AND NOTATION, LABELS, AND DESCRIPTIONS OF THE CL6 SUPERVISOR, INCLUDING PROGRAM COMPILED, PROGRAM EXECUTION, DEBUGGING AIDS, SYSTEM COUNTERS, SUPERVISOR ORDERS, AND LINKAGE WITH OTHER PROGRAMS.

68111501 MJDSUN, JEROME A., GRAS -- A GRAPHICAL ASSEMBLER FOR MAGIC II, DIV. 650, I NOV 68, NBSR 9955, 47P

GRAS (GRAPHICAL ASSEMBLER) IS AN ASSEMBLY LANGUAGE FOR THE MAGIC II COMPUTER. IT IS A ONE-TO-ONE ASSEMBLER IN THE SENSE THAT EACH LINE OF SOURCE CODE PRODUCES A SINGLE MACHINE INSTRUCTION OR IS A DIRECTIVE TO THE ASSEMBLER ITSELF. GRAS OPERATES ON THE MDRIC 8 COMPUTER UNDER THE NBS CORD TIME-SHARING SYSTEM. THIS REPORT GIVES A DESCRIPTION OF GRAS, INSTRUCTIONS FOR LOADING AND USING GRAS, MAGIC II MACHINE INSTRUCTIONS AND DATA FORMATS, ASSEMBLER INSTRUCTION FORMATS, SPECIAL SYMBOLS, PSEUDI OPERATIONS AND ERROR MANAGERS OF GRAS.

68111592 RIPPY, DON E., MAGIC II, A REMOTE GRAPHIC DISPLAY TERMINAL, DIV. 650, I NOV 68, NBSR 9956, 10P

MAGIC II IS A REMOTE DISPLAY CONSOLE CONSISTING OF A PROCESSOR UNIT AND A DISPLAY UNIT WHICH INCLUDES A CRT DISPLAY, LIGHT PENCIL, JOYSTICK, GRAPHICAL TABLET AND PROCESSOR CONTROLS. IT IS DESCRIBED IN THIS TWO PART REPORT. PART I DESCRIBES BASIC SYSTEM DESIGN OBJECTIVES, ORGANIZATION AND CHARACTERISTICS OF THE MAGIC II REMOTE DISPLAY CONSOLE. INCLUDED IS A DESCRIPTION OF THE DATA FORMATS AND ADDITIONAL RELATED INFORMATION CONCERNING THE USE AND PROGRAMMING OF THE TERMINAL. PART II PRESENTS A COMPLETE DESCRIPTION OF PROGRAMMING CHARACTERISTICS AND MACHINE INSTRUCTIONS.


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EACH ITEM PUBLISHED IN 17 JOURNALS, 20 BOOKS COMPOSED OF CHAPTERS BY INDIVIDUAL AUTHORS, AND 43 CONFERENCE PROCEEDINGS. IN ADDITION, REFERENCES TO ALL ITEMS THAT WERE REVIEWED IN THE IEEE TRANSACTIONS ON ELECTRONIC COMPUTERS HAVE BEEN INCLUDED. THE TITLE WORD INDEX SECTION PROVIDES THE MEANING FOR LOCATING AN ITEM IF ANY PART OF ITS TITLE IS KNOWN. LIKewise, IT CAN BE USED TO IDENTIFY ALL ITEMS WHOSE TITLES INCLUDE A PARTICULAR WORD OR PHRASE. THE AUTHOR INDEX SECTION LISTS ALL AUTHORS OF EACH ITEM, BUT DOES NOT INDICATE WHETHER AN INDIVIDUAL IS ITS SOLE AUTHOR.

6901061 HUDSON, JEROME A., RICHARD FREEMIRE, LISA Mockett, J. MICHAEL ST. CLAIR, A SET OF ELEMENTARY PICTURE PROCESSING ALGORITHMS, OIV, 650, 6 JAN 69, NBSR 9978, 16P, 6 REFS

A SET OF PICTURE PROCESSING PROGRAMS WAS DEVELOPED FOR THE UNIVAC I10B TO ENABLE THE FOLLOWING OPERATIONS TO BE APPLIED TO A GRAY LEVEL PICTURE STORED AS AN ARRAY: 1) EDGE RECOGNITION, 2) COOING OF BOUNDARY INTO A SET OF DIRECTED LINE SEGMENTS, 3) EXTRACTION OF A SUB-PICUTRE FROM ITS BACKGROUND, 4) INSERTION OF A FOREIGN OBJECT INTO A BACKGROUND, AND 5) SELECTIVE OBSCURATION OF DETAIL THROUGH RANDOM NOISE. A DESCRIPTION OF THE PROGRAMS IS GIVEN IN THIS REPORT.

6904001 WEISSNER, PAUL, O. E. HUMPHRIES, G. S. LANG, PRELIMINARY STUDY OF INTER-HOSPITAL COMMUNICATION INTERFACE - PHASE I, OIV, 650, APR 69, NBSR 10 084, 134P, 115 REFS

A PROJECT WAS ESTABLISHED BETWEEN THE U.S. PUBLIC HEALTH SERVICE AND NBS TO PROVIDE DESIGN CRITERIA FOR COMPUTER ASSISTED HOSPITAL INFORMATION SYSTEMS THAT WOULD PERMIT EACH INSTITUTION TO HAVE A CUSTOMIZED SYSTEM, YET ASSURE ITS COMPATIBILITY WITH OTHER EXISTING AND EMERGING SYSTEMS. THIS REPORT DESCRIBES PHASE I OF THE PROJECT, THE FACT FINDING AND PROBLEM DEFINITION PHASE. I.E., THE NATURE OF THE PROBLEM OF INTER-COMMUNICATION IN THE FUTURE HEALTH NETWORKS.

6904009 WEGSTEIN, J. H., A SEMI-AUTOMATED SINGLE FINGERPRINT IDENTIFICATION SYSTEM, OIV, 600, APR 69, TN=481, 21P

A SYSTEM IS DESCRIBED IN WHICH A FINGERPRINT IS MANUALLY CODED BY TRACING CERTAIN RIDGES AND NOTING EVENTS SUCH AS RIDGE ENDINGS AND RIDGE BEGINNINGS. THIS CODE IS ENTERED INTO A CENTRAL FILE WHERE A COMPUTER IDENTIFIES THE FINGERPRINT BY COMPARING THE CODE WITH CODES PREVIOUSLY ENTERED IN THE FILE. THE SCHEME FOR COMPAREING CODES IS GIVEN ALONG WITH SOME PRELIMINARY TEST RESULTS USING TYPICAL FINGERPRINTS.

6905001 LITTLE, JOHN L., SOME EVOLVING CONVENTIONS AND STANDARDS FOR CHARACTER INFORMATION CODED IN SIX, SEVEN, AND EIGHT BITS, OIV, 650, MAY 69, TN=478, 27P

THIS TECHNICAL NOTE DESCRIBES SOME OF THE PROPERTIES OF THE USA STANDARD CODE FOR INFORMATION INTERCHANGE, WIDELY KNOWN AS ASCII OR USASCII. IT ALSO RELATES THIS CODE TO SIMILAR INTERNATIONAL CODES AND PRESENTS THE NATIONAL CODE FOR RUSSIA AS AN EXAMPLE OF THE WORLDWIDE ACCEPTANCE OF THIS CODE, WHICH IS COMPRISED OF SEVEN INFORMATION BITS REPRESENTING 128 CODED CHARACTERS. SOME OF THE CONVENTIONS WHICH ARE EVOLVING TO RELATE THESE SEVEN BIT CODES TO SIX AND EIGHT BIT COMPUTER CODES ARE GIVEN, AND CONVENTIONS FOR EXTENDING THE CODE TO REPRESENT AN UNLIMITED REPertoire OF CONCEPTS IS ALSO GIVEN. TWO ALTERNATE ARRANGEMENTS OF THE CODE TABLE ARE SHOWN TO FACILITATE AN UNDERSTANDING OF ITS STRUCTURE AND APPLICATION.

6906001 HUDSON, JEROME A., FRANK H. ULMER, THOMAS N. PYKE, JR., AN EXPERIMENT FOR THE STUDY OF SYSTEM DESIGN AND INSTRUMENTATION FOR REMOTE COMPUTER GRAPHICS UTILIZING A GRAPHICAL TEXT EDITOR, OIV, 650, JUN 69, NBSR 10 143, 17P, 6 REFS

THE DESIGN AND USE OF GRAPHICAL DISPLAYS LOCATED REMOTE FROM A CENTRAL COMPUTER SYSTEM AND CONNECTED WITH LIMITED COMMUNICATION LINES IS STUDIED. THIS REPORT DESCRIBES THE PLANNED DEVELOPMENT OF A PARTICULAR DISPLAY APPLICATION ON EXPERIMENTAL EQUIPMENT, EMPLOYING APPROPRIATE TECHNIQUES FOR INSTRUMENTING THE PERFORMANCE OF THE SYSTEM. THE DESCRIPTION OF THE PLANNED APPLICATION CONTAINED IN THIS REPORT INCLUDES A SUMMARY OF EXTERNAL CAPABILITIES AS WELL AS COMMENTARY ON THE INTERNAL DATA STRUCTURES AND IMPLEMENTATION.

6909001 ABRAMS, MARSHALL G., DATA STRUCTURES FOR COMPUTER GRAPHICS, OIV, 650, SEP 69, NBSR 10 144, 26P, 25 REFS

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COMPUTER GRAPHICS IS THE GENERAL TERM APPLIED TO THE USE OF A DIGITAL COMPUTER TO FORM AN INTERNAL MODEL REPRESENTATION OF AN EXTERNALLY PERCEIVED GRAPHICAL ENTITY. THE OBJECTIVE OF SUCH MODELING IS TO EXTRACT INFORMATION FROM THE GRAPHICAL ENTITY SO THAT IT MAY BE MODIFIED, MANIPULATED, OR OTHERWISE PROCESSED. AFTER GRAPHICAL INFORMATION HAS BEEN DIGITIZED, AN ORGANIZATION MUST BE PROVIDED FOR THE STORAGE AND RETRIEVAL OF THIS DATA WITHIN THE MEMORY OF THE COMPUTER SYSTEM.

THIS REPORT CONTAINS A DISCUSSION OF THOSE ORGANIZATIONS WHICH REPRESENT THE RELATIONSHIPS AMONG THE COMPONENTS OF THE GRAPHICAL ENTITY. THE RELATIONSHIPS WHICH MUST BE REPRESENTED WITHIN THIS SUBSET OF COMPUTER GRAPHICS INCLUDE TOPOLOGY AND DEPENDENCY RELATIONSHIPS. IT IS MOST CONVENIENT TO REPRESENT SUCH INFORMATION IN A HIERARCHICAL DATA STRUCTURE WHICH, IN SOME ABSTRACT WAY, MODELS THE EXTERNAL GRAPHICAL ENTITY.

BULLIS, W. MURRAY, W. R. THURBER, THOMAS N. PYKE, JR., FRANK H. ULMER, A. L. KDENIG, USE OF A TIME-SHARED COMPUTER SYSTEM TO CONTROL A HALL EFFECT EXPERIMENT. DIV. 650, OCT 69, TN-510, 4P

AN EXPERIMENTAL TIME-SHARED COMPUTER SYSTEM HAS BEEN USED TO CONTROL AND COLLECT DATA FROM A HALL EFFECT EXPERIMENT. IN ADDITION TO SELECTION OF THE VOLTAGE AND CONTROL OF SPECIMEN CURRENT AND MAGNETIC FLUX DIRECTIONS, THE COMPUTER EXERTS CONTROL OVER THE SPECIMEN TEMPERATURE IN ACCORDANCE WITH A SERIES OF THERMOCOUPLE VOLTAGES ENTERED BY THE OPERATOR AT THE BEGINNING OF THE RUN. THE INTERFACE CIRCUITRY IS CONSTRUCTED FROM FOUR GENERAL PURPOSE MODULES AND A SINGLE SPECIAL PURPOSE UNIT. DETAILS OF THE INTERFACE SYSTEM AND THE PROGRAMS USED TO CONTROL THE EXPERIMENT AND TO PERFORM INTERMEDIATE CALCULATIONS ARE GIVEN. IT WAS FOUND THAT THE TIME-SHARED SYSTEM WAS WELL-SUITED TO CONTROL AN EXPERIMENT OF THIS TYPE. THE DEMANDS ON THE COMPUTER WERE ESSENTIALLY SIMILAR TO THOSE REQUIRED BY A HUMAN USER INTERACTING IN A CONVERSATIONAL MODE. SUBSTANTIAL SAVINGS IN TIME OVER MANUAL DATA COLLECTION AND REDUCTION WERE REALIZED; A TEMPERATURE RUN WITH 38 TO 40 DATA POINTS BETWEEN 10 AND 320 K COULD BE COMPLETED IN LESS THAN 4 HOURS.

ELBOURN, R. D., JUDITH F. GILSNN, SIMULATION OF AIR TRAFFIC CONTROL RADAR BEACON CODE ASSIGNMENT PLANS. FINAL REPORT ON PHASE I, DIV. 650, 31 OCT 69, NBSR 10 117, 68P


GELLER, SIDNEY B., PAUL A. MATEK, NORMAN G. CLEVELAND, STANDARD REFERENCE MATERIALS: CALIBRATION OF NBS SECONDARY STANDARD MAGNETIC TAPE (COMPUTER AMPLITUDE REFERENCE) USING THE REFERENCE TAPE AMPLITUDE MEASUREMENT 'PROCESS A', DIV. 650, NOV 69, NBS-S-P-260-18, 4P

THIS PUBLICATION DESCRIBES THE DESIGN AND OPERATION OF THE NBS SIGNAL AMPLITUDE MEASURING SYSTEM (PROCESS A) THAT IS USED FOR CALIBRATING UNRECORDED SECONDARY STANDARD MAGNETIC TAPES (COMPUTER AMPLITUDE REFERENCE). THE SIGNAL LEVEL CALIBRATION IS MADE WITH RESPECT TO A REFERENCE SIGNAL LEVEL DERIVED FROM THE NBS MASTER STANDARD MAGNETIC TAPE (COMPUTER AMPLITUDE REFERENCE) THAT IS KEPT IN A REPOSITORY AT NBS. THE TECHNIQUES FOR MEASURING AND RECORDING THE DATA THAT ACCOMPANY EACH SECONDARY STANDARD MAGNETIC TAPE IN THE FORM OF STRIP CHART RECORDINGS AND SATURATION CURVES ARE DESCRIBED.

GRUBB, DANA S., LOUIS J. PALDMED, KH SUBSYSTEM OPERATING AND MAINTENANCE INSTRUCTIONS. DIV. 650, 1 NOV 69, NBSR 10 125, 129P

THE PURPOSE OF THE KH SUBSYSTEM IS TO PROVIDE ACCURATE AND VALIDATED DIGITAL DATA FROM EACH OF THE FIVE TYPE III H SYSTEM ANALOG CHANNELS TO THE K SYSTEM DIGITAL COMPUTER FOR PROCESSING. THIS REPORT GIVES A DESCRIPTION OF THE SUBSYSTEM, PRINCIPLES OF OPERATION, OPERATING PROCEDURES, DIRECTIONS FOR INSTALLATION, CALIBRATION PROCEDURES AND MAINTENANCE PROCEDURES.

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69120001 STROM, S. C., ARTHUR M. HOBBES. VALUATION OF TELECOMMUNICATIONS, DIV. 640, DEC 69, NBSR 9977, 66P

A PROJECT WAS ESTABLISHED TO DEVELOP EFFECTIVE METHODS FOR CALCULATING THE ATTACK WORTH OF VARIOUS ELEMENTS OF TELECOMMUNICATIONS AND TO DEVELOP OPTIMAL OFFENSIVE AND DEFENSIVE STRATEGIES FOR DESTRUCTION AND/OR PRESERVATION OF COMMUNICATION CAPABILITIES. THIS REPORT GIVES THE PROGRESS OF THE PROJECT DURING FY 1968. DURING THIS YEAR RESEARCH AND DEVELOPMENT WAS CONCENTRATED IN THE FOLLOWING TWO AREAS, 1) DETERMINATION OF IMPORTANCE NUMBERS FOR THE ELEMENTS OF A COMMUNICATIONS NETWORK AND 2) DEVELOPMENT OF OFFENSIVE AND DEFENSIVE STRATEGIES FOR A TELECOMMUNICATIONS NETWORK SERVING A MULTI-COMMAND MULTI-SUBORDDINATE STRUCTURE.

69120002 STEIN, PHILIP G., LLLAMA: A LOW LEVEL LANGUAGE FOR ASSISTANCE IN MEASUREMENT AUTOMATION, DIV. 650, DEC 69, NBSR 10 147, 26P

THE REVOLUTION IN SMALL COMPUTERS HAS MADE POSSIBLE FOR THE FIRST TIME THE INCLUSION OF DATA PROCESSORS IN THE INSTRUMENTATION OF SCIENTIFIC EXPERIMENTS. THESE MACHINES CONTROL THE LABORATORY EQUIPMENT AND ANALYZE THE DATA PRODUCED, THEY OPERATE IN REAL TIME AND THEY ARE ON-LINE (DATA IS TRANSMITTED DIRECTLY IN FROM SENSORS AND DIRECTLY OUT TO EFFECTORS.) IN MOST CASES, THESE MACHINES ARE PROGRAMMED BY THE SCIENTISTS, AND ARE PROGRAMMED IN THE ASSEMBLY LANGUAGE OF THE COMPUTER IN QUESTION. IN ORDER TO ASSIST THE PROGRAMMER IN HANDLING SOME OF THE MORE INTRICATE TASKS INVOLVED IN ON-LINE CONTROL, TO MAKE IT MORE CONVENIENT TO PROGRAM SUCH A MACHINE, AND TO CREATE A NEARLY UNIVERSAL MACHINE INDEPENDENT LABORATORY PROCESSING LANGUAGE, LLLAMA WAS DEVELOPED.

69120003 TRUITT, WILLIAM B., AUXILIARY DATA READOUT SYSTEM, DIV. 650, DEC 69, NBSR 10 187, 117P

THE DIGITAL SYSTEM FOR AN AUXILIARY DATA READOUT MUST PROCESS THE VIDEO SIGNALS FROM TWO DETECTORS SIMULTANEOUSLY. CONSEQUENTLY, IT MUST BE CAPABLE OF CONVERTING AND STORING OVER 200 BINARY WORDS IN A PERIOD OF ONE MILISECOND. THIS Requires HIGH-SPEED ANALOG-TO-DIGITAL CONVERSION, A SIZEABLE AND HIGH-SPEED MEMORY, AND A HIGH-SPEED PROCESSOR TO CONTROL THE TRANSFER OF DATA INTO AND OUT OF MEMORY. SUCH A SYSTEM, BUILT AROUND A GENERAL-PURPOSE DATA PROCESSOR, IS DESCRIBED IN THIS REPORT.

70012301 KNIGHT, GEOFFREY, JR., PROGRESS REPORT ON THE DEVELOPMENT OF A CLASSIFICATION SCHEME FOR COMPUTER PROGRAMS AND RELATED DOCUMENTATION, DIV. 660, 23 JAN 70, 97P

THIS REPORT WAS PREPARED FOR PRESENTATION TO A JOINT MEETING OF THE AMERICAN PATENT LAW ASSOCIATION'S SUBCOMMITTEE ON CLASSIFICATION OF COMPUTER PROGRAMS AND THE U.S. PATENT OFFICE'S AD HOC COMMITTEE TO ESTABLISH A SEARCH SYSTEM AND DATA BASE FOR COMPUTER PROGRAM EXAMINATION. THE WORK WAS SPONSORED BY THE OFFICE OF COMPUTER INFORMATION, CENTER FOR COMPUTER SCIENCES AND TECHNOLOGY, NATIONAL BUREAU OF STANDARDS, AND WAS CARRIED OUT IN COLLABORATION WITH MEMBERS OF THE U.S. PATENT OFFICE.

70020001 RANKIN, KIRK, JAMES L. TAN, COMPONENT COMBINATION AND FRAME-EMBEDDING IN CHINESE CHARACTER GRAMMARS, DIV. 640, FEB 70, TN-492, 34P

CHINESE CHARACTERS CAN BE ALMOST COMPLETELY DESCRIBED FROM THE POINT OF VIEW THAT EACH CHARACTER IS COMPOSED OF A NUMBER OF COMPONENTS AND THAT EACH COMPONENT IS COMPOSED OF A NUMBER OF STROKES. THIS NOTE OFFERS A GRAMMATICAL TREATMENT OF COMPONENT COMBINATION. IT IS CONCERNED WITH THE THREE MOST PRODUCTIVE PROCESSES OF COMPONENT ARRANGEMENT, THIS GRAMMAR DIFFERS FROM PREVIOUS GRAMMARS IN THAT THE CONSTRAINTS ON RECURSION HAVE BEEN MINIMIZED AND GREAT LEXICAL ECONOMY HAS BEEN ACHIEVED.

70020002 STRHLEIN, JAMES N., THOMAS C. BAGG. A SELECTIVE ROLL-TO-ROLL PRINTER FOR PRODUCING DUPLICATE MICROFILM COPIES, DIV. 50, FEB 70, TN-516, 8P

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THE 'SELECTAFRAME' PRINTER, A CONVENIENT DEVICE FOR COPYING ONTO ROLL FILM SELECTED FRAMES FROM OTHER ROLLS OF
FILM FOR SUBSEQUENT AUTOMATIC ENLARGEMENT PRINTING IS DESCRIBED IN DETAIL.

7003001 STEVENS, MARY ELIZABETH. RESEARCH AND DEVELOPMENT IN THE COMPUTER AND INFORMATION SCIENCES. VOLUME 1. INFORMATION
ACQUISITION, SENSING, AND INPUT: A SELECTIVE LITERATURE REVIEW. OIV. 600. MAR 70. MONO-113-1. 165P. 640 REF

THIS REPORT, THE FIRST OF A PROJECTED SERIES OF RESEARCH AND DEVELOPMENT EFFORTS AND REQUIREMENTS IN THE COMPUTER
AND INFORMATION SCIENCES, IS CONCERNED WITH A SELECTIVE LITERATURE REVIEW INVOLVING THE OPERATIONS OF INFORMATION
ACQUISITION, SENSING, AND INPUT TO INFORMATION PROCESSING SYSTEMS CONSIDERED IN GENERALIZED TERMS. SPECIFIC TOPICS INCLUDE
BUT ARE NOT LIMITED TO: SOURCE DATA AUTOMATION AND REMOTE SENSING TECHNIQUES, COMMUNICATION SYSTEMS AND DATA TRANSMISSION
LINKS, AUDIO AND GRAPHIC INPUTS, PREPROCESSING OPERATIONS UPON INPUT ITEMS SUCH AS IMAGE ENHANCEMENT AND PROPERY FILTERING,
CHARACTER RECOGNITION, SPEECH RECOGNITION, AND VARIOUS OTHER ASPECTS OF AUTOMATIC PATERN RECOGNITION. SUPPLEMENTAL NOTES
AND A BIBLIOGRAPHY OF OVER 640 CITED REFERENCES ARE INCLUDED.

7005001 STEVENS, MARY ELIZABETH. STANDARDIZATION, COMPATIBILITY AND/OR CONVERTIBILITY REQUIREMENTS IN NETWORK PLANNING. OIV.
09. MAY 70. NBSR 10 252. 355P. 469 REF

THIS REPORT CONSIDERS THE STANDARDIZATION, COMPATIBILITY, AND/OR CONVERTIBILITY REQUIREMENTS INVOLVED IN NETWORK
PLANNING, ESPECIALLY FOR THE PROPOSED BIOMEDICAL COMMUNICATIONS NETWORK, AND WITH PARTICULAR EMPHASIS UPON THE COOPERATIVE
INTERCHANGE OF BIBLIOGRAPHIC INFORMATION. CURRENT FEDERAL, NATIONAL, INTERNATIONAL, AND OTHER STANDARDS RELEVANT TO BCN
OPERATIONS ARE DESCRIBED. AREAS OF APPLICABILITY OF PRESENT AND PROPOSED STANDARDIZATION OR COMPATIBILITY CONCERN ARE
DISCUSSED, INCLUDING THE COMMUNICATION SYSTEMS, PHYSICAL MEDIA, PROGRAMMING LANGUAGE AND DATA FORMATS, DESCRIPTIVE AND
SUBJECT CATALOGING, OUTPUT AND DISPLAY BUFFERING, AND PROTECTION REQUIREMENTS. INFORMATION CONTROL, MANAGEMENT CONTROL,
AND CONTINUING COORDINATION REQUIREMENTS ARE ALSO CONSIDERED.

7003002 STEVENS, MARY ELIZABETH. RESEARCH AND DEVELOPMENT IN THE COMPUTER AND INFORMATION SCIENCES. VOLUME 2. PROCESSING,
STORAGE, AND OUTPUT REQUIREMENTS IN INFORMATION PROCESSING SYSTEMS; A SELECTIVE LITERATURE REVIEW. OIV. 600. MAY 70.
MONO-113-2. 125P. 480 REF

AREAS OF CONCERN WITH RESPECT TO PROCESSING, STORAGE, AND OUTPUT REQUIREMENTS OF A GENERALIZED INFORMATION PROCESSING
SYSTEM ARE CONSIDERED. SPECIAL EMPHASIS IS PLACED ON MULTIPLE-ACCESS SYSTEMS. PROBLEMS OF SYSTEM MANAGEMENT AND CONTROL
ARE DISCUSSED, INCLUDING HIERARCHIES OF STORAGE LEVELS, FACSIMILE, DIGITAL, AND MASS RANDOM ACCESS STORAGE MEDIA AND
TECHNIQUES ARE CONSIDERED. A VARIETY OF OUTPUT MODE REQUIREMENTS ARE ALSO CONSIDERED, INCLUDING DIRECT RECORDING TO
MICROFORMS: ON-LINE DISPLAY SYSTEMS: PRINTING, PHOTOCOMPOSITION, AND AUTOMATIC CHARACTER GENERATION: AND
THREE-DIMENSIONAL, COLOR, AND OTHER SPECIAL-PURPOSE DISPLAY SYSTEMS. PROBLEMS OF SYSTEM USE AND EVALUATION ARE ALSO BRIEFLY
NOTED. A BIBLIOGRAPHY OF APPROXIMATELY 480 CITED REFERENCES IS INCLUDED. TOGETHER WITH SUPPLEMENTARY NOTES AND QUOTATIONS
FROM THE LITERATURE.

7005220 MOORE, R. R. K SYSTEM BASELINE CONFIGURATION. OIV. 650. 22 MAY 70. NBSR 10 243. 9P

THIS REPORT DESCRIBES THE EQUIPMENT AND FACILITIES WHICH HAVE BEEN INTEGRATED AS THE K-SYSTEM BASELINE CONFIGURATION.
IT IS INTENDED TO PROVIDE A GENERAL OVERVIEW OF THE K SYSTEM AND TO DESCRIBE ITS PERFORMANCE CAPABILITIES IN FUNCTIONAL
TERMS WHICH WILL CONVEY AN UNDERSTANDING OF WHAT THESE ARE RATHER THAN A DETAILED ACCOUNTING OF HOW THEY ARE ATTAINED.

7006001 STEVENS, MARY ELIZABETH. RESEARCH AND DEVELOPMENT IN THE COMPUTER AND INFORMATION SCIENCES. VOLUME 3. OVERALL SYSTEM
DESIGN CONSIDERATIONS: A SELECTIVE LITERATURE REVIEW. OIV. 600. JUN 70. MONO-113-3. 147P. 570 REF

THIS REPORT, THE THIRD IN A SERIES ON RESEARCH AND DEVELOPMENT EFFORTS AND REQUIREMENTS IN THE COMPUTER AND INFORMATION
SCIENCES, IS CONCERNED WITH A SELECTIVE LITERATURE REVIEW INVOLVING OVERALL SYSTEM DESIGN CONSIDERATIONS IN THE PLANNING OF
INFORMATION PROCESSING SYSTEMS AND NETWORKS. SPECIFIC TOPICS INCLUDE BUT ARE NOT LIMITED TO: REQUIREMENTS AND RESOURCES

1966 THRU 1976 ICST BIBLIOGRAPHY
70093001  STROHLEIN, JAMES N., LOUIS J. PALOMBO, REMOTE GAMMA SOURCE HANDLING SYSTEM, OIV. 650, 30 SEP 70, NBSR 10 352, 50P

NBS WAS REQUESTED TO DESIGN, FABRICATE AND INSTALL THE EQUIPMENT AND CONTROL SYSTEM FOR REMOTE HANDLING OF CO-60 GAMMA RAY SOURCE FOR THE ARMY RESEARCH INSTITUTE (AFRI). THE EQUIPMENT CONSISTS OF TWO MOBILE SOURCE ELEVATORS, REMOTE CONTROL SYSTEM CONSOLE, SAFETY INTERLOCK SYSTEM, RADIOACTIVE MONITORING SYSTEMS, SOURCE STORAGE RACKS AND MANUAL HANDLING TOOLS. THIS REPORT DESCRIBES THE PORTION OF THE AFRII CO-60 IRRADIATOR PROVIDED BY NBS AND INCLUDES OPERATING AND MAINTENANCE INSTRUCTIONS.

70120001  FRIEDMAN, O. C., K SYSTEM BASELINE SOFTWARE, VOLUME I, OIV. 650, DEC 70, NBSR 10 524 VOLUME 1, 204P

THE INFORMATION ON THE K SYSTEM BASELINE SOFTWARE IS ISSUED IN TWO REPORTS. THIS REPORT, VOLUME I, CONTAINS INFORMATION REGARDING THE REQUIREMENTS TO BE MET BY K SYSTEM PROGRAMS AT BASELINE. FLOWCHARTS OF THE PROGRAMS DEVELOPED TO MEET THESE REQUIREMENTS AND THE DESCRIPTIONS OF THE COMPUTATIONAL TECHNIQUES USED IN IMPLEMENTING THE FLOWCHARTS. THIS VOLUME SHOULD PROVIDE SUFFICIENT INFORMATION FOR USERS WHO WISH TO LEARN FUNCTIONAL REQUIREMENTS OF THE K PROGRAMS AND HOW THESE ARE MET.

70120002  FRIEDMAN, O. C., K SYSTEM BASELINE SOFTWARE, VOLUME II, OIV. 650, DEC 70, NBSR 10 524 VOLUME 2, 477P

THE INFORMATION ON THE K SYSTEM BASELINE SOFTWARE IS ISSUED IN TWO REPORTS. THIS REPORT, VOLUME II, CONSISTS OF APPENDICES TO VOLUME I, INCLUDING DETAILS OF THE PROGRAMS WITH PROGRAM LISTINGS AND SOME DETAILS OF THE OPERATION OF THE COMPUTER SYSTEM WHICH AFFECT PROGRAMMING. THIS REPORT CONTAINS DETAILS OF PROGRAMMING AND K SYSTEM HARDWARE OF INTEREST ONLY TO THOSE WHO INTEND TO MODIFY THESE PROGRAMS OR SYSTEM HARDWARE AFFECTING THEM, TO INCORPORATE INTO THE SYSTEM ADDITIONAL PROGRAMS, OR TO TRANSFER THESE PROGRAMS TO OTHER HARDWARE.

71010001  BOLOTSKY, GLORIA R., ZELLA G. RUTHEBERG, ROY G. SALTMAN, USER'S MANUAL FOR THE ONC MAP PLOTTING PROGRAM SILOT, OIV. 640, JAN 71, NBSR 10 545, 71P, 3 REFS

THE PURPOSE OF THE SILOT PROGRAM IS TO PLOT A SET OF GEOGRAPHICAL POINTS ON A SET OF OVERLAYS FOR A GROUP OF THE OPERATIONAL NAVIGATIONAL CHARTS (ONC MAPS) OF THE WORLD. THE SET OF POINTS IS ARBITRARY IN LOCATION AND NUMBER AND ARE SPECIFIED BY THE USER. OPTIONS FOR ANY PLOTTED POINT ARE: 1) HAVING A SYMBOL PLACED ABOVE THE POINT, 2) DRAWING ONE TO THREE CONCENTRIC CIRCLES ABOUT THE POINT AND 3) CHOOSING ONE OF FOUR COLORS FOR THE INFORMATION RELATING TO A POINT. SECURITY CLASSIFICATION FOR EACH COMPUTER RUN CAN ALSO BE SELECTED.


71030001  ELBORN, R. O., JUDITH F. GILSINN, SIMULATION OF AIR TRAFFIC CONTROL RADAR BEACON CODE ASSIGNMENT PLANS, FINAL REPORT, OIV. 650, MAR 71, TN-566, 73P

IN THE AIR TRAFFIC CONTROL RADAR BEACON SYSTEM TRANSPONDERS IN THE AIRCRAFT USE ONE OF 4096 IDENTITY CODES WHEN REPLYING TO INTERROGATION FROM THE SECONDARY SURVEILLANCE RADAR. TWO TYPES OF PLANS FOR ASSIGNING IDENTITY CODES TO AIRCRAFT WERE TESTED BY SIMULATING IN A DIGITAL COMPUTER A PEAK DAY'S IFR TRAFFIC IN THE USA. IN ONE TYPE EACH AIR ROUTE TRAFFIC CONTROL CENTER ASSIGNS CODES INDEPENDENTLY OF ALL THE OTHERS, WHILE IN THE OTHER TYPE A SINGLE MASTER CENTER MAKES ALL THE CODE ASSIGNMENTS FOR THE USA. FOUR OTHER TYPES OF PLANS ARE DISCUSSED, AND AN ASSIGNMENT PLAN OF MIXED TYPE IS

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PROPOSED FOR FURTHER STUDY. THE STRATEGY OF SIMULATION AND THE USE OF THE SIMSCRIPT LANGUAGE ARE DISCUSSED IN AN APPENDIX.

FRIEDMAN, D. C., SUSAN X. REED, DOCUMENTATION OF 'OSCAN', A PROGRAM FOR VERIFYING UPPER AND LOWER CASE TEXT WITH CONTROL SYMBOLS, DIV. 640, 23 MAR 71, NBSR 10 560, 16P

OSCAN IS A SIMPLIFIED PROGRAM WHICH PROVIDES TAPE OUTPUT IN UPPER AND LOWER CASE CHARACTERS FOR NORMAL RUNNING TEXT AND PROVIDES AN INDICATION OF THE CODING OF OTHER SYMBOLS AND SPECIAL CODES. THIS INTERIM PROGRAM ENABLED A CHECK TO BE MADE ON TAPES WHICH WERE BEING PRODUCED FOR THE PATENT OFFICE MORE EASILY THAN PROCESSING HEXADECIMAL DUMPS OF THE TAPE. THIS REPORT GIVES A BASIC DESCRIPTION OF THE PROGRAM INCLUDING TAPE FORMATS, FLOWCHARTS, PROGRAM LISTING AND SAMPLE PRINTOUTS.

REITWIESNER, GEDPE W., ON COMPUTER PERFORMANCE MEASUREMENT PROGRAMMING, MEASURING INDEXING ADOBTNIS BY ISOLATING COMPLEX PRIMES, DIV. 600, APR 71, TN-572, 23P

THIS WRITING DESCRIBES A TEST PROGRAM FOR A COMPUTER. IT IS CONCERNED NOT WITH SPECIFIC MEASUREMENTS TAKEN, BUT RATHER WITH A PROCEDURE FOR MAKING MEASUREMENTS REGARDING A SPECIFIC PROPERTY OF COMPUTER OPERATION. THE PROGRAM IS WRITTEN IN A PARTICULAR PROBLEM-DIRECTED PROGRAMMING LANGUAGE; THEREFORE ASSESSMENT SPANS THE EFFECTS OF THE COMPUTER HARDWARE, OF THE PROGRAMMING LANGUAGE, AND OF THE COMPILING PROCESS. THE OBJECTIVE OF THE TEST IS TO ASSESS ADOBTNIS IN CERTAIN INDEXING OPERATIONS. ASSESSMENT IS ACCOMPLISHED BY MEASURING EXECUTION TIME OF A RECURSIVE PROGRAMMING LOOP. THE TEST PROGRAM WAS CHOSEN AS A CONVENIENT ARTIFICE TO USE SPECIFIC INDEXING-TYPE OPERATIONS IN THE PROGRAMMING EMPLOYED FOR SOLUTION. THE TEST PROBLEM PERFORMS A SIMPLE COMPUTATION FOR WHICH THE SOLUTION IS COMPLETELY DEFINITIVE, YET FOR WHICH BOTH THE SOLUTION AND THE TIME FOR ACHIEVING IT ARE VARIABLE UNDER PARAMETERS WHOSE VALUES ARE INTRODUCED AS PROGRAM INPUT DATA.

OLOFIELD, MARTHA J., TAD-KUANG MING, CHEMICAL AND PHARMACOLOGICAL DATA MANAGEMENT, DIV. 640, APR 71, NBSR 10 569, 33P

THIS IS THE FINAL REPORT ON THE CHEMICAL AND PHARMACOLOGICAL INFORMATION MANAGEMENT PROJECT AND IS THE PRESENTATION TO NIH OF RECOMMENDATIONS PERTINENT TO THE DESIGN OF A NEW, MORE AMBITIOUS SYSTEM FOR SUCH INFORMATION MANAGEMENT BASED ON EXPERIENCE IN THE BUILDING AND EXERCISING A CARD-INPUT BATCH SYSTEM. THE EXISTING SYSTEM IS FIRST DESCRIBED, AND THEN ANALYZED IN TERMS OF SPECIFIC FEATURES BOTH EXISTING AND NOTABLY LACKING.

STEVENS, MARY ELIZABETH, INTERLOCKING DIRECTORIES -- PROBLEMS AND PROSPECTS OF NETWORK REFERRAL RESOURCES, DIV. 600, MAY 71, NBSR 10 473, 204P

THE IMPORTANCE OF KNOWING WHERE TO GO TO OBTAIN INFORMATION ABOUT RESOURCES IS STRESSED FOR PURPOSES OF NETWORK PLANNING. THE EXTENT TO WHICH INFORMATION-RESOURCE INFORMATION IS NOW OR COULD BE MADE MACHINE-USEFUL IS DISCUSSED. DIRECTORIES-TO-DIRECTORIES OR INTERLOCKING DIRECTORIES, ON PEOPLE, INSTITUTIONS, CURRENT ACTIVITIES, THE LITERATURE, NON-BOOK MATERIALS, AND GOODS AND SERVICES, ARE NEEDED. APPENDICES TO THE REPORT CONSIST OF A BIBLIOGRAPHY OF CITED AND/OR PERTINENT REFERENCES AND A PROPER NAME INDEX.

REITWIESNER, GEORGE W., COUNTING EXCLUDED CASES--ELIMINATING PAIRS OF DIGITS WITH EQUAL DISTANCES FROM STRINGS WITH CHECK DIGITS, DIV. 600, 27 MAY 71, NBSR 10 639, 21P

THE ACCURACY OF TRANSCRIPTION OF A STRING OF DIGITS CAN BE POLICED FOR A SINGLE ERROR BY ADDING TO THE STRING A CHECK DIGIT WHOSE VALUE IS ESPECIALLY ASSIGNED SUCH THAT THE SUM OF SOME PERMUTATION FUNCTIONS OF EACH OF THE DIGITS (INCLUDING THE CHECK DIGIT) YIELDS A PREDETERMINED VALUE WHEN AND ONLY WHEN THE TRANSCRIPTION IS PERFORMED CORRECTLY. (SEE ALSO NBSR 10 866)

FRIEDMAN, O. C.., DOCUMENTATION OF BLDK1 AND BLDK2 -- PROGRAMS FOR PRINTING OF SELECTED TAPE BLOCKS, DIV. 650, JUN 71, NBSR 10 445, 10P

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BLOK1 IS A COMPUTER PROGRAM WHICH PERMITS THE PRINTING OUT OF SELECTED TAPE BLOCKS FROM A TAPE OF PATENT DATA. IT PERMITS THE ALTERNATE SKIPPING AND PRINTING OF SELECTED NUMBERS OF BLOCKS FOR AS MANY AS TEN SAMPLES FROM A REEL OF TAPE. BLOK2 IS A VERSION OF BLOK1. THIS REPORT GIVES A GENERAL DESCRIPTION AND DOCUMENTATION OF THESE TWO PROGRAMS.

PYKE, THOMAS N., JR., SIEGFRIED TREU, JEROME A. HUDSON, PERFORMANCE MEASUREMENT OF INTERACTIVE GRAPHICS SYSTEMS IN SUPPORT OF COMPUTER-AIDE D DESIGN AND ENGINEERING, OIV. 650, JUN 71, NBSR 10 451, 42P, 16 REFS

THE MATERIAL PRESENTED IN THIS REPORT IS A RESULT OF WORK PERFORMED BETWEEN SEPTEMBER 15, 1970, AND JUNE 30, 1971, AS PART OF A LONG TERM "INTERACTIVE COMPUTER-AIDE TECHNIQUES" STUDY. A GENERAL PERFORMANCE MEASUREMENT METHODOLOGY IS INTRODUCED IN WHICH A FRAMEWORK FOR ESTABLISHING MEANINGFUL PERFORMANCE CRITERIA AND SPECIFIC MEASURES IS DEVELOPED. WITHIN THE FRAMEWORK A NUMBER OF MEASURES ARE SUGGESTED AS RELEVANT TO EVALUATING INTERACTIVE GRAPHICS SYSTEMS. THE REPORT ALSO DESCRIBES AN INTERACTIVE GRAPHICAL THERMAL DESIGN SYSTEM THAT HAS BEEN IMPLEMENTED AND IS INTENDED FOR USE IN TESTING PROPOSED PERFORMANCE MEASURES AND IN COMPARING INTERACTIVE GRAPHICS WITH ALTERNATIVE MEANS FOR SUPPORTING COMPUTER-AIDE DESIGN.

GELLER, SIDNEY B., STANDARD REFERENCE MATERIALS: CALIBRATION OF NBS SECONDARY STANDARD MAGNETIC TAPE (COMPUTER AMPLITUDE REFERENCE) SAM 3200 USING THE REFERENCE TAPE AMPLITUDE MEASUREMENT (PROCESS A) MODEL II, OIV. 650, JUN 71, NBS-SP-260-29, 5P

THIS PUBLICATION DESCRIBES THE DESIGN, OPERATION AND CALIBRATION OF THE NBS SIGNAL AMPLITUDE MEASURING SYSTEM (PROCESS A - MODEL II) THAT IS USED FOR CALIBRATING UNRECORDED SECONDARY STANDARD MAGNETIC TAPE (COMPUTER AMPLITUDE REFERENCE) SAM 3200. THIS SYSTEM SUPERCEDES THE MEASUREMENT SYSTEM THAT WAS DESCRIBED IN THE NBS SPECIAL PUBLICATION 260-18 (NOVEMBER 1969). THE SIGNAL LEVEL CALIBRATION IS MADE WITH RESPECT TO A REFERENCE SIGNAL LEVEL DERIVED FROM THE NBS MASTER STANDARD MAGNETIC TAPE (COMPUTER AMPLITUDE REFERENCE) THAT IS KEPT IN REPOSATORY AT NBS. THE TECHNIQUES FOR MEASURING AND RECORDING THE DATA THAT ACCOMPANY EACH SECONDARY STANDARD MAGNETIC TAPE IN THE FORM OF STRIP CHART RECORDINGS AND SATURATION CURVES ARE DESCRIBED.


PONG, ELIZABETH, A PRELIMINARY DESIGN OF A DATA RETRIEVAL LANGUAGE TO HANDLE A GENERALIZED DATA BASE, OIV. 640, JUL 71, TH-590, 26P

ORL (DATA RETRIEVAL LANGUAGE) IS A HIGH-LEVEL PROGRAMMING LANGUAGE FOR INFORMATION RETRIEVAL. THE LANGUAGE INCLUDES A DATA DESCRIPTION LANGUAGE WHICH CAN DESCRIBE FIXED-LENGTH HIERARCHICAL DATA STRUCTURES, AND ORL INCLUDES A DATA RETRIEVAL STATEMENT WHEREBY A USER CAN RETRIEVE DATA BY SPECIFYING CONDITIONS ON TO THE DATA VALUE. ORL ALSO HAS AN ENVIRONMENT DECLARATION STATEMENT IN WHICH THE USER CAN INICATE SPECIFIC PERIPHERAL DEVICES BY UNIT NUMBER FOR FILES. THE REST OF THE LANGUAGE CONSISTS OF AN OPERATION REPERTORY OF INPUT-OUTPUT FUNCTIONS AND OTHER DATA MANIPULATIONS. ORL IS IMPLEMENTED AS A PREPROCESSOR TO FORTRAN V ON THE UNIVAC 1108. KEYWORDS ACT AS TRIGGERS AND ARE REPLACED BY BLOCKS OF FORTRAN CODE.

THE PURPOSE OF THIS PROJECT IS TO INVESTIGATE THE DESIGN OF AN INFORMATION RETRIEVAL LANGUAGE TO HANDLE A GENERALIZED DATA BASE. THE ORL SYSTEM CONSISTS OF A SET OF PRIMITIVES UTILIZING BOTH COMPIL-TIME MACROS AND RUN-TIME SUBROUTINES.

THESE PRIMITIVES ARE EMBEDDED IN A HIGH LEVEL PROCEDURE-ORIENTED PROGRAMMING LANGUAGE-THE 'HOST LANGUAGE'-FORTAN IN THIS CASE. THESE PRIMITIVES FORM A BASE UPON WHICH A CLASS OF LANGUAGES CAN BE DEFINED.

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OBJECTIVES OF THESE TESTS WERE: (A) TO DEVELOP INFORMATION WHICH WOULD BE USEFUL IN ESTIMATING THE TIME REQUIRED TO MAKE AN OPENING LARGE ENOUGH FOR A SMALL MAN TO CRAWL THROUGH AND (B) COLLECT DATA ON THE VIBRATIONAL, ACOUSTIC AND ULTRASONIC DISTURBANCES PRODUCED BY THE TOOLS EMPLOYED IN THE ATTACKS.


PART 1 DESCRIBES A MANUAL FOOTPRINT CLASSIFICATION SYSTEM THAT UTILIZES THE RIDGE PATTERNS ADJACENT TO THE TOES ON THE SOLE OF THE RIGHT FOOT. THE SYSTEM IS AN EXTENSION OF THE FBI FOOTPRINT CLASSIFICATION SYSTEM. PART 2 DESCRIBES A METHOD OF CODING MINUTE DETAILS OF THESE PRINTS FOR STORAGE IN A COMPUTERIZED FILE. THE COMPUTER CAN THEN SEARCH A SIMILARLY CODED UNKNOWN PRINT AGAINST THIS FILE AND IDENTIFY THE MOST LIKELY MATCHING PRINTS FROM THE FILE.

72053101 FINAL REPORT ON NBS PROJECT WHERE, IN SUPPORT OF USAAMCA PROJECT MNPLS. Div. 630. 31 May 72. NBSR 10 859. 27 PLUS APPENDIX

THIS REPORT SUMMARIZES THE WORK DONE AT NBS UNDER ITS PROJECT WHERE IN SUPPORT OF THE U.S. ARMY ADVANCED MATERIEL CONCEPTS AGENCY'S (USAAMCA) PROJECT MNPLS (MICRO NAVIGATION AND POSITION LOCATION SYSTEM).


A METHOD IS DESCRIBED FOR MANUALLY POSITIONING A FINGERPRINT SO THAT MANUALLY READ MINUTIAE DATA CAN BE SEARCHED BY COMPUTER AGAINST A FILE OF FINGERPRINT DATA THAT HAS BEEN PREVIOUSLY READ BY MACHINE. A PROCEDURE IS ALSO DESCRIBED WHEREBY A COMPUTER CAN UTILIZE MACHINE-READ RIDGE-DIRECTION DATA IN MANIPULATING MINUTIAE DATA TO EFFECT A REGISTRATION OF THE FINGERPRINT PRIOR TO FILING ITS MINUTIAE DATA.

7206010 TREV, SIEGFRIED. TRANSPARENT STIMULATION OF A COMPUTER USER. Div. 650. Jun 72. NBSR 10 863. 29P, 5 REFs

THIS REPORT DESCRIBES THE DETAILED GROUNDWORK FOR THE 'TRANSPARENT STIMULATION' PROJECT CARRIED OUT BY THE AUTHOR DURING HIS ONE-YEAR APPOINTMENT WITH THE COMPUTER SYSTEMS SECTION OF CCST. THE WORK INCLUDED THE DESIGN, IMPLEMENTATION AND TESTING OF A COMPUTER TERMINAL NETWORK ENABLING TRANSPARENT STIMULATION OF A SEARCHER OF AN ON-LINE RETRIEVAL SYSTEM. A BROADER DESCRIPTION, INCLUDING THE GENERAL RATIONALE, IS TO BE FOUND IN NBS TECHNICAL NOTE 732.

72063001 REITWIESNER, GEORGE W., POLICING TRANSCRIPTION AND TRANPOSITION ERRORS BY A SINGLE CHECK DIGIT MODULUS 10 AND 11. Div. 600. 30 Jun 72. NBSR 10 886. 24P

IN USING A SINGLE CHECK DIGIT TO POLICE SINGLE TRANSCRIPTION ERRORS AND SINGLE TRANPOSITION ERRORS BETWEEN ADJACENT DIGIT POSITIONS IN A DECIMAL STRING OF ARBITRARY LENGTH, TWO PERMUTATIONS (ONE OF WHICH MAY BE THE IDENTITY PERMUTATION) MAY BE EMPLOYED IN ALTERNATING ODD DIGIT POSITIONS TO DETERMINE WEIGHS WHICH YIELD SOME PREASSIGNED VALUE (E.G., ZERO) WHEN ADDED WITH RESPECT TO AN ASSIGNED MODULUS. VAILABLE VALUES OF THAT MODULUS ARE 10 AND 11, EACH ACCOMPANIED BY SOME CONSTRAINT.

72063002 REITWIESNER, GEORGE W., A SET OF PROBLEMS TO EVALUATE SCIENTIFIC COMPUTERS. Div. 600. 30 Jun 72. NBSR 10 883. 14P

THIS WRITING RECORDS THE DETAILED TEXT OF A SET OF THIRTEEN PROBLEMS USED BY THE NATIONAL BUREAU OF STANDARDS EARLY IN 1961 TO COMPARATIVELY EVALUATE ELECTRONIC DIGITAL COMPUTERS.

72063009 ABRAMS, MARSHALL D., JEROME A. HUDSON, PAUL MEISSNER, THOMAS N. PYKE, JR., ROBERT ROSENTHAL, FRANK H. ULMER, USE OF COMPUTER NETWORKS IN SUPPORT OF INTERACTIVE GRAPHICS FOR COMPUTER-AIDED DESIGN AND ENGINEERING. Div. 650. 30 Jun 72. NBSR 72-217, AEC 72-90013. 44P

THIS REPORT COVERS WORK PERFORMED BETWEEN 1 JULY 1971 AND 30 JUNE 1972 AS PART OF A LONG-TERM STUDY OF INTERACTIVE

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COMPUTER-AIDED TECHNOLOGIES. THE PRIMARY EMphasis DURING THIS PERIOD HAS BEEN ON INVESTIGATING THE FEASIBILITY OF USING COMPUTER NETWORKS IN SUPPORT OF INTERACTIVE GRAPHICS FOR COMPUTER-AIDED DESIGN AND ENGINEERING. ALTERNATIVE MEANS FOR PROVIDING REMOTE COMPUTER SERVICE HAVE BEEN STUDIED. AN EXPERIMENTAL CONFIGURATION HAS BEEN DESIGNED TAKING ADVANTAGE OF THE FACT THAT THERE IS LOCATED AT THE NATIONAL BUREAU OF STANDARDS A NODE OF THE ARPA COMPUTER NETWORK. ARRANGEREMENTS WERE MADE VIA THIS CONFIGURATION FOR USERS AT THE ELECTRONICS COMMAND TO UTILIZE A STRUCTURAL DESIGN PROGRAM, NASTRAN, AT A REMOTE COMPUTER SITE. EMPHASIS HAS BEEN PLACED ON THE EVALUATION OF PERFORMANCE OF INTERACTIVE DESIGN TECHNIQUES USING DISPLAYS SUPPORTED BY LOCAL AND REMOTE COMPUTERS IN A HIERARCHICAL ARRANGEMENT. A VARIETY OF PROBLEMS ARE IDENTIFIED WHICH MUST BE CONSIDERED IN ORDER TO SUPPORT INTERACTIVE GRAPHICS VIA A COMPUTER NETWORK. THESE ARE COMPOUNDED WHERE THE NETWORK ITSELF IS IN AN EVOLVING STATE OF DEVELOPMENT. THIS REPORT INCLUDES AN OUTLINE OF A SYNCHRONOUS COMMUNICATION PROTOCOL WHICH WAS DEVELOPED FOR USE BETWEEN ECOM AND NBS.

7207991  GELLER, SIDNEY B., PAUL A. MANTES, 'CALIBRATION OF SECONDARY STANDARD MAGNETIC TAPE CASSSETTES (COMPUTER AMPLITUDE REFERENCE) PHASE I', OIV, 650, JUL 72, TN-731, 55P, 2 REFs

THIS TECHNICAL NOTE DISCUSSES A METHOD FOR DEVELOPING AND MAINTAINING A REFERENCE SYSTEM WHICH WILL PRODUCE NBS SECONDARY STANDARD MAGNETIC TAPE CASSSETTES (COMPUTER AMPLITUDE REFERENCE). IT DESCRIBES BOTH THE CENTERLINE TAPE SEARCH PROCEDURES AND AN INTERIM SIGNAL AMPLITUDE MEASUREMENT SYSTEM FOR THE REFERENCE MAGNETIC TAPE CASSSETTE CANDIDATES. THE RESULTS OF THE INITIAL EXPERIMENTS WITH CASSSETTE TAPES AND TRANSPORTS ARE GIVEN.

7207002  TREU, SIEGFRIED, 'A COMPUTER TERMINAL NETWORK FOR TRANSPARENT STIMULATION OF THE USER OF AN ON-LINE RETRIEVAL SYSTEM', OIV, 650, JUL 72, TN-732, 39P, 22 REFs


7207993  GELLER, SIDNEY B., THE EFFECTS OF MAGNETIC FIELDS ON MAGNETIC STORAGE MEDIA USED IN COMPUTERS, OIV, 650, JUL 72, TN-735, 35P

EXPERIMENTS HAVE BEEN PERFORMED WITH DIFFERENT TYPES OF MAGNETS TO DETERMINE THEIR EFFECTS ON THE INFORMATION STORED ON MAGNETIC STORAGE MEDIA. THE TESTS RESULTS THAT WERE OBTAINED WITH RECORDED COMPUTER TAPES ARE DISCUSSED AND GUIDELINES ARE SUGGESTED TO COMPUTER INSTALLATION MANAGERS FOR PROTECTING THEIR RECORDED TAPES, DISKS AND DRUMS AGAINST UNWANTED ERASURE BY MAGNETIC FIELDS. THE EFFECTS OF OTHER FORMS OF ENERGY ON RECORDED MAGNETIC MEDIA ARE BRIEFLY CONSIDERED.

7209001  GELLER, SIDNEY B., 'A UNIVERSAL DROPOUT TESTER FOR MAGNETIC STORAGE MEDIA', OIV, 650, SEP 72, TN-739, 32P

THIS TECHNICAL NOTE DESCRIBES A SIGNAL DROP-OUT DETECTION AND COUNTING SYSTEM WHICH WAS DESIGNED TO MAKE MEASUREMENTS ON 1/2 INCH MAGNETIC COMPUTER TAPE, MAGNETIC INSTRUMENTATION TAPES AND MAGNETIC CASSETTE TAPES AS REQUIRED BY EXISTING AND POTENTIAL FEDERAL SPECIFICATIONS. THE CALIBRATION AND OPERATIONAL PROCEDURES FOR THE SYSTEM ARE DESCRIBED IN DETAIL.

7209059  HORN, W. A., 'SCHEDULING JOBS ON A COMPUTER', OIV, 630, SEP 72, NBSR 10 914, 6P, 1 REF

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JDB ON VARIOUS PARTS OF THE SYSTEM ARE NOT PREDICTABLE EXACTLY, BUT ONLY PROBABILISTICALLY, AND THE POINT AT WHICH THEY OCCUR IN THE PROCESSING TASK IS ALSO KNOWN ONLY PROBABILISTICALLY. A SIMPLIFIED APPROACH HAS BEEN TAKEN IN THIS PAPER, TO IMPROVE RATHER THAN OPTIMIZE THE OPERATION OF THE SYSTEM.

7210004 ANDERSON, RUTH K., INDEX OF DATA MANAGEMENT SOFTWARE PACKAGES, OIV. 640, OCT 72, NBSR 10 932, 36P, 14 REFS

IN THE CONTEXT OF THIS REPORT, GENERAL-PURPOSE DATA MANAGEMENT SOFTWARE HAS BEEN DEFINED TO BE SOFTWARE WHICH IS APPLICATION INDEPENDENT AND WHICH PROVIDES AT LEAST ONE OF THE BASIC DATA HANDLING FUNCTIONS OF FILE DEFINITION, FILE CREATION, FILE MAINTENANCE, QUERY, RETRIEVAL AND REPORT GENERATION. DEVELOPMENT OF AN INDEX OF GENERAL-PURPOSE DATA MANAGEMENT SOFTWARE PACKAGES HAS USED AS PRINCIPAL SOURCES FROM WHICH INFORMATION HAS BEEN ASSEMBLED PUBLISHED SURVEYS, SOFTWARE INDEXES, FEDERALLY SPONSORED STUDIES, PRODUCT ADVERTISEMENTS AND TRADE JOURNALS. THE ACCOMPANYING INDEX IN A LISTING OF CURRENTLY AVAILABLE PACKAGES, BOTH PROPRIETARY AND GOVERNMENT OWNED, CONTAINING BASIC DESCRIPTIVE INFORMATION TO ENABLE AN INITIAL SCREENING.

7212001 MOORE, R. T., PENETRATION RESISTANCE TESTS OF REINFORCED CONCRETE BARRIERS, OIV. 650, OCT 72, NBSIR 73-101, IACRO-DNA-ED 72-201, IACRO-DNA-ED 73-406, 81P


DEPENDING UPON THE ATTACK TECHNIQUES, A MAN-PASSABLE OPENING CAN BE MADE IN FOUR-INCH THICK REINFORCED CONCRETE IN TIMES RANGING FROM 4 TO NEARLY 15 MINUTES. THE CORRESPONDING TIMES FOR EIGHT-INCH THICK REINFORCED REGULAR CONCRETE RANGE FROM ABOUT 7 TO 25 MINUTES AND FROM ABOUT 20 TO 30 MINUTES FOR FIBROUS CONCRETE.

WITH THE EXCEPTION OF THE DIAMOND CORE DRILL, DETECTION SHOULD BE RELATIVELY EASY BY THE COMBINED ACOUSTIC, ULTRASONIC OR VIBRATIONAL DISTURBANCES PRODUCED BY THE ATTACKS EVEN THOUGH NOT ALL ATTACK TECHNIQUES PRODUCE ALL THREE TYPES OF DISTURBANCES.

7212301 STEIN, PHILIP G., ANNE H. MEININGER, A TECHNICAL MANUAL FOR THE SPECTRE II COMPUTER-CONTROLLED MICROSCOPE, OIV. 650, 31 DEC 72, NBSR 10 962, NC1-(69)-49, 38 PLUS APPENDIX, 6 REFS

THE SPECTRE II SYSTEM IS A GENERAL-PURPOSE COMPUTER OPTICAL MICROSCOPE USED PRIMARILY FOR GATHERING OF SOURCE DATA FOR COMPUTER PROCESSING OF BIOLOGICAL IMAGES. THE SYSTEM WAS FUNDED AND CONSTRUCTED AT THE NATIONAL INSTITUTES OF HEALTH, BUT SOME OF THE DESIGN AND CONSTRUCTION WAS ACCOMPLISHED BY THE NATIONAL BUREAU OF STANDARDS. THIS REPORT DOCUMENTS THOSE PARTS OF THE SYSTEM.


VOLUME I OF THE 'AUTOMATED U SYSTEM' DESCRIBES THE SOFTWARE LISTINGS AND THE OPERATOR'S MANUAL. THIS VOLUME IS INTENDED TO INSTRUCT THE STATION TECHNICIAN IN THE PROCEDURE TO LOAD PROGRAMS AND OPERATE UNDER COMPUTER CONTROL. THE AUTOMATED U SYSTEM,
73030001 FONG, ELIZABETH, A SET OF DEBUGGING AND MONITORING FACILITIES TO IMPROVE DIAGNOSTIC CAPABILITIES OF A COMPILER, DIV. 45, MAR 73, TN-763, 25P, 13 REFs

INCREASING CONCERN WITH THE QUALITY OF COMPUTER SOFTWARE TODAY MAKES IT IMPORTANT TO EVALUATE CRITICALLY THE DEBUGGING FACILITIES AVAILABLE IN HIGH-LEVEL LANGUAGES. THIS PAPER PRESENTS A COLLECTION OF PROGRAM DEBUGGING AND MONITORING FACILITIES TO IMPROVE THE DIAGNOSTIC CAPABILITIES OF A COMPILER. A DISTINCTION IS MADE BETWEEN DEBUGGING AND MONITORING FACILITIES PERFORMED AT COMPILE TIME, AT LINK/LOAD TIME AND AT EXECUTION TIME. THESE FACILITIES ARE DESCRIBED IN TERMS OF THEIR BREAKDOWN WITH A CONSCIOUS ATTEMPT TO MOVE THE DETECTION OF ERRORS FROM EXECUTION TIME TO COMPILE OR LINK/LOAD TIME, AND TO COLLECT INFORMATION WHEN THE INFORMATION IS AVAILABLE DURING THE COMPIATION PROCESS.

73050001 GRUBB, GANA S., DATA COMMUNICATIONS SYSTEM THROUGHPUT PERFORMANCE USING HIGH SPEED TERMINALS ON THE DIAL TELEPHONE NETWORK, DIV. 650, MAY 73, TN-779, 40P, 7 REFs

THROUGHPUT PERFORMANCE OF HIGH SPEED DATA TERMINALS USING THE DIAL TELEPHONE NETWORK IS CALCULATED FOR SIGNALING RATES OF 1200 TO 4800 BITS PER SECOND USING THE ANSI X3.28-1971 CONTROL PROCEDURES AND MEASURED IN TERMS OF THE PROPOSED ANSI STRAND TRIB DESCRIBED IN X3535/80. THE PERFORMANCE CALCULATIONS ARE SHOWN GRAPHICALLY WITH TRIB AS A FUNCTION OF BLOCK LENGTH, ERROR RATES OF THE TELEPHONE CONNECTION, SIGNALING RATE AND TELEPHONE LINE DELAYS. ERROR RATES ARE BASED ON A PUBLISHED SURVEY INVOLVING SEVERAL HUNDRED TELEPHONE CONNECTIONS TO GEOGRAPHICALLY DISTRIBUTED PARTS OF THE UNITED STATES.

73060001 REED, SUSAN K., MARTHA M. GRAY, CONTROLLED ACCESSIBILITY BIBLIOGRAPHY, DIV. 640, DIV. 660, JUN 73, TN-780, ISP

A BIBLIOGRAPHY OF 96 REFERENCES ON CONTROLLED ACCESSIBILITY HAS BEEN COMPILED. THE PURPOSE IN COMPILING THIS LIMITED BIBLIOGRAPHY WAS TO FREE THE EFFORT TO SOLVE THE PROBLEMS OF CONTROLLED ACCESSIBILITY FROM DOMINATION BY DISCUSSION OF THE ISSUES OF PRIVACY. IN SO FAR AS POSSIBLE, EXCEPT WHEN THE TWO SUBJECTS ARE REFERRED TO IN THE SAME WORK OR FOR OVERRIDING HISTORICAL CONSIDERATIONS, REFERENCES DEALING WITH PRIVACY HAVE NOT BEEN INCLUDED.

73060002 MARCHIT, BEATRICE A. S., ELIZABETH FONG, DENNIS W. FIFE, KIRK RANKIN, A STUDY OF SIX UNIVERSITY-BASED INFORMATION SYSTEMS: A STUDY OF SIX UNIVERSITY-BASED INFORMATION SYSTEMS, DIV. 640, JUN 73, TN-781, 98P

A METHODOLOGY FOR CATEGORICALLY DESCRIBING COMPUTER-BASED INFORMATION SYSTEMS WAS DEVELOPED AND APPLIED TO SIX UNIVERSITY-BASED, NSF-SUPPORTED SYSTEMS. THE SYSTEMS UNDER STUDY ALL OPERATE AS RETAIL INFORMATION CENTERS PRIMARILY SERVING CAMPUS COMMUNITIES BY ACCESSING LARGE COMMERCIALLY-AVAILABLE DATA BASES USING 3RD GENERATION COMPUTER CONFIGURATIONS. THE SYSTEMS VARY IN DESIGN PHILOSOPHY, MODE OF USER SERVICE, TRANSFERABILITY CHARACTERISTICS, AND OPERATIONAL STATUS. A SUMMARY MATRIX IS INCLUDED.

73060003 SALTMAN, ROY G., GLORIA R. BOLOTSKY, ZELLA G. RUTHBERG, HEURISTIC COST OPTIMIZATION OF THE FEDERAL TELPAK NETWORK, DIV. 640, JUN 73, TN-787, OCA-1-35859, 52P

A HEURISTIC METHOD OF OPTIMIZING THE DESIGN OF A VERY LARGE COMMUNICATIONS NETWORK IS DESCRIBED. THE PROCEDURE IS EMPLOYED TO CONFIGURE THE ROUTES OF 1652 COMMUNICATION SERVICE REQUESTS INVOLVING 1633 NODES. A FORTRAN IV PROGRAM WAS DEVELOPED TO SOLVE FOR THE ACTUAL NEEDS OF THE DEFENSE COMMUNICATIONS AGENCY FOR LEASED-LINE SERVICE EMPLOYING THE TELPAK TARIFF STRUCTURE.

73060004 HOLDERTON, FRANCES E. S., ELIZABETH G. PARKER, NBS FORTRAN TEST PROGRAMS, VERSION 1 AND VERSION 3, DIV. 640, JUN 73, NBSIR 73-250, 272P

THE NBS FORTRAN TEST PROGRAMS, WRITTEN IN STANDARD FORTRAN, ARE DESIGNED TO TEST WHETHER A FORTRAN COMPILER ACCEPTS THE FORMS AND INTERPRETATIONS OF THE FORTRAN LANGUAGE AS DESCRIBED IN THE AMERICAN NATIONAL STANDARD FORTRAN DOCUMENT X3.9-1966. THE TEST PROGRAMS ARE RECORDED ON MAGNETIC TAPE IN APPROXIMATELY 14,500 PUNCH CARD IMAGES, AND COMPRISE 116 TEST UNITS. THE TEST UNITS MAY BE USED AS SEPARATE EXECUTABLE FORTRAN PROGRAMS, OR MAY BE LINKED END TO END WITH OTHER TEST UNITS, WITH A MINIMUM OF USER EFFORT, TO IMPROVE OPERATING EFFICIENCY. AN ADDITIONAL COPY OF THESE 116 TEST UNITS

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THIS MANUAL CONTAINS AN OVERVIEW OF THE U SYSTEM, WHICH USES A SMALL COMPUTER TO PROVIDE AUTOMATIC CONTROL OF UP TO IS SPECIAL-PURPOSE RADIO RECEIVERS. THE DIAGRAMS SHOW THE OVERALL SYSTEM CONFIGURATION, CABLEING, DATA FLOW AND COMPUTER WORD BIT ASSIGNMENTS.

73023202 CARPENTER, ROBERT J., K. M. GRAY, OANA S. GRUBB, LOUIS J. PALOMBO, FIELD SERVICE TEST MODEL: COMPUTER-CONTROLLED U SYSTEM MANUAL FOR COMPUTER SUBSYSTEM, OIV. 650, 23 AUG 73, NBSIR 73-270, AFTEC T-2301-U-NBS, 8P.


7300001 BLANC, ROBERT P., IRA W. COTTON, THOMAS N. PYKE, JR., SHIRLEY W. WATKINS, ANNOTATED BIBLIOGRAPHY OF THE LITERATURE ON RESOURCE SHARING COMPUTER NETWORKS, OIV. 650, SEP 73, NBS-SP-384, NSF AG-350, 9P.

THIS BIBLIOGRAPHY CONSISTS OF REFERENCES WITH CRITICAL ANNOTATIONS TO THE LITERATURE ON COMPUTER NETWORKS. A CLASSIFICATION SCHEME HAS BEEN DEVELOPED TO PLACE EACH ANNTOATION IN A CATEGORY REFLECTIVE OF ITS CONTENT. FIVE INDEXES TO THE BIBLIOGRAPHY ARE INCLUDED: AUTHOR INDEX, CORPORATE AUTHOR INDEX, NETWORK INDEX, KEYWORD INDEX AND REPORT NUMBER INDEX.

7310001 NEUMANN, ALBRECHT J., REVIEW OF NETWORK MANAGEMENT PROBLEMS AND ISSUES, OIV. 640, OCT 73, TN-795, 77P, 26 REFS.

COMPUTER NETWORKING IS BROADLY CONSIDERED INCLUDING HARDWARE, SOFTWARE, PROCEDURES AND PEOPLE. NETWORKING ENCOMPASSES MANY ACTIVITIES, SUCH AS, CREATION OF NETWORK PRODUCTS, DISTRIBUTION PROCESSES, USER ACTIVITIES, AND SUPPORTING SERVICES LIKE MARKETING, DOCUMENTATION, INFORMATION SERVICES AND MAINTENANCE. NETWORK MANAGEMENT COVERS BOTH THE ESTABLISHMENT OF NETWORKING OPERATIONS AND ACTUAL OPERATION OF THE NETWORK FACILITIES. IT INCLUDES ALL MANAGEMENT FUNCTIONS PERFORMED AT SUCH NETWORK NODES AS COMPUTING CENTERS, DOCUMENTATION Facilities, AND SERVICE DISTRIBUTION CENTERS. IN ORDER TO SURVEY THE PROBLEMS FACING DEVELOPMENT OF NETWORK MANAGEMENT, USER REQUIREMENTS AND SYSTEM REQUIREMENTS ARE OUTLINED IN A QUALITATIVE MANNER. EXAMPLES OF POLITICAL, ECONOMIC AND LEGAL CONSTRAINTS ARE SUMMARIZED, SUCH AS THE ECONOMIC IMPACT OF EXTENDED NETWORKS ON REGIONAL AND LOCAL COMPUTING ACTIVITIES. CRITICAL ISSUES FOR NETWORKING MANAGEMENT, AND OTHER AREAS OF SIGNIFICANT MANAGEMENT CONCERN ARE OUTLINED. ORGANIZATIONAL ALTERNATIVES ARE CONCEIVED IN TERMS OF A FOUR LAYER ORGANIZATION MODEL. CONCLUSIONS DEAL WITH CONTINUING PROBLEM AREAS, THE NEED FOR A STRUCTURAL MODEL FOR NETWORK MANAGEMENT, CRITICAL EXPERIMENTS AND TASKS TO BE UNDERTAKEN TO FURTHER NETWORKING CAPABILITIES, AND A SUGGESTION TO ESTABLISH PLANNING TEAMS TO INITIATE SOME OF THE INITIAL STEPS REQUIRED FOR FUTURE NETWORKING DEVELOPMENT.

7310002 LYON, GOROON OR., STATIC LANGUAGE ANALYSIS, OIV. 640, OCT 73, TN-797, 23P, 17 REFS.

ALTHOUGH MANY VARIANTS OF PROGRAMMING LANGUAGES EXIST, LITTLE INFORMATION IS AVAILABLE ON HOW LANGUAGE FEATURES ARE ACTUALLY USED BY PROGRAMMERS. SEVERAL DATA COLLECTION SCHEMES ARE DISCUSSED HERE: EACH WOULD PROVIDE EMPIRICAL DATA ON LANGUAGE USE. SOME INTERNAL DETAILS ARE GIVEN FOR ANALYZERS FOR FORTRAN AND COBOL. IN ADDITION, A SUGGESTION IS MADE FOR A SPECIAL SYSTEMS OPTION WHICH WOULD ALLOW A COMPILER TO CONTINUOUSLY RECORD SOURCE STATEMENT CHARACTERISTICS OF PROGRAMS GIVEN TO IT.

7310003 NEUMANN, ALBRECHT J., USER PROCEDURES STANDARIZATION FOR NETWORK ACCESS, OIV. 640, OCT 73, TN-759, 43P, 10 REFS.

USER ACCESS PROCEDURES TO INFORMATION SYSTEMS HAVE BECOME OF CRUCIAL IMPORTANCE WITH THE ADOPT OF COMPUTER NETWORKS, WHICH HAVE OPENED NEW TYPES OF RESOURCES TO A BROAD SPECTRUM OF USERS. THIS REPORT SURVEYS USER ACCESS PROTOCOLS OF SIX REPRESENTATIVE SYSTEMS. FUNCTIONAL ACCESS REQUIREMENTS ARE OUTLINED, AND IMPLEMENTATION OF ACCESS PROCEDURES IS ANALYZED BY MEANS OF A COMMON METHODOLOGY. QUALITATIVE ASSESSMENT OF STANDARIZATION POSSIBILITIES IDENTIFY STANDARIZATION CANDIDATES SUCH AS: SYSTEM AND USER SIGNALS, ON-LINE USER ENTRIES, SYSTEM REQUESTS, AND NETWORK WIDE CATEGORIES OF MESSAGE CONTENT.

1966 THRU 1976 I.C.S.T. BIBLIOGRAPHY.
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7311001
STEWART, S. L., REPORT ON PLANNING COMMITTEE SPONSORED BY THE NATIONAL BUREAU OF STANDARDS, THE NATIONAL SCIENCE FOUNDATION, AND THE ASSOCIATION FOR COMPUTING MACHINERY DISCUSSES THE NEED FOR, COVERAGE OF, AND AUDIENCE FOR A PROPOSED SOFTWARE ENGINEERING HANDBOOK, OIV. 640, NOV 73, TN-832, 18P

7312001
NEUMANN, ALBRECHT J., NETWORK USER INFORMATION SUPPORT, OIV. 640, OEC 73, TN-802, 27P, 14 REFS

WITH INCREASING INTEREST IN THE DEVELOPMENT OF COMPUTER NETWORKS AND THE PROLIFERATION OF REMOTE ENTRY CAPABILITY FROM USER TERMINALS, USER SUPPORT TAKES ON NEW DIMENSIONS. SOME USER CHARACTERISTICS ARE OUTLINED AS THEY AFFECT USER SUPPORT. USER SUPPORT REQUIREMENTS ARE IDENTIFIED FOR TRAINING, TERMINAL OPERATION, AND GENERAL INFORMATION TO AID IN NETWORK OPERATIONS. SUPPORT CAPABILITIES INCLUDE ON-LINE AIDS, INFORMATION AVAILABLE ON REQUEST, AND TUTORIAL INFORMATION AVAILABLE AT THE TERMINAL. USER SUPPORT ALSO INCLUDES PERTINENT DOCUMENTATION AND HUMAN CONSULTATION. AREAS OF FUTURE RESEARCH ARE IDENTIFIED AS: INTERACTIVE LANGUAGE DESIGN, TUTORIAL DESIGN, INTEGRATION OF HARD-COPY AND ON-LINE CAPABILITIES, AND FURTHER DEVELOPMENT OF USER FEEDBACK CAPABILITY.

7312002
SIMMONS, RALPH A., GUIDELINES FOR THE USE OF COMPUTER TECHNOLOGY IN THE DEVELOPING COUNTRIES, OIV. 660, OEC 73, NBSIR 73-423, 16P


7312101
CARPENTER, ROBERT J., K. M. GRAY, DANA S. GRUBB, LOUIS J. PALOMBO, FIELD SERVICE TEST MODEL: COMPUTER-CONTROLLED UNIT SYSTEMS MANUAL FOR RECEIVER AND ADACS INTERFACE CHASSIS, OIV. 650, 11 OEC 73, NBSIR 73-227, 88P

THE FIELD SERVICE TEST MODEL USES A COMPUTER TO CONTROL THE OPERATION OF FROM 1 TO 15 EEG 881 RECEIVERS FOR UNATTENDED OPERATION. EACH RECEIVER IS CONNECTED TO THE COMPUTER BY AN ADACS INTERFACE CHASSIS. WHICH PROVIDES NECESSARY DECODING AND CONVERSION FOR COMMUNICATION BETWEEN THE RECEIVER AND THE COMPUTER. THIS MANUAL DESCRIBES THE OVERALL SYSTEM, MODIFICATIONS NEEDED FOR THE RECEIVERS, AND CONSTRUCTION OF THE ADACS INTERFACE CHASSIS.

74010901
BERG, JOHN L., CODASYL DATA DESCRIPTION LANGUAGE JOURNAL OF DEVELOPMENT JUNE 1973, OIV. 640, JAN 74, NBS HB-113, 15P


THE APPROVED DATA DESCRIPTION LANGUAGE SPECIFICATIONS CONTAINS THE SYNTAX AND SEMANTIC RULES THAT PERMIT THE DESCRIPTION OF THE STRUCTURE AND CONTENTS OF A DATA BASE IN A LANGUAGE INDEPENDENT OF, BUT COMMON TO, MANY OTHER HIGH LEVEL PROGRAMMING LANGUAGES. THE LANGUAGE SPECIFICATIONS WILL HAVE A SIGNIFICANT IMPACT ON THE DEVELOPMENT OF FUNCTIONALLY

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74010002 BLANC, ROBERT P., REVIEW OF COMPUTER NETWORKING TECHNOLOGY, DIV. 650, JAN 74, TN-804, 135P, 41 REFS

THIS REPORT GIVES A DESCRIPTIVE SUMMARY OF THE TECHNICAL CHARACTERISTICS OF EXISTING COMPUTER NETWORKS, INCLUDING DATA COMMUNICATION TECHNOLOGY AND CONFIGURATION RELATED TO SUPPORT OF RESOURCE SHARING SERVICES FOR A COMPUTER NETWORK. INCLUDED ARE DISCUSSIONS OF TERMINAL SUPPORT CAPABILITIES FOR THE COMMUNICATIONS NETWORK AND A DEVELOPMENT OF RELEVANT NETWORK TERMINOLOGY. THE REPORT CONCLUDES WITH A COMPARATIVE EVALUATION OF EXISTING TECHNOLOGICAL APPROACHES TO NETWORKING.

74010009 STILLMAN, RONA B., COMPUTER NETWORKING: APPROACHES TO QUALITY SERVICE ASSURANCE, DIV. 640, JAN 74, TN-600, 26P, 13 REFS

THE PROBLEM OF QUALITY SERVICE ASSURANCE IN A (GENERALIZED) COMPUTER NETWORKING ENVIRONMENT IS ADDRESSED. IN THE ABSENCE OF ANY DIRECT, WELL-DEFINED, QUANTITATIVE MEASURE OF SERVICE QUALITY AND RELIABILITY, ERROR COLLECTION AND ANALYSIS IS THE ONLY BASIS FOR SERVICE QUALITY CONTROL. THEREFORE, MECHANISMS ARE DESCRIBED WHICH FACILITATE REPORTING OF OPERATIONAL ERRORS, DOCUMENTATION OF ERROR CORRECTIONS, AND COLLECTION OF SYSTEM PERFORMANCE DATA. SINCE TECHNIQUES FOR HARDWARE QUALITY CONTROL ARE WELL KNOWN, THESE MECHANISMS FOCUS ON COLLECTING DATA WHICH CAN BE USED TO ASSESS AND CONTROL SOFTWARE QUALITY. FINALLY, SPECIFIC NETWORK FACILITIES ARE DESCRIBED WHICH SUPPORT RESEARCH IN THE AREA OF SOFTWARE QUALITY, AND POTENTIAL AREAS OF NEW RESEARCH USING THE NETWORK ARE IDENTIFIED.

74020001 COTTON, IRA W., NETWORK MANAGEMENT SURVEY, DIV. 650, FEB 74, TN-605, 91P

THIS REPORT PRESENTS THE RESULTS OF A STUDY OF MANAGEMENT PRACTICES IN DIFFERENT COMPUTER NETWORKS. FIVE NETWORKS WERE CHOSEN AS TYPICAL OF DIFFERENT APPROACHES TO NETWORK IMPLEMENTATION AND MANAGEMENT: DEFENSE ADVANCED RESEARCH PROJECTS AGENCY (ARPA) NETWORK, MERIT NETWORK, TRIANGLE UNIVERSITIES COMPUTATION CENTER (TUC), OREGON STATE REGIONAL NETWORK AND TYMNET, A COMMERCIAL NETWORK. A COMMON FORMAT IS EMPLOYED TO SURVEY EACH NETWORK. WHILE THE REPORT IS NOT INTENDED TO BE PRESCRIPTIVE, SOME EMPIRICAL OBSERVATIONS ARE PRESENTED FOR EACH TOPIC COVERED.


THE ORIGIN OF GOVERNMENTAL PROBLEMS IS DISCUSSED IN THE CONTEXT OF THE PUBLIC'S CONCERN FOR PRIVACY ARISING OUT OF COMPUTER-BASED RECORDKEEPING. THE DIVERSE LEGISLATIVE ACTIONS NOW BEING TAKEN TO SAFEGUARD PRIVACY. THE THREATS TO THE SECURITY OF COMPUTER-BASED INFORMATION SYSTEMS AND THE TECHNOLOGICAL PROBLEMS ASSOCIATED WITH PROTECTING AGAINST SUCH THREATS. USEFUL DISTINCTIONS ARE DRAWN BETWEEN PRIVACY, CONFIDENTIALITY AND SECURITY TO CLARIFY THE ISSUES AND ALLOCATE RESPONSIBILITIES FOR SOLVING THE PROBLEM AMONG LAWMAKERS, TECHNOLOGISTS AND MANAGEMENT.

MAJOR NEEDS ARE DESCRIBED. THESE INCLUDE THE NEED FOR COHESIVE FEDERAL, STATE AND LOCAL LEGISLATION, TECHNOLOGICAL GUIDELINES AND STANDARDS FOR ASSURING UNIFORM COMPLIANCE WITH LEGISLATIVE REQUIREMENTS: MANAGEMENT GUIDELINES FOR IDENTIFYING AND EVALUATING THREATS TO SECURITY: AND IMPROVED TECHNOLOGICAL MECHANISMS FOR CONTROLLING ACCESS TO COMPUTER SYSTEMS AND NETWORKS. COST IMPLICATIONS OF PROVIDING SECURITY MEASURES ARE DISCUSSED.

1966 THRU 1976 ICST BIBLIOGRAPHY
74020003 MARRON, BEATRICE A. S., ELIZABETH FONG, DENNIS W. FIFE, A MECHANIZED INFORMATION SERVICES CATALOG. DIV. 640, FEB 74, TN-814, 56P, 12 REFS


74020004 DUNCAN, B. C., D. GARVIN, COMPLETE CLEAR TEXT REPRESENTATION OF SCIENTIFIC DOCUMENTS IN MACHINE-READABLE FORM. DIV. 630, FEB 74, TN-820, 55P, 39 REFS

SCIENCE AND TECHNOLOGY USE A LARGE VARIETY OF SYMBOLS TO REPRESENT PHYSICAL PROPERTIES, CHEMICAL FORMULAS AND MATHEMATICAL EXPRESSIONS. DATA CENTERS THAT CODEFY AND EVALUATE PHYSICAL PROPERTIES NEED TO USE THIS CONVENTIONAL SYMBOLISM IN THEIR WORK. IT IS RECOMMENDED THAT THESE DATA CENTERS ADOPT THE SYMBOLS AND TERMINOLOGY SPECIFIED BY THE VARIOUS INTERNATIONAL UNIONS BOTH IN MANUAL OPERATIONS AND IN THE CREATION OF MACHINE-READABLE DATA BASES.

IT IS DEMONSTRATED THAT THESE CONVENTIONAL SYMBOLS CAN BE PRODUCED BY MODERN COMMUNICATIONS DEVICES THAT ARE COMPATIBLE WITH THE INTERNATIONAL STANDARD CODES FOR INFORMATION INTERCHANGE. A SET OF CHARACTERS SUITABLE FOR REPRESENTING SCIENTIFIC DATA AND TEXT IS PRESENTED AND PROPOSED AS AN EXTENSION OF THE ISO INFORMATION INTERCHANGE CODE.

THE USE OF THIS EXTENDED CHARACTER CODE BY COMPUTER ORIENTED DATA CENTERS AT THE NATIONAL BUREAU OF STANDARDS IS DESCRIBED. THE EQUIPMENT NEEDEO FOR THIS LEVEL OF PERFORMANCE AND CRITERIA FOR THEIR SELECTION ARE OUTLINED.

74020005 SIBLEY, EDGAR H., THE CODASYL DATA BASE APPROACH: A COBOL EXAMPLE AND USE OF A PERSONNEL FILE. DIV. 640, FEB 74, NBSIR 74-500, 78P

THIS REPORT INTRODUCES EXAMPLES OF THE USE OF THE PROPOSED CODASYL DATA DEFINITION LANGUAGE AND DATA BASE LANGUAGE EXTENSIONS TO COBOL. IT DOES THIS BY SUGGESTING THE NEEDS AND DATA BASE ELEMENTS WHICH CAN BE EXPECTED FOR A SET OF SIMPLE PERSONNEL APPLICATIONS. THE DISCUSSION OF THE DATA DEFINITIONS CENTERS AROUND THE DECISIONS THAT THE DATA ADMINISTRATOR MAKES, AND THE TOOLS THAT ARE PROVIDED FOR HIM. THEN IT DISCUSSES A FEW OF THE PROCESSES (PROGRAMS) WHICH ARE REQUIRED BY TYPICAL PERSONNEL DEPARTMENTS, AND SHOWS THEIR IMPLEMENTATION (IN OUTLINE) IN THREE COBOL PROGRAMS. THE READER IS EXPECTED TO HAVE SOME KNOWLEDGE OF THE CODASYL SPECIFICATIONS.

74030001 NEUMANN, ALBRECHT J., A GUIDE TO NETWORKING TERMINOLOGY. DIV. 640, MAR 74, TN-803, 29P

A SELECTED SET OF TERMS AND DEFINITIONS RELATING TO COMPUTER NETWORKING IS PRESENTED IN A COHESIVE MANNER. AN INTRODUCTION GIVES THE RATIONALE FOR THE GLOSSARY, DEFINES THE SCOPE BY A BRIEF TUTORIAL OVERVIEW, AND STATES THE GLOSSARY FORMAT AND CONVENTIONS. THE GLOSSARY IS ARRANGED ALPHABETICALLY AND CONTAINS ABOUT 140 DEFINITIONS AND ASSOCIATED TERMS. THE SOURCES OF MANY TERMS ARE CITED AND MODIFIERS INDICATE THE STATUS OF DEFINITIONS. A COMPLETE LISTING OF SOURCE MATERIAL IS APPENDED.

74030002 FIFE, DENNIS W., KIRK RANKIN, ELIZABETH FONG, JUSTIN C. WALKER, BEATRICE A. S. MARRON, A TECHNICAL INDEX OF INTERACTIVE INFORMATION SYSTEMS. DIV. 640, MAR 74, TN-819, 73P, 10 REFS

THIS REPORT CONSTITUTES A REFERENCE TO TECHNICAL FEATURES AND OPERATIONAL STATUS OF INTERACTIVE INFORMATION SYSTEMS, I.E., THOSE PROVIDING A 'CONVERSATIONAL' USAGE MODE TO A 'NON-PROGRAMMER' THROUGH A DATA TERMINAL DEVICE. IT IS AIMED AT THE ADP SERVICE MANAGER, FOR HIS USE IN THE STATE-OF-THE-ART ASSESSMENTS PREPARATORY TO A DETAILED SYSTEM SELECTION PROCESS. IT CONTAINS AN INDEX THAT DESCRIBES 46 SYSTEMS IN TERMS OF A LIST OF OVER 50 TECHNICAL FEATURES PLUS DESCRIPTIVE IDENTIFICATION, AND BACKGROUND INFORMATION. IN ADDITION, THERE ARE AIDS AND EXAMPLES CONTRIBUTING TO THE INTENDED USE OF

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THE TEST PROGRAMS, COMPRISED OF 116 TEST UNITS, ARE STRUCTURED INTO TWO VERSIONS, EACH CONTAINING APPROXIMATELY 14,500 PUNCH CARD IMAGES. THE TEST UNITS MAY BE USED AS SEPARATE EXECUTABLE FORTRAN PROGRAMS, OR MAY BE LINKED END TO END WITH OTHER TEST UNITS, WITH A MINIMUM OF USER EFFORT, TO IMPROVE OPERATING EFFICIENCY. VERSION 1 IS STRUCTURED INTO 116 EXECUTABLE FORTRAN PROGRAMS, AND VERSION 3, CONTAINING THE SAME 116 TEST UNITS, IS STRUCTURED INTO 14 EXECUTABLE FORTRAN PROGRAMS FOR USE ON LARGE FORTRAN PROCESSORS.

THE TEST PROGRAM DESIGN CRITERIA WAS TO: CONSTRAIN ALL TEST PROGRAMS TO THE FORTRAN STANDARD X3.9-1966, REDUCE THE EFFECTS OF THOSE AREAS IN WHICH THE FORTRAN STANDARD DOES NOT PRESCRIBE A METHOD OR SOLUTION, E.G., RANGE, PRECISION, SIZE OF COMPUTER, ETC., SIMPLIFY THE USE OF THE FORTRAN TEST PROGRAMS, TEST FORTRAN LANGUAGE ELEMENTS BEFORE THEY ARE USED IN SUPPORT OF OTHER TESTS, MAINTAIN AN OPEN ENDED SYSTEM SO THAT TESTS MAY BE CHANGED OR ADDED, THE TEST PROGRAMS REQUIRE THE USE OF A CARD READER, PRINTER AND ONE INTERMEDIATE TAPE UNIT.

HOLBERTON, FRANCES E., ELIZABETH G. PARKER, NBS FORTRAN TEST PROGRAMS, VOLUME 2 - LISTINGS FOR VERSION 1, DIV. 640, OCT 74, NBS-SP-399 VOL. 2, (LC 74-12314), 221P

THE NBS FORTRAN TEST PROGRAMS, WRITTEN IN STANDARD FORTRAN, ARE DESIGNED TO TEST WHETHER A FORTRAN COMPILER ACCEPTS THE FORMS AND INTERPRETATIONS OF THE FORTRAN LANGUAGE AS DESCRIBED IN THE AMERICAN NATIONAL STANDARD FORTRAN DOCUMENT X3.9-1966. THE TEST PROGRAMS, COMPRISED OF 116 TEST UNITS, ARE STRUCTURED INTO TWO VERSIONS, EACH CONTAINING APPROXIMATELY 14,500 PUNCH CARD IMAGES. THE TEST UNITS MAY BE USED AS SEPARATE EXECUTABLE FORTRAN PROGRAMS, OR MAY BE LINKED END TO END WITH OTHER TEST UNITS, WITH A MINIMUM OF USER EFFORT, TO IMPROVE OPERATING EFFICIENCY. VERSION 1 IS STRUCTURED INTO 116 EXECUTABLE FORTRAN PROGRAMS, AND VERSION 3, CONTAINING THE SAME 116 TEST UNITS, IS STRUCTURED INTO 14 EXECUTABLE FORTRAN PROGRAMS FOR USE ON LARGE FORTRAN PROCESSORS.

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HOLBERTON, FRANCES E., ELIZABETH G. PARKER, NBS FORTRAN TEST PROGRAMS, VOLUME 3 - LISTINGS FOR VERSION 3, DIV. 640, OCT 74, NBS-SP-399 VOL. 3, (LC 74-12314), 221P

THE NBS FORTRAN TEST PROGRAMS, WRITTEN IN STANDARD FORTRAN, ARE DESIGNED TO TEST WHETHER A FORTRAN COMPILER ACCEPTS THE FORMS AND INTERPRETATIONS OF THE FORTRAN LANGUAGE AS DESCRIBED IN THE AMERICAN NATIONAL STANDARD FORTRAN DOCUMENT X3.9-1966. THE TEST PROGRAMS, COMPRISED OF 116 TEST UNITS, ARE STRUCTURED INTO TWO VERSIONS, EACH CONTAINING APPROXIMATELY 14,500 PUNCH CARD IMAGES. THE TEST UNITS MAY BE USED AS SEPARATE EXECUTABLE FORTRAN PROGRAMS, OR MAY BE LINKED END TO END WITH OTHER TEST UNITS, WITH A MINIMUM OF USER EFFORT, TO IMPROVE OPERATING EFFICIENCY. VERSION 1 IS STRUCTURED INTO 116 EXECUTABLE FORTRAN PROGRAMS, AND VERSION 3, CONTAINING THE SAME 116 TEST UNITS, IS STRUCTURED INTO 14 EXECUTABLE FORTRAN PROGRAMS FOR USE ON LARGE FORTRAN PROCESSORS.

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LYON, GORDON, RONA B. STILLMAN, A FORTRAN ANALYZER, DIV. 640, OCT 74, TN-849, AG-350, (LC 74-600144), 28P

DETAILS OF A FORTRAN ANALYSIS PACKAGE ARE PRESENTED. EXAMPLES ILLUSTRATE A CURRENT OPERATIONAL LEVEL WHICH GATHERS FORTRAN STATEMENT AND FREQUENCY-OF-EXECUTION STATISTICS. ARGUMENTS SUPPORT A SIMPLE TECHNIQUE FOR MONITORING FORTRAN EXECUTIONS.

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74100008  KUCK, DAVID J., COMPUTER SYSTEM CAPACITY FUNDAMENTALS, OIV. 640, OCT 74, TN-851, (LC 74-600148), 20P

A FRAMEWORK FOR THE STUDY OF COMPUTER CAPACITY IS GIVEN BY MEANS OF A DEFINITION OF CAPACITY IN TERMS OF SPEEDS OF VARIOUS PARTS OF A COMPUTER AS WELL AS MEMORY SIZE. THE CALCULATION OF THEORETICAL CAPACITY IS GIVEN FOR SEVERAL COMBINATIONS OF PROCESSOR, MEMORY, AND I/O BANDWIDTH FOR BOTH OVERLAPPED AND NONOVERLAPPED MACHINES. THE TRADEOFF BETWEEN PRIMARY MEMORY SIZE AND I/O BANDWIDTH IS DISCUSSED IN TERMS OF THE NEW DEFINITION.

74119051  WALKOWICZ, JOSEPHINE L., BENCHMARKING AND WORKLOAD DEFINITION: A SELECTED BIBLIOGRAPHY WITH ABSTRACTS, OIV. 640, NOV 74, NBS-SP-405, 45P

THREE CITATIONS TO THE LITERATURE OF BENCHMARKING AND WORKLOAD DEFINITION WERE SELECTED FROM A LONGER LIST OF DOCUMENTS, ENCOMPASSING A SOMEWHAT BROADER SCOPE, THAT WAS SUBMITTED TO FEDERAL INFORMATION PROCESSING STANDARDS (FIPS) TASK GROUP 13 IN RESPONSE TO A REQUEST MADE TO ATTENDEES OF THE TASK GROUP'S PLANNING SESSION HELD ON JULY 12, 1973. AT THE NATIONAL BUREAU OF STANDARDS, ONE OF THE TOPICS DISCUSSED AT THE PLANNING SESSION WAS THE COLLECTION OF A SELECTED BIBLIOGRAPHY ON WORKLOAD DEFINITION AND BENCHMARKING. THE BIBLIOGRAPHIC EFFORT WAS TO BE DIRECTED NOT SO MUCH TOWARD EXHAUSTIVENESS AS TOWARD THE DEVELOPMENT OF A BIBLIOGRAPHY THAT THE ATTENDEES HAD FOUND USEFUL AND WOULD, THEREFORE, RECOMMEND TO OTHER WORKERS IN THE FIELD. OF THE APPROXIMATE 250 CITATIONS SUBMITTED TO THE TASK GROUP, THESE 85 WERE SELECTED ON THE BASIS OF TWO CRITERIA: (1) THE ITEM DEALS PRIMARILY WITH BENCHMARKING OR WORKLOAD DEFINITION; AND (2) HARD COPY WAS AVAILABLE AT THE INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY. THE CITATIONS ARE ARRANGED ALPHABETICALLY BY LAST NAMES OF THE FIRST AUTHORS. EACH CITATION HAS AN ABSTRACT, A CLASSIFICATION CATEGORY ASSIGNMENT, AND A LIST OF REF. THE CATEGORY ASSIGNMENTS ARE MADE FROM A CLASSIFICATION SCHEME THAT WAS DEVELOPED FOR THE COLLECTION AND THAT IS USED HERE AS A CATEGORY INDEX TO THE BIBLIOGRAPHY. A KEYWORD INDEX IS ALSO PROVIDED.

74121021  MOORE, R. T., THE INFLUENCE OF INK ON THE QUALITY OF FINGERPRINT IMPRESSIONS, OIV. 650, 12 DEC 74, NBS-74-627, FBI 34797, 15P

TESTS WERE CONDUCTED ON SEVERAL TYPES OF INK TO DETERMINE THEIR INFLUENCE ON THE QUALITY OF FINGERPRINT IMPRESSIONS WHICH THEY COULD PRODUCE. THE THICKNESS AND UNIFORMITY OF THE FILM USED TO INK THE FINGERS WERE FOUND TO BE THE MOST SIGNIFICANT FACTOR IN PROVIDING HIGH QUALITY IMPRESSIONS. A METHOD IS DESCRIBED FOR MEASURING THE THICKNESS AND ESTIMATING WHETHER OR NOT A UNIFORM FILM OF NEAR OPTIMUM THICKNESS HAS BEEN ROLLED OUT ON A GLASS INKING PLATE.

75036001  SALTMAN, RAY G., EFFECTIVE USE OF COMPUTING TECHNOLOGY IN VOTE-TALLYING, OIV. 660, MAR 75, NBSIR 75-687, (COM-75-11137), 13P, 147 REFS

THE RESULTS OF A SYSTEM ANALYSIS AND EVALUATION CONDUCTED ON THE ROLE OF AUTOMATIC DIGITAL PROCESSING IN VOTE-TALLYING ARE PRESENTED. INCLUDED IN THE REPORT ARE DESCRIPTIONS OF HARDWARE, SOFTWARE, AND ADMINISTRATIVE PROBLEMS ENCOUNTERED IN FOURTEEN ELECTIONS IN WHICH ELECTRONIC COMPUTING TECHNOLOGY WAS UTILIZED. METHODS OF ASSURING MORE CONFIDENCE IN THE ACCURACY AND SECURITY OF THE VOTE-TALLYING PROCESS ARE PRESENTED AND DESCRIBED. THESE METHODS INCLUDE AIDS TO AUDITS OF CALCULATIONS, PHYSICAL CONTROLS OVER BALLOTS AND COMPUTER PROGRAMS, AND GUIDELINES FOR THE USE OF COMPUTER PROGRAMS, COMPUTER FACILITIES, AND TELEPROCESSING. METHODS OF IMPROVING THE ELECTRONIC PREPARATION PROCESS ALSO ARE PRESENTED AND DESCRIBED. THESE INVOLVE THE DEVELOPMENT AND IMPLEMENTATION OF DESIGN SPECIFICATIONS AND ACCEPTANCE TESTS FOR COMPUTER PROGRAMS, ELECTRIC EQUIPMENT AND SUPPLIES, AND GUIDELINES FOR PRE-ELECTION CHECKS OF VOTE-TALLYING SYSTEMS AND FOR ASSURANCE OF MANAGEMENT CONTROL. INSTITUTIONAL FACTORS ARE DISCUSSED WHICH SHOULD BE CONSIDERED IF IMPROVED ACCURACY AND SECURITY CONTROLS ARE TO BE IMPLEMENTED. RECOMMENDATIONS FOR ADDITIONAL RESEARCH AND OTHER ACTIVITIES INCLUDING POSSIBLE FEDERAL ROLE ARE PROVIDED.

75041001  ALI, N., JAMES A., COST RECOVERY IN PRICING AND CAPACITY DECISIONS FOR AUTOMATED INFORMATION SYSTEMS, OIV. 660, APR 75, TN-104, (LC 75-600(C15), 60P, 28 REFS

THIS PAPER EXAMINES THE COST-BENEFIT IMPLICATIONS OF ALTERNATIVE PRICING AND CAPACITY INVESTMENT DECISIONS FOR 1966 THRU 1976. ICST BIBLIOGRAPHY.
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75070005 NEUMANN, ALBRECHT J., PROPOSED IMPLEMENTATION FOR DEVELOPMENT OF USER-TERMINAL PROTOCOLS FOR COMPUTER NETWORK ACCESS, DIV. 640, JUL 75, NBSIR 75-744, NSF CA-68, (COM 75-11072), 17P, 10 REFS


75080001 ABRAMS, MARSHALL G., IRA M. COTTON, THE SERVICE CONCEPT APPLIED TO COMPUTER NETWORKING, DIV. 650, AUG 75, TN-880, (LC 75-600056, SD C13,401:880), 36P, 19 REFS

THE NETWORK MEASUREMENT SYSTEM (NMS) REPRESENTS THE IMPLEMENTATION OF A NEW APPROACH TO THE PERFORMANCE MEASUREMENT AND EVALUATION OF COMPUTER NETWORK SYSTEMS AND SERVICES. BY FOCUSING ON THE SERVICE DELIVERED TO NETWORK CUSTOMERS AT THEIR TERMINALS, RATHER THAN ON THE INTERNAL MECHANICS OF NETWORK OPERATION, MEASUREMENTS CAN BE OBTAINED WHICH ARE DIRECTLY RELEVANT TO USER NEEDS AND MANAGEMENT CONCERNS. FURTHERMORE, THE TYPE OF MEASUREMENT NECESSARY TO IMPLEMENT THIS APPROACH CAN BE MADE DIRECTLY, WITHOUT PERVERTING THE NETWORK SYSTEM UNDER TEST.

THIS TECHNICAL NOTE INTRODUCES THE SERVICE CONCEPT AND OTHER BACKGROUND INFORMATION NECESSARY TO UNDERSTAND THE NEED FOR AND USE OF THE NMS. THE FUNDAMENTAL DISTINCTION BETWEEN SERVICE AND INTERNAL EFFICIENCY IS CLARIFIED, BOTH IN GENERAL AND IN THE ENVIRONMENT OF COMPUTER NETWORKS. A NUMBER OF DIFFERENT MEASURES OF SERVICE ARE THEN DISCUSSED, FOLLOWED BY THE PRESENTATION OF SEVERAL MODELS OF INTERACTIVE USE OF NETWORKS. THEN, THE PRACTICAL ASPECTS OF GATHERING DATA AND APPLYING THIS INFORMATION TO SERVICE MEASUREMENT ARE REVIEWED, LEADING TO A PRESENTATION OF THE NMS AS IT IS IMPLEMENTED. THE NOTE ENDS WITH A DISCUSSION OF APPLICATIONS FOR THE NMS.

75080002 VAN WYK, CHRISTOPHER J., MATHEMATICS AND ENGINEERING IN COMPUTER SCIENCE, DIV. 600, AUG 75, NBSIR 75-780, 84P

THIS DOCUMENT PRESENTS SHORT DESCRIPTIONS OF FIFTEEN MATHEMATICAL FIELDS AND NINE ENGINEERING FIELDS WHICH ARE IMPORTANT TO COMPUTER SCIENCE TODAY. THE DESCRIPTIONS HAVE FIVE SECTIONS: GENERAL DEFINITION, HISTORICAL PERSPECTIVE, PRINCIPLES AND THEORIES, APPLICATIONS TO COMPUTER SCIENCE, AND REFERENCES. A LIST OF THIRTY-FIVE OTHER TOPICS, NOT SEPARATELY TREATED BUT SUBSUMED UNDER ONE OR MORE OF THE TWENTY-FOUR MAJOR HEADINGS, IS INCLUDED. A BIBLIOGRAPHY LISTS CLASSIC AND RECENT WORKS IN THE AREAS COVERED.

75080003 BERG, JOHN L., EXPLORING PRIVACY AND DATA SECURITY COSTS--A SUMMARY OF A WORKSHOP, DIV. 640, AUG 75, TN-876, (LC 75-600063), 35P


AN ACM/NBS WORKSHOP ON COMPUTER PERFORMANCE EVALUATION (CPE) WAS HELD IN SAN DIEGO, CALIFORNIA IN MARCH, 1973. THE PAPERS, WORKSHOP DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS PRESENTED IN THIS VOLUME ADDRESS SPECIFIC PROBLEMS IN MAKING COMPUTER PERFORMANCE EVALUATION A COMMONPLACE AND PRODUCTIVE PRACTICE. WHILE SEVERAL OF THE CONCLUSIONS INDICATE THAT IMPROVEMENTS ARE NEEDED IN PERFORMANCE ANALYSIS TOOLS, ANOTHER SUGGESTS THAT IMPROVED APPLICATION OF CPE COULD BE ACHIEVED

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BY BETTER DOCUMENTATION OF ANALYSIS APPROACHES, MORE INTEGRATION OF DATA COLLECTION AND MODELING ARE CONSIDERED NECESSARY FOR THE PERFORMANCE ANALYSIS FIELD TO DEVELOP ITS FULL POTENTIAL. PARTICIPANTS NOTED THAT THE COMMON EMPHASIS ON DATA COLLECTION OR MODELING, TO THE EXCLUSION OF CONSIDERING OBJECTIVES, OFTEN SERIOUSLY DEGRADATES THE VALUE OF PERFORMANCE ANALYSIS.

7S09002 GRUBB, DAMA S., IRA M. COTTON, CRITERIA FOR THE PERFORMANCE EVALUATION OF DATA COMMUNICATION SERVICES FOR COMPUTER NETWORKS. DIV. 650, SEP 75, TN-882, 36P, 37 REFS

IN GENERAL, WHEN TELECOMMUNICATIONS SERVICES ARE USED AS A MEANS OF INTERCHANGING INFORMATION BETWEEN PROCESSING SYSTEMS OR BETWEEN TERMINALS AND SYSTEMS, A NUMBER OF PARAMETERS DETERMINE HOW WELL THAT INTERCHANGE IS PERFORMED. THIS REPORT EXAMINES THE FOLLOWING CHARACTERISTICS OF TELECOMMUNICATION SERVICES: 1) TRANSFER RATE, 2) AVAILABILITY, 3) RELIABILITY, 4) ACCURACY, 5) CHANNEL ESTABLISHMENT TIME, 6) NETWORK DELAY, 7) LINE TURNAROUND DELAY, 8) TRANSPARENCY, AND 9) SECURITY. THESE TERMS ARE ALL DEFINED AND THEIR SIGNIFICANCE DISCUSSED. THE EFFECTS OF THESE FACTORS ON DATA COMMUNICATION NETWORKS ARE ILLUSTRATED.

7S11001 FONG, ELIZABETH, JOSEPH COLLICA, BEATRICE A. S. MARRON, SIX DATA BASE MANAGEMENT SYSTEMS: FEATURE ANALYSIS AND USER EXPERIENCES, DIV. 640, NDV 75, TN-887, (SD C13, 461887), 84P, 11 REFS

THIS REPORT PRESENTS AN OBJECTIVE OVERVIEW OF FEATURES OF SIX SELECTED DATA BASE MANAGEMENT SYSTEMS (DBMS) AND FEDERAL USER EXPERIENCES WITH THESE SYSTEMS. APPLICATION CRITERIA WERE DEVELOPED IN ORDER TO AID IN THE EVALUATION AND SELECTION OF DBMS.

THE ADVANTAGES OF GENERALIZED DBMS OVER TRADITIONAL METHODS OF SOFTWARE SYSTEM DEVELOPMENT ARE DISCUSSED. THE CRITERIA FOR CHOICE OF THE SIX SYSTEMS' FEATURES ARE PRESENTED. THE DATA REPORTED WERE GATHERED FROM TWO SOURCES: VENDORS AND USERS. VENDOR INFORMATION CONSISTED OF SIDE-BY-SIDE PRESENTATION OF FEATURES OF THE SIX DBMS. USER EXPERIENCES REPORTED ARE SUMMARIZED UNDER APPROPRIATE HEADINGS. THIS INFORMATION IS USED TO DERIVE APPLICATION CRITERIA FOR ASSESSING THE USABILITY AND OPERATIONAL SUITABILITY OF DBMS TO A VARIETY OF DATA PROCESSING REQUIREMENTS.

THE SIX SYSTEMS REVIEWED ARE: ADABAS, IMS/VS, INQUIRE, MODEL 204, SYSTEM 2000, AND TOTAL.

7S11002 EVANS, JOHN M., JR., DR., JAMES S. ALBUS, ANTHONY J. BARBERA, ROBERT ROSENTHAL, WILLIAM B. TRUITT, GUIDE TO IMPROVING THE PERFORMANCE OF A MANIPULATOR SYSTEM FOR NUCLEAR FUEL HANDLING THROUGH COMPUTER CONTROLS. DIV. 600, NDV 75, NBSIR 75-973, 5AP

THE OFFICE OF DEVELOPMENT AUTOMATION AND CONTROL TECHNOLOGY OF THE INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY OF THE NATIONAL BUREAU OF STANDARDS PROVIDES ADVISING SERVICES, STANDARDS AND GUIDELINES ON INTERFACE AND COMPUTER CONTROL SYSTEMS, AND PERFORMANCE SPECIFICATIONS FOR THE PROCUREMENT AND USE OF COMPUTER CONTROLLED MANIPULATORS AND OTHER COMPUTER BASED AUTOMATION SYSTEMS. THESE OUTPUTS HELP OTHER AGENCIES AND INDUSTRY APPLY THIS TECHNOLOGY TO INCREASE PRODUCTIVITY AND IMPROVE WORK QUALITY BY REMOVING MEN FROM HAZARDOUS ENVIRONMENTS.

IN FY 74 PERSONNEL FROM THE OAK RIDGE NATIONAL LABORATORY VISITED NBS TO DISCUSS THE FEASIBILITY OF USING COMPUTER CONTROL TECHNIQUES TO IMPROVE THE OPERATION OF REMOTE CONTROL MANIPULATORS IN NUCLEAR FUEL REPROCESSING. SUBSEQUENT DISCUSSIONS LEAD TO AN AGREEMENT FOR NBS TO DEVELOP A CONCEPTUAL DESIGN FOR SUCH A COMPUTER CONTROL SYSTEM FOR THE PAR MODEL 3000 MANIPULATOR IN THE THORIUM URANIUM RECYCLE FACILITY (TURF) AT ORNL. THIS REPORT PROVIDES THE REQUIRED ANALYSIS AND CONCEPTUAL DESIGN. COMPLETE COMPUTER PROGRAMS ARE INCLUDED FOR TESTING OF COMPUTER INTERFACES AND FOR ACTUAL ROBOT CONTROL IN BOTH POINT-TO-POINT AND CONTINUOUS PATH MODES.

7S12010 INDEX OF AUTOMATED SYSTEM DESIGN REQUIREMENTS AS DERIVED FROM THE DMB PRIVACY ACT IMPLEMENTATION GUIDELINES. DIV. 640, DIV. 600, 1 DEC 75, NBSIR 75-909, 14P

THIS INDEX IS A LIST OF CERTAIN REQUIREMENTS WHICH MUST BE CONSIDERED BY FEDERAL TECHNICAL AND ADMINISTRATIVE PERSONNEL IN ORDER TO COMPLY WITH THOSE PROVISIONS OF THE PRIVACY ACT OF 1974 RELATING TO AUTOMATED SYSTEMS DESIGN AND DEVELOPMENT. THIS INDEX HAS BEEN DERIVED FROM THE OFFICE OF MANAGEMENT AND BUDGET (OMB) GUIDELINES FOR IMPLEMENTING THOSE

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PROVISIONS. EACH REQUIREMENT LISTED CONTAINS A REFERENCE TO AN APPlicable PART OF THE PRIVACY ACT AND TO A PAGE AND COLUMN NUMBER OF THE OMB GUIDELINES AS THEY APPEAR IN THE 'FEDERAL REGISTER.' THEREFORE, THESE DOCUMENTS MUST BE USED IN CONJUNCTION WITH THIS INDEX. FURTHERMORE, A FAMILIARITY WITH THESE DOCUMENTS WILL INCREASE THE UTILITY OF THIS INDEX.

7601001  O'NEILL, JOSEPH T., MUMPS LANGUAGE STANDARD, OIV, 640, JAN 76, NBS HB-118, 5-7750007, (LC 75-619261). 50 C13.11:11B, 144P


76020001  GOLSTEIN, ROBERT C., HENRY H. SEWARD, A COMPUTER MODEL TO DETERMINE LOW COST TECHNIQUES TO COMPLY WITH THE PRIVACY ACT OF 1974, OIV, 640, O.P. MANAGEMENT CORP., LEXINGTON, MA, FEB 76, NBSIR 76-985, 5-35935, 57P

THIS DOCUMENT CONTAINS A COMPLETE DESCRIPTION OF THE STEPS NECESSARY TO RUN THE COST OF PRIVACY MODEL ALONG WITH A DESCRIPTION OF THE COMPUTER PROGRAM WHICH IMPLEMENTS THE MODEL. THIS DOCUMENT DESCRIBES THE GENERAL SYSTEM REQUIREMENTS FOR RUNNING THE PROGRAM, HOW TO INPUT INFORMATION TO THE MODEL AND HOW TO INTERPRET THE OUTPUT.

THE MODEL, WHICH WAS DEVELOPED FOR THE NATIONAL BUREAU OF STANDARDS BY THE O.P. MANAGEMENT CORPORATION OF LEXINGTON, MASSACHUSETTS, ACCEPTS INPUTS ABOUT PERSONAL DATA SYSTEMS, UTILIZES ALGORITHMS TO PROVIDE INCREMENTAL RESOURCES REQUIRED TO COMPLY WITH THE PRIVACY OF 1974, AND APPLIES COST FACTORS TO THE RESOURCES TO PROVIDE A COST ESTIMATE. COST ESTIMATES OF ALTERNATIVE COMPLIANCE TECHNIQUES CAN BE GENERATED, THESE CAN LATER BE COMPARED BY THE USER TO DETERMINE A COST EFFECTIVE METHOD OF COMPLIANCE.

76020002  WATKINS, SHIRLEY W., MARSHALL D. ABRAMS, INTERPRETATION OF DATA IN THE NETWORK MEASUREMENT SYSTEM, OIV, 650, FEB 76, TN-897, 46P, 15 REFs

THE NETWORK MEASUREMENT SYSTEM (NMS) REPRESENTS AN IMPLEMENTATION OF A NEW APPROACH TO THE PERFORMANCE MEASUREMENT AND EVALUATION OF COMPUTER NETWORK SYSTEMS AND SERVICES. IN THIS REPORT, THE INTERPRETATION OF DATA WITHIN THE NMS IS DESCRIBED. THESE DATA HAVE BEEN ACQUIRED BY THE NETWORK MEASUREMENT MACHINE (NMM) COMPONENT OF THE NMS AND ARE THEN INTERPRETED BY A DATA ANALYSIS PACKAGE (DAP), WHICH PRODUCES MEANINGFUL INFORMATION CONCERNING THE QUALITY OF NETWORK SERVICE DELIVERED TO INTERACTIVE TERMINAL USERS AS WELL AS A CHARACTERIZATION OF USER DEMANDS AND NETWORK COMMUNICATION FACILITY UTILIZATION.

THIS REPORT TRACES THE FLOW OF DATA FROM THE TIME OF CAPTURE BY THE MINICOMPUTER-BASED NMM THROUGH THE SEVERAL PHASES OF MODELING AND STRUCTURING IN THE DAP. INCLUDED IN THIS DESCRIPTION IS THE STATISTICAL TREATMENT OF THE DATA WHICH PROVIDES QUANTITATIVE MEASURES OF VARIOUS ASPECTS OF NETWORK PERFORMANCE.

76030001  LEWIS, T. G., MINICOMPATERS: AN ATTITUDE, OIV, 640, MAR 76, NBSIR 76-1033, 50P

MINICOMPATERS ARE DEFINED IN DOZENS OF WAYS: BY WORD LENGTH, MEMORY SIZE, SPEED, COST, APPLICATIONS, PERIPHERALS, SOFTWARE, AND DESIGN. THE DEFINITION USED HERE INCLUDES ALL LIMITED RESOURCE COMPUTERS AND MORE IMPORTANTLY EMPHASIZES THE ATTITUDE BEHIND MINICOMPATING, THAT THE UNDERTAKING BE FRUGAL BUT ADEQUATE. MINICOMPAT ARCHITECTURES ARE CATEGORIZED ACCORDING TO TYPE OF CONTROL (RANDOM LOGIC OR MICROPROGRAMMED), BUS STRUCTURE (DISTRIBUTED OR CENTRAL), NUMBER OF WORKING REGISTERS, AND INSTRUCTIONS (SPECIAL PURPOSE AND LIMITED). THE MINICOMPAT ATTITUDE IS DEFINED AS THE ATTITUDE THAT PLACES IMPORTANCE UPON DESIGN OF SIMPLE, STRAIGHTFORWARD, SPECIAL PURPOSE, DEDICATED COMPUTING SYSTEMS, PROGRAMMING AND SOFTWARE
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IS THE MOST SIGNIFICANT PROBLEM FACED WITHIN MINICOMPUTING. THIS SUGGESTS THAT COMPLEXITY SHOULD BE FORCED INTO HARDWARE BECAUSE HARDWARE IS LESS EXPENSIVE THAN SOFTWARE. HIGH LEVEL LANGUAGE SUPPORT IS NEEDED.

THREE DEMONSTRATION MINIS ARE USED TO SHOW HOW HARDWARE COMPLEXITY INFLUENCES SOFTWARE COMPLEXITY (AND THEREFORE SOFTWARE COST). CONCLUDING SPECULATIONS SUGGEST MINIS WILL OVERCOME CURRENT LIMITATIONS, WILL INCORPORATE MORE COMPLEXITY INTO HARDWARE, AND USE THE MULTI-LEVEL NATURE OF SOFTWARE, AND HARDWARE TO ADVANTAGE IN DEVELOPING SPECIAL PURPOSE SYSTEMS.

76040001 WOLCOTT, NORMAN M., JOSEPH MILSENRAH, A CONTRIBUTION TO COMPUTER TYPESETTING TECHNIQUES; TABLES OF COORDINATES FOR HERSEY'S REPERTORY OF OCCIDENTAL TYPE FONTS AND GRAPHIC SYMBOLS, DIV. 630, APR 76. NBS-SR-424. 173P

THESE TABLES PRESENT COORDINATES FROM WHICH IT IS POSSIBLE TO GENERATE 1377 DIFFERENT ALPHABETIC AND GRAPHIC CHARACTERS ON EITHER CDN DEVICES OR ON DIGITAL PRINTERS. THE TABLES, ORIGINALLY DEVELOPED BY OR. A. V. HERSHEY OF THE NAVAL WEAPONS LABORATORY, ARE AUGMENTED HERE BY CORRESPONDING FIGURES WHICH SHOW FOR EACH CHARACTER THE LOCATION OF THE TABULATED POINTS AND THE MANNER IN WHICH THEY ARE CONNECTED. THE TABLES CAN BE USED WITH EXISTING TYPGRAPHIC SYSTEMS TO COMPARE PAGES FOR SCIENTIFIC AND MATHEMATICAL PUBLICATIONS OF GRAPHIC ARTS QUALITY EITHER ON CDN DEVICES OR FLAT-BED PLottERS. NUMEROUS APPLICATIONS ARE DISCUSSED AND ILLUSTRATED. THE TABLES ARE ALSO AVAILABLE ON A MAGNETIC TAPE IN EITHER BCD OR ASCII FORMAT FROM THE NATIONAL TECHNICAL INFORMATION SERVICE.

76040002 ASSENTHAL, ROBERT, DON E. RIPPY, HELEN M. WOOD, THE NETWORK MEASUREMENT MACHINE--A DATA COLLECTION DEVICE FOR MEASURING THE PERFORMANCE AND UTILIZATION OF COMPUTER NETWORKS, DIV. 659, APR 76. TN-912. 91P

THE NETWORK MEASUREMENT MACHINE (NMM) IS A DEVICE USED TO ACQUIRE DATA FOR THE PERFORMANCE MEASUREMENT OF COMPUTER NETWORKS AND SERVICES. BY FOCUSING ON THE SERVICE DELIVERED TO NETWORK CUSTOMERS AT THEIR TERMINALS, MEASUREMENTS CAN BE MADE THAT ARE DIRECTLY RELEVANT TO USER NEEDS AND TO MANAGEMENT CONCERNS.


76040003 RUTHBERG, ZELLA G., GLORIA R. BOLOTSKY, SOFTWARE EXCHANGE DIRECTORY FOR UNIVERSITY RESEARCH ADMINISTRATION, DIV. 640, APR 76. TN-916, NSF RM174-15417. 102, 215P


76040005 ABLOT, R. P., J. S. CHIN, J. E. ODNELLELY, W. L. KONIGSFORD, S. TOLKBO, D. A. WEBB, SECURITY ANALYSIS AND ENHANCEMENTS OF COMPUTER OPERATING SYSTEMS, DIV. 640, LAWRENCE LIVERMORE LAB., CA. RISOS PROJECT, APR 76. JUL 74-DEC 75. NBSIR 76-1941. 69P, 9 REFs

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THE PROTECTION OF COMPUTER RESOURCES, DATA OF VALUE, AND INDIVIDUAL PRIVACY HAS MOTIVATED A CONCERN FOR SECURITY OF EDP INSTALLATIONS, ESPECIALLY OF THE OPERATING SYSTEMS. IN THIS REPORT, THREE COMMERCIAL OPERATING SYSTEMS ARE ANALYZED AND SECURITY ENHANCEMENTS SUGGESTED. BECAUSE OF THE SIMILARITY OF OPERATING SYSTEMS AND THEIR SECURITY PROBLEMS, SPECIFIC SECURITY FLAWS ARE FORMALLY CLASSIFIED ACCORDING TO A TAXONOMY DEVELOPED HERE. THIS CLASSIFICATION LEADS TO A CLEARER UNDERSTANDING OF SECURITY FLAWS AND AIDS IN ANALYZING NEW SYSTEMS. THE DISCUSSIONS OF SECURITY FLAWS AND THE SECURITY ENHANCEMENTS OFFER A STARTING REFERENCE FOR PLANNING A SECURITY INVESTIGATION OF AN EDP INSTALLATION'S OPERATING SYSTEM.

76040013 MCEwen, Hazel E., MANAGEMENT OF DATA ELEMENTS IN INFORMATION PROCESSING (PROCEEDINGS OF THE SECOND NATIONAL SYMPOSIUM, 1975 OCTOBER 23-24). OIV, 600, APR 76, NBSIR 75-1015, (PB-249 530), 278p

CONTINUING TECHNOLOGICAL ADVANCES IN COMPUTERS AND COMMUNICATIONS MAKE POSSIBLE THE INTEGRATION OF DATA SYSTEMS AND THE EXCHANGE OF DATA AMONG THEM ON AN EXPANDING SCALE. HOWEVER, THE FULL EFFECT OF THESE ADVANCES CANNOT BE REALIZED UNLESS THE NEED FOR UNIFORM UNDERSTANDING OF THE COMMON INFORMATION (DATA ELEMENTS) AND THEIR EXPRESSION IN DATA SYSTEMS IS RECOGNIZED AND A MEANS PROVIDED TO EFFECTIVELY MANAGE THIS INFORMATION. THE INCREASING INTERRELATIONSHIPS AMONG THE DATA SYSTEMS OF FEDERAL, STATE AND LOCAL GOVERNMENTS, AND WITH INDUSTRY AND THE PUBLIC ADD EMPHASIS AND DIMENSION TO THE NEED FOR THE IMPROVED MANAGEMENT OF DATA ELEMENTS IN INFORMATION PROCESSING.

THESE PROCEEDINGS ARE FOR THE SECOND SYMPOSIUM ON THE MANAGEMENT OF DATA ELEMENTS IN INFORMATION PROCESSING HELD AT THE NATIONAL BUREAU OF STANDARDS ON 1975 OCTOBER 23-24. OVER 300 REPRESENTATIVES OF FEDERAL AND STATE GOVERNMENTS, INDUSTRY AND UNIVERSITIES FROM 29 STATES, FROM JAPAN, AND THE UNITED KINGDOM WERE IN ATTENDANCE. TWENTY-NINE SPEAKERS DISCUSSED THE ROLE OF THE DATA MANAGER, COMMUNICATIONS NEEDS FOR DATA STANDARDIZATION, DATA ELEMENT DIRECTORIES, STANDARD CODES FOR CHARACTER AND CONTROL, USE OF CHECK CHARACTERS, DATA ELEMENTS IN BIBLIOGRAPHIC DATA BASES, PRODUCT CODING, CODING FOR CLINICAL MEDICINE, HUMAN FACTORS, DATA RESOURCE MANAGEMENT, DATA BASE MANAGEMENT SYSTEMS, AND OTHER SUBJECTS RELATED TO DATA STANDARDIZATION AND DATA MANAGEMENT EFFORTS.

76060091 GOLSTEIN, Robert C., HENRY H. Secaro, RICHARD L. NOLAN, A METHODOLOGY FOR EVALUATING ALTERNATIVE TECHNICAL AND INFORMATION MANAGEMENT APPROACHES TO PRIVACY REQUIREMENTS. OIV, 640, JUN 76, TN-906, 72P

COST BECOMES AN EARLY CONCERN IN APPLYING PRIVACY SAFEGUARDS TO ANY COMPUTERIZED RECORD-KEEPING SYSTEM. TO DETERMINE PRIVACY COST IMPACT ONE CONCURES A CONCRETE AND RIGOROUS APPROACH THAT PERMITS REPEATED ANALYSIS OF CAREFULLY DOCUMENTED ASSUMPTIONS. SUCH A METHODOLOGY APPEARS IN THE WORK REPORTED IN THE BOOK 'THE COST OF PRIVACY' BY ROBERT C. GOLSTEIN. THIS REPORT REPRESENTS THE APPLICATION OF THAT METHODOLOGY TO THE TECHNICAL REQUIREMENTS FLOWING FROM THE PRIVACY ACT OF 1974 (PL 93-579). THE METHODOLOGY PRESENTED REDUCES THE LEGISLATION TO 17 COMPLIANCE STEPS. EACH COMPLIANCE STEP THEN DECOMPOSES INTO ONE OR MORE SPECIFIC ACTIONS REQUIRED OF THE RECORD-KEEPER. THE ACTIONS, IN TURN, translate INTO THE EXPENDITURE OF DIFFERENT RESOURCES. THE RESOURCES, IN DOLLARS, ARE COMPUTED BY A SET OF ALGORITHMS COLLECTIVELY CALLED A PRIVACY MODEL AND IMPLEMENTED AS A COMPUTER PROGRAM.


76070301 ROSENTHAL, Robert A REVIEW OF NETWORK ACCESS TECHNIQUES WITH A CASE STUDY: THE NETWORK ACCESS MACHINE. OIV, 650, JUL 76, TN-917, NSF OCE-72-01206, 36P, 29 REFs

THE COMPUTER INDUSTRY'S ABILITY TO SERVE A DIVERSE AND EXPANDING USER COMMUNITY IS EVIDENCED BY THE RAPID GROWTH OF COMPUTER NETWORK SERVICES. COMPUTER SERVICE PROVIDERS DESIGN AND MARKET THEIR OWN OFFERINGS AS THEY OCEM BEST, GIVEN THEIR OWN MARKET AND THEIR OWN SET OF RESOURCES. THIS HAS LED TO A PROLIFERATION OF SIMILAR RESOURCES REQUIRING DIFFERENT USER ACCESS PROCEDURES. WITH EMPHASIS ON CURRENTLY OPERATING AND PLANNED SYSTEMS THAT ASSIST USERS IN ACCESING AVAILABLE

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NETWORK SERVICES. THIS REPORT IDENTIFIES THE TECHNIQUES USED IN NETWORK ACCESS DEVICES. BY EXAMINING THESE DEVICES, THE TENDENCY FOR IMPROVING THE INTERFACE BETWEEN THE USER AND THE COMPUTER IS BROUGHT MORE CLEARLY INTO FOCUS AND UP TO DATE.

ONE SPECIFIC SOLUTION—A NETWORK ACCESS MACHINE (NAM)—IS DESCRIBED IN DETAIL. THE NAM IS A MINICOMPUTER SYSTEM THAT ACTS AS A NETWORK ACCESS POINT FOR A USER AT HIS TERMINAL AND ASSISTS THE USER THROUGH THE AUTOMATIC EXECUTION OF ACCESS PROCEDURES. THIS MINICOMPUTER FACILITY ALLOWS THE USER TO SPECIFY (OR TO HAVE SPECIFIED) HIS OWN NETWORK COMMAND SEQUENCES FOR EXECUTION ON A SPECIFIED NETWORK AND HOST CONNECTED TO THAT NETWORK. COMPUTER RESPONSES ARE ANALYZED TO ASSURE AGREEMENT WITH THOSE ANTICIPATED FOR SPECIFIC COMMANDS. CONDITIONAL PARAMETERIZED EXPANSIONS ALLOW THE USE OF THE SAME COMMANDS ON DIFFERENT HOST COMPUTER AND DIFFERENT NETWORKS.

7637002 ABRAMS, MARSHALL G., SIEGFRIED TREV, ROBERT P. BLANC, MEASUREMENT OF COMPUTER COMMUNICATION NETWORKS, DIV. 650, JUL 76, TN-908, NSF OGR 72-1206105, 95P

THIS REPORT IS CONCERNED WITH AIDING THOSE RESPONSIBLE FOR THE PROCUREMENT OF COMPUTER SERVICES FROM A REMOTE ACCESS NETWORK BY PROVIDING A DESCRIPTION OF THE MEASURES, TOOLS, AND TECHNIQUES APPLICABLE TO THE PERFORMANCE MEASUREMENT OF COMPUTER COMMUNICATION NETWORKS. COST CONSIDERATIONS ARE DISCUSSED AS A MAJOR COMPONENT OF EVALUATION. MEASUREMENT AND EVALUATION METHODOLOGY ARE SURVEYED, INCLUDING VARIOUS OPERATIONAL TOOLS AND TECHNIQUES. SOME EXEMPLARY DATA ARE ALSO PRESENTED. ALTHOUGH THE CONSTITUENTS ARE ALREADY PRESENT, A NEATLY PACKAGED METHODOLOGICAL PRODUCT, PERHAPS IN THE FORM OF A WELL-STRUCTURED USER'S GUIDE TO NETWORK PERFORMANCE MEASUREMENT, IS NOT YET AVAILABLE.

7607003 CONTI, DENNIS M., USE OF SYNTHETIC BENCHMARKS FOR ESTIMATING SERVICE BUREAU PROCESSING CHARGES, OIV. 640, JUL 76, TN-920, 47P

THIS REPORT DESCRIBES THE DEVELOPMENT OF A NEW SYNTHETIC BENCHMARK TECHNIQUE FOR ESTIMATING BATCH CHARGES AT SERVICE BUREAU SITES. THIS TECHNIQUE WAS USED TO ESTIMATE THE COST OF PROCESSING A LARGE BATCH WORKLOAD AT A NUMBER OF SERVICE BUREAUS WITHIN THE SAME MAINFRAME FAMILY. THE METHOD WAS ACCURATE FOR A CERTAIN CLASS OF SERVICE BUREAU CHARGING ALGORITHMS. REFINEMENTS OF THIS METHOD ARE SUGGESTED WHICH WILL EXTEND ITS APPLICABILITY TO OTHER ALGORITHMS. THE PROCEDURES USED TO CREATE AND RUN THE BENCHMARK TOGETHER WITH THE PROJECTION OF TOTAL WORKLOAD COST ARE DESCRIBED.

7608001 DEUTSCH, DONALD R., APPRAISAL OF FEDERAL GOVERNMENT COBOL STANDARDS AND SOFTWARE MANAGEMENT: SURVEY RESULTS, OIV. 640, AUG 76, NBSIR 76-1100, 73P

THIS REPORT SUMMARIZES THE RESULTS OF A SURVEY OF SELECTED FEDERAL GOVERNMENT AUTOMATED DATA PROCESSING (ADP) INSTALLATIONS, UNDERTAKEN PRIMARILY AS AN EVALUATION OF NATIONAL BUREAU OF STANDARDS (NBS) ACTIVITIES IN SUPPORT OF THE STANDARDIZATION OF THE COBOL PROGRAMMING LANGUAGE. THE STUDY ALSO DEALT WITH SOFTWARE MANAGEMENT TOOLS AND PRACTICES. THE SURVEY SAMPLE WAS SELECTED FROM A SUBSET OF ALL KNOWN FEDERAL GOVERNMENT ADP UNITS; SPECIFICALLY, ONLY DOMESTIC INSTALLATIONS WITH AT LEAST ONE GENERAL PURPOSE HARDWARE SYSTEM CAPABLE OF SUPPORTING A MODERN COBOL COMPILER WERE INCLUDED. RESPONSES WERE RECEIVED FROM OVER 70 PERCENT OF THE 190 INSTALLATIONS INCLUDED IN THE SAMPLE. THE MAJOR PORTION OF THIS DOCUMENT IS MADE UP OF TABULAR SUMMARIZATIONS OF ALL RESPONSES FOR EACH SURVEY QUESTION. CROSS STATISTICS AND FREQUENCY DISTRIBUTIONS ARE PRESENTED ON A QUESTION BY QUESTION BASIS. NO INTERQUESTION RELATIONSHIPS ARE ANALYZED. THE APPENDICES INCLUDE A COMPREHENSIVE DISCUSSION OF THE SAMPLING METHODOLOGY AND SURVEY MECHANICS AND A REPRODUCTION OF THE SURVEY INSTRUMENT WITH CROSS REFERENCES TO RESPONSE TABULATIONS APPEARING IN THE REPORT.

7618009 LINDBERG, THEODORE A., OPERATING SYSTEM STRUCTURES TO SUPPORT SECURITY AND RELIABLE SOFTWARE, OIV. 640, AUG 76, TN-919, 51P, 70 REFS

SECURITY HAS BECOME AN IMPORTANT AND CHALLENGING GOAL IN THE DESIGN OF COMPUTER SYSTEMS. THIS SURVEY Focuses ON TWO SYSTEM STRUCTURING CONCEPTS THAT SUPPORT SECURITY: NAMELY, SMALL PROTECTION DOMAINS AND EXTENDED-TYPE OBJECTS. THESE TWO CONCEPTS ARE ESPECIALLY PROMISING BECAUSE THEY ALSO SUPPORT RELIABLE SOFTWARE THROUGH ENCOURAGING AND ENFORCING HIGHLY MODULAR SOFTWARE STRUCTURES—IN BOTH SYSTEM SOFTWARE AND IN APPLICATION PROGRAMS. SMALL PROTECTION DOMAINS ALLOW EACH SUBUNIT OR

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MODULE OF A PROGRAM TO BE EXECUTED IN A RESTRICTED ENVIRONMENT THAT CAN PREVENT UNANTICIPATED OR UNDESIRABLE ACTIONS BY THAT MODULE. EXTENDED-TYPE OBJECTS PROVIDE A VEHICLE FOR DATA ABSTRACTION BY ALLOWING OBJECTS OF NEW TYPES TO BE MANIPULATED IN TERMS OF OPERATIONS THAT ARE NATURAL FOR THESE OBJECTS. THIS PROVIDES A WAY TO EXTEND SYSTEM PROTECTION FEATURES SO THAT PROTECTION CAN BE ENFORCED IN TERMS OF APPLICATIONS-ORIENTED OPERATIONS ON OBJECTS. THIS SURVEY ALSO EXPLAINS ONE APPROACH TOWARD IMPLEMENTING THESE CONCEPTS THOROUGHLY AND EFFICIENTLY--AN APPROACH BASED ON THE CONCEPT OF CAPABILITIES INCORPORATED INTO THE ADDRESSING STRUCTURE OF THE COMPUTER. CAPABILITY-BASED ADDRESSING IS SEEN AS A PRACTICAL WAY TO SUPPORT FUTURE REQUIREMENTS FOR SECURITY AND RELIABLE SOFTWARE WITHOUT SACRIFICING REQUIREMENTS FOR PERFORMANCE, FLEXIBILITY, AND SHARING.


THIS BIBLIOGRAPHY CONSISTS OF OVER 1,000 REFERENCES WITH CRITICAL ANNOTATIONS TO THE LITERATURE ON COMPUTER NETWORKS. A CLASSIFICATION SCHEME HAS BEEN DEVELOPED TO MAKE EACH CITATION MORE ACCESSIBLE BY GENERAL TOPIC. FIVE INDEX TO THE BIBLIOGRAPHY ARE INCLUDED: AUTHOR INDEX, CORPORATE AUTHOR INDEX, NETWORK INDEX, TITLE WORD INDEX, AND REPORT NUMBER INDEX.

76090002 BERG. JOHN L. DATA BASE DIRECTIONS. THE NEXT STEPS. OIV. 649, SEP 76, NBS-SP-451. (LC 76-608219), 175P

WHAT INFORMATION ABOUT DATA BASE TECHNOLOGY DOES A MANAGER NEED TO MAKE PRUDENT DECISIONS ABOUT USING THIS NEW TECHNOLOGY? TO PROVIDE THIS INFORMATION THE NATIONAL BUREAU OF STANDARDS AND THE ASSOCIATION FOR COMPUTING MACHINEY ESTABLISHED A WORKSHOP OF APPROXIMATELY 60 EXPERTS IN FIVE MAJOR SUBJECT AREAS. THE FIVE SUBJECT AREAS WERE AUDITING, EVOLVING TECHNOLOGY, GOVERNMENT REGULATIONS, STANDARDS, AND USER EXPERIENCE. EACH AREA PREPARED A REPORT CONTAINED IN THESE PROCEEDINGS. THE PROCEEDINGS PROVIDE GUIDANCE ON STEPS MANAGERS SHOULD FOLLOW TO PREPARE THEMSELVES AND THEIR ORGANIZATION FOR THE INSTALLATION OF DATA BASE MANAGEMENT CONCEPTS. THE AUDITING WORKING PANEL NOTED THE INCREASED VULNERABILITY OF ORGANIZATIONS WHO INTEGRATE THEIR FORMERLY DISPERSED AND REDUNDANT FILES INTO A DATA BASE AND SUGGEST ACTIONS TO ADDRESS THIS RISK. THE TECHNOLOGY REPORT NOTED SEVERAL PROMISING PARALLEL DEVELOPMENTS BUT CONCLUDED THAT THE FUTURE WOULD SEE EVOLVING, RATHER THAN REVOLUTIONARY DATA BASE PROGRESS. GOVERNMENT REGULATIONS PARTICULARLY THE DRIVE FOR INDIVIDUAL PRIVACY RIGHTS, WERE SEEN TO PLAY AN IMPORTANT ROLE IN DETERMINING DATA BASE DIRECTIONS AND THE PANEL'S GUIDANCE ON COST IMPACT SUGGEST THAT ORGANIZATIONS WOULD EXPERIENCE REDUCED COSTS WITH DATA BASE TECHNOLOGY. STANDARDS PERVADED ALL ISSUES AND WERE FOUND NECESSARY IN SEVERAL SUB-AREAS OF DATA BASE TECHNOLOGY BUT THE PANEL SAW NO IMMEDIATE LIKELIHOOD OF NATIONAL DATA BASE STANDARDS. THE USER EXPERIENCE WORKING PANEL NOTED THAT DATA BASE SYSTEMS HAD IMPACTED THEIR ORGANIZATIONS TO THE EXTENT OF RECONSIDERING EXISTING DATA FLOWS, AREAS OF RESPONSIBILITIES, AND PROCEDURES.

76120003 WESTIN, ALAN F., COMPUTERS, HEALTH RECORDS AND CITIZEN RIGHTS. OIV. 649, COLUMBIA UNIV., NEW YORK, DEPT. OF POLITICAL SCIENCE, DEC 76, MCNO-157, 5-35865. (LC 76-608322), 401P

THIS REPORT INVESTIGATES THE IMPACT OF COMPUTERS ON CITIZEN RIGHTS IN THE HEALTH RECORD-KEEPING AREA. UNDER OR. ALAN F. WESTIN'S DIRECTION, FROM JULY OF 1974 TO APRIL OF 1976, A SMALL INTERDISCIPLINARY TEAM DID THE FOLLOWING: (1) EXAMINED PUBLISHED LITERATURE FROM MEDICINE AND HEALTH, LAW, COMPUTING, AND SOCIAL SCIENCE, (2) CONDUCTED INTERVIEWS WITH MAJOR COMPUTER MANUFACTURERS, SYSTEMS DEVELOPERS, HEALTH PROFESSIONALS AND CIVIL LIBERTIES, PUBLIC INTEREST, CONSUMER, AND MINORITY-RIGHTS GROUPS; (3) MADE ON-SITE VISITS TO SIX REPRESENTATIVE HEALTH-CARE ORGANIZATIONS USING COMPUTERS TO HANDLE PERSONAL RECORDS; (4) CORRESPONDED WITH 70 ORGANIZATIONS IN THE HEALTH FIELD; AND (5) SUBMITTED AN INITIAL DRAFT REPORT TO REVIEW BY A CONFERENCE OF EXPERTS IN SEPTEMBER 1975 AND SUBSEQUENTLY BY ABOUT 50 OUTSIDE REVIEWERS. THE FINDINGS OF THIS INVESTIGATION WERE THEN COMBINED INTO THIS FOUR-PART REPORT. PART ONE DESCRIBES THE WORLD OF MEDICAL DATA AND CITIZENS RIGHTS WITHIN THE FRAMEWORK OF THREE ZONES--PRIMARY HEALTH CARE (BY HEALTH PROFESSIONALS), SERVICE PAYERS AND HEALTH CARE REVIEWERS, AND SOCIAL USES OF HEALTH DATA SUCH AS IN EMPLOYMENT, LIFE INSURANCE, AND WELFARE; PART TWO TREATS PATTERNS OF COMPUTERIZATION IN HEALTH CARE IN EACH OF THE ABOVE ZONES; PART THREE CONTAINS THE PROFILES OF THE SIX HEALTH-CARE ORGANIZATIONS THAT WERE STUDIED IN DEPTH; AND PART FOUR ANALYZES THE IMPACT OF COMPUTERIZATION ON PERSONAL HEALTH RECORDS, PRESENTS COMPARISONS WITH SIX OTHER DEMOCRATIC NATIONS, AND STATES 12 RECOMMENDED MANAGEMENT PRINCIPLES FOR HEALTH CARE DATA SYSTEMS. THE REPORT ALSO CONTAINS A 28 PAGE BIBLIOGRAPHY AND TWELVE APPENDICES WITH SUPPORT DOCUMENTS AND INFORMATION.

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A WORKSHOP ON THE ESTIMATION OF SIGNIFICANT ADVANCES IN COMPUTER TECHNOLOGY WAS CONDUCTED BY THE INSTITUTE FOR COMPUTER SCIENCES AND TECHNOLOGY AT THE NATIONAL BUREAU OF STANDARDS ON AUGUST 30-31, 1976. THE WORKSHOP WAS ATTENDED BY 20 REPRESENTATIVES FROM INDUSTRY, RESEARCH ORGANIZATIONS, UNIVERSITIES AND GOVERNMENT AGENCIES. THE WORKSHOP WAS HELD TO OBTAIN CURRENT SCIENTIFIC AND TECHNICAL INFORMATION ON ADVANCES IN COMPUTER TECHNOLOGY WHICH COULD SIGNIFICANTLY IMPACT THE FEDERAL GOVERNMENT'S KNOWLEDGE AND USE OF COMPUTER TECHNOLOGY DEVELOPMENTS IN RELATION TO COMPUTER SECURITY AND EXPORT ADMINISTRATION. PRESENTATIONS WERE MADE ON ANTICIPATED ADVANCES IN COMPUTER ARCHITECTURE AND SEMICONDUCTOR TECHNOLOGY. IT WAS INDICATED THAT THE PRESENT TRENDS IN COMPONENT DENSITY FOR LSI WILL CONTINUE TO INCREASE AT THE CURRENT RATE FOR AT LEAST FIVE YEARS. THE SPEED OF LOGIC CIRCUITY HAS BEEN INCREASING AT A RATE OF ABOUT 1.5 MEGAHertz PER YEAR, AND A SPEED OF 30 MEGAHertz IS PRESENTLY ATTAINABLE. SPEED-POWER RATIOS HAVE BEEN IMPROVING BY A FACTOR OF 10 ABOUT EVERY 4 YEARS, AND A SIMILAR IMPROVEMENT APPEARS LIKELY IN THE NEXT 4 YEARS. THE CURRENT EMPHASIS IN DEVELOPMENT WORK IS ON ACHIEVING HIGH DENSITY AT LOW COST. IN ORDER TO PROVIDE A VEHICLE AROUND WHICH TO ORGANIZE ITS DISCUSSIONS, THE WORKSHOP CONSIDERED THE DESIGN OF A HYPOTHETICAL MACHINE FOR EXTRACTING THE KEY USED FOR ENCRYPTING DATA UNDER THE PROPOSED NBS DATA ENCRYPTION STANDARD. SEVERAL DESIGNS WERE POSTULATED AND ENGINEERING ESTIMATES WERE DEVELOPED FOR OPERATING SPEED, SIZE, DEVELOPMENT TIME, COST AND OTHER FACTORS.
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