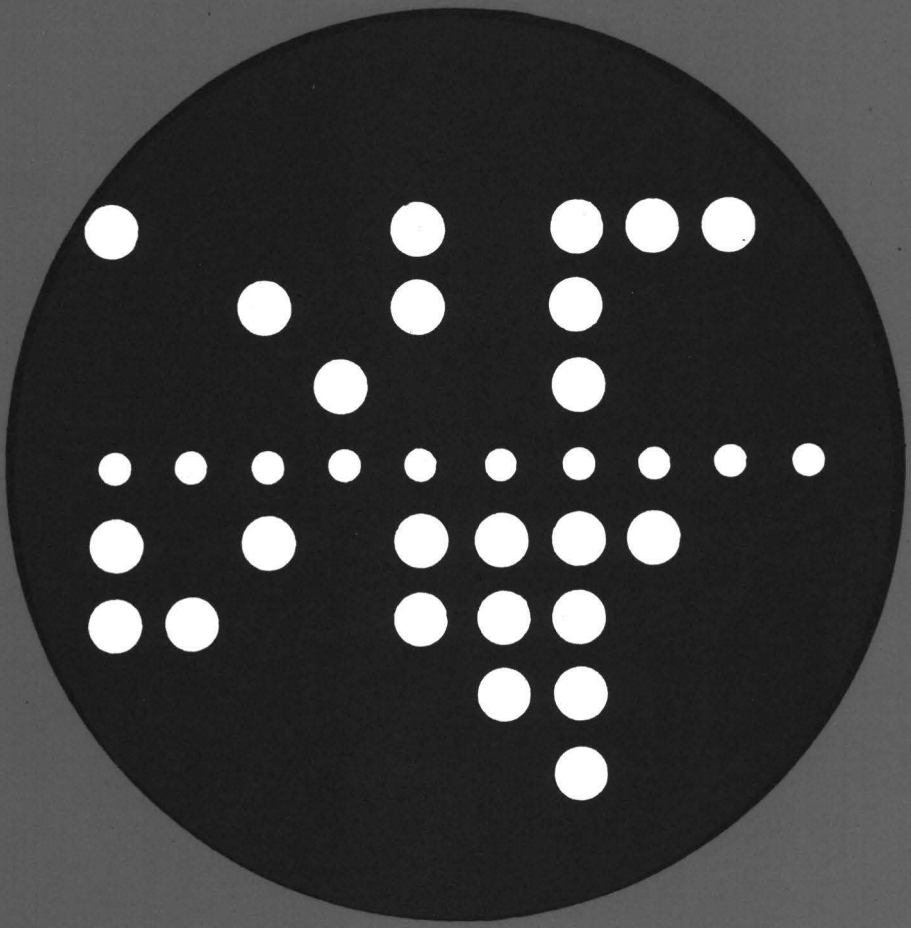
COMPUTING CENTRE NEWSLETTER



Commission of the European Communities
JOINT RESEARCH CENTRE
Ispra Establishment

June 1978 · No 22

CONTENTS

Note of the Editor

The present Newsletter is published monthly except for August and December.

The Newsletter includes:

- Developments, changes, uses of installations
- Announcements, news and abstracts on initiatives and accomplishments.

The Editor thanks in advance those who want to contribute to the Newsletter by sending articles in English or French to one of the following persons of the Editorial Board.

Note de la Rédaction

Le présent Bulletin est publié mensuellement excepté durant les mois d'août et décembre.

Le Bulletin traite des:

- Développements, changements et emploi des des installations
- Avis, nouvelles et résumés concernant les initiatives et les réalisations.

La Rédaction remercie d'avance ceux qui veulent bien contribuer au Bulletin en envoyant des articles en anglais ou français à l'un des membres du Comité de Rédaction.

Computing Centre References

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Mathematical and Statistical Subroutines

Angelo Inzaghi, Herman I. de Wolde

In a previous article (Newsletter Oct. 1977), we mentioned the importance of using ready and well tested program elements to improve the software production and the software quality. One of the fields where the implementation of existing program elements is rather easy is the area of numerical mathematics and statistics.

Many thoroughly tested subroutines are available in the Fortran environment and the use of these materials has to be promoted strongly.

As we mentioned before, the average daily production is about 20 valid statements per programmer. This means that a user may quietly dedicate some time to understand the prerequisites of a subroutine of, for example, 40 thoroughly tested statements. Even a few days to test the behaviour of a complicated subroutine may still offer an economic gain in production.

The presently available materials at the Computing Centre belong to the following collection:

S S P

The Scientific Subroutine Package has been produced by IBM, however the collection is not sustained anymore. Many of the elements are obsolete. However, it is certainly worthwhile to consult the manual because many of the smaller routines are still very useful and special chapters, for example the one on matrix storage, still offers a considerable possibility of pogramming economy.
The description is given in the IBM publication GH20-0205. A copy of this manual is deposited at the Computing Support Library.

C S S L

This library has been set up during the years 1968-1974 and contains about 130 elements of various origins. However, during the recent years neither maintenance has been performed nor new routines have been added.
Although this library is still in use, it did not follow the new trends and methods in numerical mathematics and consequently must be considered as incomplete and partly obsolete.

I M S L

The International Mathematical and Statistical Library is a very well maintained collection of about 400 Fortran subroutines which is leased for a yearly

fee of 1200 dollars. The library is strongly oriented towards statistics and lacks sufficient routines in the field of numerical analysis.
The IMSL manual may be consulted at the Computing Support Library.

After consultation with the Users Group (Mr. Harmers et al.), it was decided that the subroutine package of the Numerical Algorithm Group (NAG) would be a useful library to complete the collection.
This package contains now about 160 subroutines and is more directed towards numerical analysis than the IMSL library.

Consequently the NAG library has been ordered (price 700 pounds per year) and will be installed during the second half of 1978.

It is our scope to phase out the use of the CSSL collection as it is impossible to maintain and extend this library according to the needs, with the present available manpower.

The combination of the IMSL and NAG packages offers enough facilities to make a replacement of the CSSL possible. Additionally these libraries are constantly maintained and extended, consequently the available routines are reflecting the state of the art in numerical and statistical analysis.

The users are kindly requested to use as much as possible the routines from these packages for new developments and to avoid the implementation of the CSSL routines.

The single routines of IMSL and NAG may not be distributed outside the JRC. However, complete programs or software systems which make use of the libraries may be distributed. For these cases you may request the object deck of the applied routines.

A series of basic routines has been implemented already. Two new libraries have been created, containing respectively the single precision routines and the double precision versions: SYS1.LIBMASTS and SYS1.LIBMASTED.

A list of the implemented routines may be obtained at the Computing Support Library, where also the abstracts may be consulted.
If the presently available routines do not contain a solution for your particular problem, you may consult the IMSL manuals, or, after installation, the NAG manuals, and select the appropriate routines. These routines will be implemented on request.

The installed subroutines may be accessed by programming:

```
//  EXEC  FTGCLG,PRN=MASTS,ULB=DISK,VLB=COPICB
```

or, for the double precision routines:

```
//  EXEC  FTGCLG,PRN=MASTD,ULB=DISK,VLB=COPICB
```

The called procedures may also be: FTHCLG, FTG1CLG, FTLG and FTGCG.

The problem of using both single and double precision routines in the same program is still under study. As soon as a useful approach has been designed, the users will be informed.

As a last point we have to state clearly that the user remain responsible for the choice of the subroutines for a particular problem. The members of the group «Support to Computing» have to avoid any involvement with the mathematical or statistical aspects of the offered solution.
Eventually the group may mediate between different users and we plan to encourage the publication of short notes ont he use of particular interesting subroutines.

The following list specifies the presently implemented routines:

Name	Description
ANALYSIS OF EXPERIMENTAL DESIGN DATA	
ACRDAN	ANALYSIS OF ONE-WAY CLASSIFICATION DESIGN DATA
ARCBAN	ANALYSIS OF BALANCED INCOMPLETE BLOCK AND BALANCED LATTICE DESIGN
BASIC STATISTICS	
BECORI	MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS (IN-CORE VERSION)
BECORO	MEANS, STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS (OUT-OF-CORE VERSION)
BECOVM	MEANS OF VARIANCE-COVARIANCE MATRIX
DIFFERENTIAL EQUATIONS — QUADRATURE — DIFFERENTIATION	
DASCRU	AUTOMATIC STEP CHANGE MERSON DIFFERENTIAL EQUATION SOLVER
DCS1FE	CUBIC SPLINE ONE-DIMENSIONAL CALCULATION OF 1-ST DERIVATIVES EQUALLY SPACED DATA
DCS1FU	CUBIC SPLINE ONE-DIMENSIONAL CALCULATION OF 1-ST DERIVATIVES UNEQUALLY SPACED DATA
DCS1SE	CUBIC SPLINE ONE-DIMENSIONAL CALCULATION OF 2-ND DERIVATIVES EQUALLY SPACED DATA
DCS1SU	CUBIC SPLINE ONE-DIMENSIONAL CALCULATION OF 2-ND DERIVATIVES UNEQUALLY SPACED DATA
DREBS	DIFFERENTIAL EQUATION SOLVER — EXTRAPOLATION METHOD

DVERK	DIFFERENTIAL EQUATION SOLVER — RUNGE KUTTA — VERNER FIFTH AND SIXTH ORDER METHOD
DVOGER	DIFFERENTIAL EQUATION SOLVER — VARIABLE ORDER PREDICTOR CORRECTOR METHOD

EIGENSYSTEM ANALYSIS

EBALAF	BALANCE OF A REAL MATRIX
EBBCKF	BACK TRANSFORMATION OF THE EIGENVECTORS OF A BALANCED REAL MATRIX TO FORM THE EIGENVECTORS OF THE ORIGINAL MATRIX
EHBCKF	BACK TRANSFORMATION OF THE EIGENVECTORS OF A REAL UPPER HESSENBERG MATRIX TO FORM THE EIGENVECTORS OF THE ORIGINAL MATRIX
EHESSF	REDUCTION OF A NONSYMMETRIC MATRIX TO HESSENBERG FORM BY ORTHOGONAL TRANSFORMATIONS
EHOBKS	BACK TRANSFORMATION TO FORM THE EIGENVECTORS OF THE ORIGINAL SYMMETRIC MATRIX FROM THE EIGENVECTORS OF THE TRIDIAGONAL MATRIX
EHOUSS	REDUCTION OF A SYMMETRIC MATRIX TO SYMMETRIC TRIDIAGONAL FROM USING HOUSEHOLDER'S REDUCTION
EIGRF	EIGENVALUES AND (OPTIONALLY) EIGENVECTORS OF A REAL MATRIX IN FULL STORAGE MODE
EIGRS	EIGENVALUES AND (OPTIONALLY) EIGENVECTORS OF A SYMMETRIC MATRIX IN SYMMETRIC STORAGE MODE
EIGZF	EIGENVALUES AND (OPTIONALLY) EIGENVALUES FOR THE GENERALIZED PROBLEM $AX=\lambda BX$, WHERE A AND B ARE REAL MATRICES
EQRH3F	EIGENVALUES AND (OPTIONALLY) EIGENVECTORS OF A REAL UPPER HESSENBERG MATRIX
EQRT1S	SMALLEST OR LARGEST M EIGENVALUES OF A SYMMETRIC TRIDIAGONAL MATRIX
EQRT2S	EIGENVALUES AND (OPTIONALLY) EIGENVECTORS OF A TRIDIAGONAL MATRIX
EQRT3S	THE LARGEST (OR SMALLEST) EIGENVALUE OF A TRIDIAGONAL MATRIX IN ALGEBRAIC VALUE WHOSE SUM EXCEEDS A GIVEN VALUE
EQZQF	HESSENBERG REDUCTION FOR THE GENERALIZED EIGENVALUE PROBLEM $AX=\lambda BX$. REDUCTION OF A TO UPPER HESSENBERG FORM AND B TO UPPER TRIANGULAR FORM
EQZTF	EXPLICIT QZ ITERATION FOR THE GENERALIZED EIGENVALUE PROBLEM $AX=\lambda BX$ WHERE A IS UPPER HESSENBERG FORM AND B IS UPPER TRIANGULAR. A IS REDUCED TO ALMOST UPPER TRIANGULAR FORM WHILE B IS HELD

EQZVF	EIGENVALUES/EIGENVECTORS OF THE GENERALIZED EIGENVALUEPROBLEM AX=λBX WHERE B IS UPPER TRIANGULAR AND A IS ALMOST UPPER TRIANGULAR

FORECASTING — ECONOMETRICS — TIME SERIES

FTRDIF	TRANSFORMATION, DIFFERENCES AND SEASONAL DIFFERENCES OF A TIME SERIES FOR IDENTIFICATION

INTERPOLATION, APPROXIMATION AND SMOOTHING

ICS1DE	CUBIC SPLINE ONE-DIMENSIONAL DATA DENSIFIER — EQUALLY SPACED DATA
ICS1DU	CUBIC SPLINE ONE-DIMENSIONAL DATA DENSIFIER — UNEQUALLY SPACED DATA
ICS1VE	CUBIC SPLINE ONE-DIMENSIONAL INTERPOLATION EQUALLY SPACED DATA
ICS1VU	CUBIC SPLINE ONE-DIMENSIONAL INTERPOLATION UNEQUALLY SPACED DATA
ICS2CE	CUBIC SPLINE TWO-DIMENSIONAL COEFFICIENT CALCULATOR
ICS2CU	CUBIC SPLINE TWO-DIMENSIONAL COEFFICIENT CALCULATOR — UNEQUALLY SPACED DATA
ICS2DE	BICUBIC SPLINE TWO-DIMENSIONAL DATA DENSIFIER — EQUALLY SPACED DATA
ICSS2DU	BICUBIC SPLINE TWO-DIMENSIONAL DATA DENSIFIER — UNEQUALLY SPACED DATA
ICS2VE	BICUBIC SPLINE TWO-DIMENSIONAL INTERPOLATOR EQUALLY SPACED DATA
ICS2VU	BICUBIC SPLINE TWO-DIMENSIONAL INTERPOLATOR — UNEQUALLY SPACED DATA

LINEAR ALGEBRAIC EQUATIONS

LEQT1F	LINEAR EQUATION SOLUTION — FULL STORAGE MODE — SPACE ECONOMIZER SOLUTION
LINV2P	INVERSION OF MATRIX — POSITIVE DEFINITE — SYMMETRIC STORAGE MODE — HIGH ACCURACY SOLUTION
LIN1PB	INVERSION OF MATRIX — POSITIVE DEFINITE — SYMMETRIC BAND MATRIX SYMMETRIC BAND STORAGE MODE SPACE ECONOMIZER SOLUTION
LPSDOR	PSEUDO INVERSE OF A MATRIX

LSVALR	SINGULAR VALUE DECOMPOSITION OF A MATRIX
LUDAPB	DECOMPOSITION OF A POSITIVE DEFINITE SYMMETRIC BAND MATRIX — SYMMETRIC BAND STORAGE MODE
LUDATF	LU DECOMPOSITION BY THE CROUT ALGORITHM WITH (OPTIONAL) ACCURACY TEST
LUDECP	DECOMPOSITION OF A POSITIVE DEFINITE MATRIX — SYMMETRIC STORAGE MODE
LUELMF	ELIMINATION PART OF SOLUTION OF AX=B FULL STORAGE MODE
LUELMP	ELIMINATION PART OF SOLUTION OF AX=B POSITIVE DEFINITE MATRIX SYMMETRIC STORAGE MODE
LUELPB	ELIMINATION PART OF SOLUTION OF AX=B POSITIVE DEFINITE SYMMETRIC BAND MATRIX SYMMETRIC BAND STORAGE MODE
LUREFP	REFINEMENT OF SOLUTION TO LINEAR EQUATIONS — POSITIVE DEFINITE MATRIX — SYMMETRIC STORAGE MODE

MATHEMATICAL AND STATISTICAL SPECIAL FUNCTIONS

MDBETA	INCOMPLETE BETA PROBABILITY DISTRIBUTION FUNCTION
MDBETI	INVERSE INCOMPLETE BETA PROBABILITY DISTRIBUTION FUNCTION
MDCH	CHI-SQUARED PROBABILITY DISTRIBUTION FUNCTION
MDFD	F PROBABILITY DISTRIBUTION FUNCTION
MDGAM	INCOMPLETE GAMMA PROBABILITY DISTRIBUTION FUNCTION
MMDEI	EXPONENTIAL INTEGRALS

OBSERVATION STRUCTURE

OCLINK	PERFORM SINGLE-LINKAGE OF COMPLETE-LINKAGE HIERARCHICAL CLUSTER ANALYSIS GIVEN A SIMILARITY MATRIX
OIND	WILKS' TEST FOR THE INDEPENDANCE OF K SETS OF MULTI-NORMAL VARIATES

REGRESSION ANALYSIS

RLCOMP	GENERATION OF AN ORTHOGONAL CENTRAL COMPOSITE DESIGN
RLEAP	LEAPS AND BOUNDS ALGORITHM FOR DETERMINING A NUMBER OF BEST REGRESSION SUBSETS FROM A FULL REGRESSION MODEL
RLEAP1	NUCLEUS CALLED ONLY BY IMSL SUBR.RLEAP
RLEAP2	NUCLEUS CALLED ONLY BY IMSL SUBR.RLEAP

RLEAP3	NUCLEUS CALLED ONLY BY IMSL SUBR.RLEAP
RLFITI	PURE REPLICATION ERROR DEGREES OF FREEDOM AND SUM OF SQUARES (IN-CORE VERSION)
RLMUL	MULTIPLE LINEAR REGRESSION ANALYSIS
RLSEP	SELECTION OF A REGRESSION MODEL USING A FORWARD STEPWISE ALGORITHM, AND COMPUTATION OF THE USUAL ANALYSIS OF VARIANCE TABLE ENTRIES — EASY TO USE VERSION
RLSTEP	SELECTION OF A REGRESSION MODEL USING A FORWARD STEPWISE ALGORITHM
RLSUBM	RETRIEVAL OF A SYMMETRIC SUBMATRIX FROM A STORED IN SYMMETRIC STORAGE MODE BY RLSTEP

UTILITY FUNCTIONS

UERTST	PRINT AN ERROR MESSAGE
USTREE	PRINT A BINARY TREE (WHICH MAY REPRESENT THE OUTPUT OF A CLUSTERING ALGORITHM IN CHAPTER 0)

VECTOR-MATRIX ARITHMETIC

VHSH2C	COMPLEX HOUSEHOLDER TRANSFORMATION TO ZERO A SINGLE ELEMENT OF A MATRIX
VHSH2R	REAL HOUSEHOLDER TRANSFORMATION TO ZERO A SINGLE ELEMENT OF A MATRIX
VHSH3R	REAL HOUSEHOLDER TRANSFORMATION TO ZERO TWO ELEMENTS OF A MATRIX
VMULFS	MATRIX MULTIPLICATION (FULL BY SYMMETRIC MATRICES)
VSORTM	SORTING OF ARRAYS BY ABSOLUTE VALUE OR ALGEBRAIC VALUE
VSRTPM	SORTING OF ARRAYS BY ABSOLUTE VALUE OR ALGEBRAIC VALUE — PERMUTATIONS RETURNED
VXPADD	EXTENDED PRECISION ARITHMETIC PACKAGE INCLUDING ADDITION AND MULTIPLICATION

ZEROS AND EXTREMA — LINEAR PROGRAMMING

ZSYSTM	SOLUTION TO A SYSTEM OF N SIMULTANEOUS NONLINEAR EQUATIONS IN N UNKNOWNS
ZXPOWL	POWELL'S ALGORITHM TO FIND A (LOCAL) MINIMUM OF A REAL FUNCTION OF N REAL VARIABLES
ZX1LP	LINEAR PROGRAMMING VIA THE REVISED SIMPLEX ALGORITHMS

ACCOUNTED WORK UNITS TABLE FOR ALL JOBS OF THE GENERAL SERVICES - Monthly and Cumulative Statistics

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1977	44	74	78	32	26	36	27	25	27	31	40	34
accumulation	44	118	196	228	254	290	317	342	369	400	440	474
Year 1978	51	43	55	50	49							
accumulation	51	94	149	199	248							

ACCOUNTED WORK UNITS TABLE FOR THE JOBS OF ALL THE OBJECTIVES AND GENERAL SERVICES - Monthly and Cumulative Statistics

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1977	135	218	312	193	180	269	244	196	277	275	284	179
accumulation	135	353	665	858	1038	1307	1551	1747	2024	2300	2584	2763
Year 1978	211	213	283	232	202							
accumulation	211	424	707	939	1141							

ACCOUNTED WORK UNITS TABLE FOR THE JOBS OF THE EXTERNAL USERS - Monthly and Cumulative Statistics

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1977	13	14	18	16	13	22	19	18	27	25	21	20
accumulation	13	27	45	61	74	96	115	133	160	185	206	226
Year 1978	12	10	11	46	23							
accumulation	12	22	33	79	102							

EQUIVALENT TIME TABLE FOR ALL JOBS OF ALL USERS - Monthly and Cumulative Statistics

	January	February	March	April	May	June	July	August	September	October	November	December
Year 1977	158	241	314	242	202	294	266	217	299	299	318	235
accumulation	158	399	713	955	1157	1451	1717	1934	2233	2532	2850	3085
Year 1978	276	261	356	298	262							
accumulation	276	537	893	1191	1453							

Statistics of computing installation utlization

Report of computing installation exploitation for the month of May

	YEAR 1978	YEAR 1977
Number of working days	18 d	18 d
Work hours from 8.00 to 24.00 for	16.00 h	16.00 h
Duration of scheduled maintenance	21.37 h	21.08 h
Duration of unexpected maintenance	23.66 h	69.76 h
Total maintenance time	45.03 h	90.84 h
Total exploitation time	232.29 h	199.16 h
CPU time in problem mode	138.76 h	104.64 h
Conversational Systems:		
CPU time	1.98 h	2.65 h
I/O number	395,000	499,000
Equivalent time	4.69 h	6.15 h
Elapsed time	301.00 h	211.00 h
Batch processing:		
Number of jobs	5,912	6,487
Number of cards read	1,461,881	1,869,000
Number of cards punched	59,759	140,000
Number of lines printed	16,858,531	20,303,000
Number of pages printed	404,604	454,000

BATCH PROCESSING DISTRIBUTION BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1400	total
Number of jobs	1654	2259	1437	689	165	21	69	7	6301
Elapsed time (hrs)	45	148	181	173	67	7	35	7	663
CPU time (hrs)	3	33	28	24	14	2	9	3	116
Equivalent time (hrs)	16	56	60	56	20	3	17	3	231
Turn around time (hrs)	0.6	1.1	1.6	2.6	3.1	2.8	4.0	5.5	1.2

PERCENTAGE OF JOBS FINISHED IN LESS THAN

TIME	15'	30'	1^h	2^h	4^h	8^h	1^D	2^D	3^D	6^D
% year 1977	29	46	62	77	87	95	97	99	99	100
% year 1978	34	53	70	84	94	99	100	–	–	–

Utilisation of computer center by the objectives and appropriation accounts for the month of May

		IBM 370/165 Accounted work units in hours
1.20.2	General Services - Administration - Ispra	48.45
1.20.3	General Services - Technical Isrpa	0.67
1.30.4	L.M.A.	–
1.90.0	ESSOR	10.10
1.92.0	Support to the Commission	10.14
2.10.1	Reactor Safety	102.22
2.10.2	Plutonium Fuel and Actinide Research	2.80
2.10.3	Nuclear Materials	0.79
2.20.1	Solar Energy	0.02
2.20.2	Hydrogen	–
2.20.4	Design Studies on Thermonuclear Fusion	6.40
2.30.0	Environment and Resources	6.82
2.40.0	METRE	2.08
2.50.1	Informatics	7.08
2.50.3	Safeguards	2.41
309	Programming Support	2.6
	TOTAL	200.24
1.94.0	Services to External Users	22.72
	TOTAL	224.96

»XX ICES Users Group Worldwide Conference«

Padua, Sept. 14-15, 1978

The XX ICES Users Group Conference will be held at Padua University on Sept. 14-15, 1978, and will be preceded on Sept. 13 by a series of pre-conference short courses.

The Integrated Civil Engineering System, (ICES), is certainly the best known and most used modular system in the field of computer aided analysis and design of structures.

It consists of a Basic System and of an expandible library of application Subsystems, presently covering a wide range of engineering problems, like structure analysis/design, bridge and road design , transportation and hydraulic network analysis, project control, and urban planning.

The Conference is aimed at providing potential users with an overview of ICES capabilities, and at giving present users the opportunity of sharing experiences and illustrating new developments.

More information is available from the JRC Computing Support Library. Registrations must be adressed to the Conference Chairman:

Dr. A. Natali
Università di Padova
Centro di Calcolo - Palazzo Sala
Via S. Francesco, 11
35100 Padova

TSO Data Utilities: COPY, FORMAT, LIST and MERGE

A. Rink

With the TSO Data Utilities which are now available in the JRC TSO system as a program product, four commands (COPY, FORMAT, LIST, MERGE) and two sub-commands of EDIT (FORMAT, MERGE) are added to the TSO command language.

The basic functions of these utilities are:

1. COPY

- Copy a sequential or partitioned data set or a member of a partitioned data set into another data set
- Add members to a partitioned data set
- Combine two partitioned data sets
- Change the record length, block size and record format when copying to a sequential data set or a new partitioned data set.

2. FORMAT

- Print one or more physical sequential data sets or members of partitioned data sets according to a predetermined format.

3. LIST

- List all or a part of the contents of one or several sequential data sets or members of partitioned data sets.

4. MERGE

- Combine, interleave, or copy all or a part of physical sequential data sets or members of partitioned data sets.

Examples :

1. COPY

- Copy a sequential data set called X into a member of a partitioned data set called Y(Z).

  copy x y(z)

  Note: The content of Y(Z) is replaced by the content of X.

- Combine 2 existing partitioned data sets called X and Y

  copy x y

  Note: If X consists of members A,B,C and Y consists of members A,B,D then members A and B of X will replace members A and B of Y.

2. FORMAT

- Prior to using the FORMAT command the output format has to be established. This can be done by using the EDIT command to insert control words into the data set intented to print.

```
edit   example   new   data
INPUT

00010.adjust
00020july 11,1970
00030.space 5
00040.center 2
00050 x  and k  sales  inc.
00060annual report - 1970
00070
EDIT
save
EDIT
format
```

```
                                                    PAGE 1
                                                JULY 11,1970

                        X AND K SALES INC.
                    ANNUAL REPORT — 1970
```

Note: Control words are preceded by a dot and are used in lines 10, 30 and 40. Typing the subcommand FORMAT of EDIT then produces the shown output.

- Print on the terminal the first twenty pages of the formatted data set XYZ.

```
format   xyz   page(1,20)
```

- Print the formatted data set XYZ onto the output data set OUT than can be displayed later on a high speed printer.

```
format   xyz   print(out)
```

3. LIST

- Print on the terminal lines 10 to 50 of the line numbered data set X.

```
list  x   10,50
```

- Print on the terminal the content of member Y of partitioned data set Z. Print only the fields that provide names and monthly sales totales.

```
list  y(x)   col (10:30,45:53)
```

Note: Only the columns 10 through 30 and 45 through 53 which contain the name field and monthly sales total field are listed.

4. MERGE

- Merge lines 20 to 100 of data set A into data set B starting at line 50 of B. Renumber data set B.

  merge a 20 100 b 50 renum

  Note: Lines 20 to 100 of data set A are inserted into data set B. Because of renumbering data set B this means that for instance line 20 of A will be numbered line 60 of data set B.

- Merge lines 20 through 50 of data set A onto the end of data set B.

  merge a 20 50 b

Reference

IBM Program Product, OS/MVT and OS/VS2 TSO Data Utilities: COPY, FORMAT, LIST, MERGE, User's guide and Reference, SC2B-6765-4

The Newsletter is available at:

Mrs. A. Cambon
Support to Computing
Bldg. 36 - Tel. 730

Des exemplaires du Bulletin sont disponibles chez:

Mme A. Cambon
Support to Computing
Bât. 36 - Tel. 730

Note to all PSQ-FILEDI users

D. König, A. Rink, C.L. van den Muyzenberg

We would like to remind all PSQ-FILEDI users that the PSQ-FILEDI system will be cancelled **October 1st**, as announced in the «Third TSO Information Meeting» on Wednesday, June 28th. Since the TSO system offers more facilities to the users, the maintenance of the FILEDI system cannot be justified for technical and managerial reasons. Therefore all users which are currently using PSQ-files are asked to remove their files from the system before October 1st.
This can be done by using the PSQTSO command procedure.
The PSQTSO command procedure copies a PSQ data set into a new or existing TSO data set.
In the case of a new TSO data set the PSQTSO command procedure will automatically ask parameters to reserve the data set.
An example on how to use the PSQTSO command procedure is shown on the next page
Thereby the following information is assumed as input:

Useridentification	- TSOTEST
Accountnumber	- 14550823 (aut.no and progr.no)
PSQ data set	- 0171TEST
TSO data set	- TSOTEST.TEST.DATA

All user input is underlined and every time the user has to give a carriage return; it is indicated by **CR**.
To get more information on how to use the PSQTSO command procedure, the user may use the HELP command of TSO : ***help psqtso*** **CR**.

This is recommended before PSQTSO is used.

Major Differences	**PSQ / FILEDI**	**TSO**
little time	**2 months** **(extended automatically with use)**	**duration of reservation period max. 6 months** **(not automatically extended with use)**
payment	**no**	**yes**

If you need any more help on the usage of the PSQTSO command procedure please contact Mr. C.L.v.d. Muyzenberg, Tel. 781.
Mr. v.d. Muyzenberg will be in holiday in the time from 29-7 to 20-8.

```
READY
psqtso 0171test tsotest.test.data new (CR)
ATTR-LIST-NAME $@#4321 NOT FOUND
UTILITY DATA SET NOT FREED, IS NOT ALLOCATED
TSOTEST.TEST.DATA
--RECFM-LRECL-BLKSIZE-DSORG-CREATED--EXPIRES---SECURITY
   FB      80      3120      PS      07/25/78     00/00/00      NONE
--VOLUMES--
   USER0A
TO TERMINATE, REPLY AT ANY TIME 'END' OR 'STOP'.
DO YOU WILL RESERVE, INQUIRY OR STOP ? (REPLY R, I OR S)
r CR
SPECIFY AUT.NO. AND PROGR.NO.
.........(8 NUMERICS)
14550823 (CR)
SPECIFY THE VOLUME SERIAL NUMBER.
.......(6 ALPHANUMERICS)
user0a CR
SPECIFY THE EXPIRATION DATE (DAY/MONTH/YEAR).
.....(6 NUMERICS)
260778 (CR)
YOUR DATA-SET IS NOW RESERVED.
DO YOU WILL RESERVE, INQUIRY OR STOP? (REPLY R, I OR S)
s (CR)
```

A

```
INPUT
00010 (CR)
SAVED
UTILITY DATA SET NOT FREED, IS NOT ALLOCATED
TO TERMINATE, REPLY AT ANY TIME 'END' OR 'STOP'.
SPECIFY AUT.NO. AND PROGR.NO.
.........(8 NUMERICS)
14550823 CR
SPECIFY BOX NO., JOBNAME SUFFIX AND PROGRAMMER'S NAME.
.............(3 NUMERICS, 1 ALPHANUMERIC AND MAX. 16 ALPHANUMERICS)
999a--micky-mouse CR
YOUR JOB IS NAME 'TSOTESTA' AND HAS BEEN PASSED TO HASP.
READY
```

B

A – In this part the TSO data set is created and reserved.

B – In this part a background job is created that copies the PSQ data set into the TSO data set.

Les personnes intéressées et désireuses de recevoir régulièrement "Computing Centre Newsletter" sont priées de remplir le bulletin suivant et de l'envoyer à:

Mme A. Cambon
Support to Computing
Bât. 36, Tel. 730

Nom .....

Adresse .....

.....

Tel. .....

The Persons interested in receiving regularly the "Computing Centre Newsletter" are requested to fill out the following form and to send it to:

Mrs. A. Cambon
Support to Computing
Building 36, Tel. 730

Name .....

Address .....

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