

OVERVIEW OF STRUCTUR

STRUCTUR (PGM NAME= STRCT) TAKES OUTPUT FROM ICISCAN (PURIFIED TEXT) AND SYNTACTICALLY ANALYZES IT INTO ITS COMPONENT ITEMS AND GROUPS. EACH ITEM PUT OUT WILL BE EITHER A ROLE, ACTOR, TIME ENTRY, LONDON STAGE PAGE ENTRY, SECTION TITLE, THEATRE, DATE, CAST GROUP LADDER ENTRY, 'SEE' LADDER ENTRY, OR TITLE LADDER ENTRY. THERE ARE TWO KINDS OF GROUPS, TITLE GROUPS, AND CAST GROUPS. A TITLE GROUP CONTAINS THE TITLE, IF ANY, OF A SECTION, AND THE TITLE LADDER ENTRY OR 'SEE' LADDER ENTRY, IF ANY, OF A SECTION. IT MAY, LIKE CAST GRPS, CONTAIN A LONDON STAGE PAGE ENTRY. A CAST GRP MAY CONTAIN 0 OR 1 TIME ENTRIES, 0 OR MORE ROLES, 0 OR 1 CAST GRP LADDER ENTRIES, AND 0 OR MORE ACTORS IN THAT ORDER, EXCEPT THAT ROLES MAY FOLLOW CAST GROUP LADDER ENTRIES AS LONG AS ONE ROLE PRECEDES THE CGLE IN THE GROUP. THIS EXCEPTION MAY BE DUE TO A BUG, BUT SHOULD DO NO GREAT HARM. A CAST GROUP ALWAYS HAS AT LEAST ONE ITEM, AND ALL ITEMS IN A CAST GROUP SHOULD BE OF NONZERO LENGTH IN THEIR DATA PORTIONS. A TITLE ITEM MAY BE OF ZERO LENGTH IN THE DATA PORTION, IN FACT EACH UNTITLED SECTION HAS A TITLE OF ZERO LENGTH IN ITS OUTPUT BLK.

EACH INPUT BLK MUST CONTAIN 1 OR MORE COMPLETE SECTIONS. EACH OUTPUT BLK IS ONE SECTION. PARTS OF SECTIONS ARE NOT ALLOWED, AND SHOULD NOT BE PRODUCED BY ICISCAN. EACH OUTPUT BLK OF SAVEDT, ON THE OTHER HAND, SHOULD CONSIST OF 1 OR MORE COMPLETE SECTIONS, BUT OCCASIONALLY DUE TO BAD INPUT SAVEDT WILL PUT OUT A SECTIONLESS BLK OR ONE WITH PART OF A SECTION IN IT.

FOR SEQUENTIAL OUTPUT (OPTION 7) THE KEYS (12 BYTES) ARE APPENDED TO THE FRONT OF EACH BLK, AND 2 BLANKS ARE APPENDED IN FRONT OF THE KEYS TO MAKE AN ABSOLUTE MINIMUM OUTPUT BLKSIZE OF 18 BYTES INCLUDING THE MINIMUM POSSIBLE OF 4 DATA BYTES CONSISTING OF AN EMPTY TITLE GRP AND TITLE ITEM. THE BLANKS MAY BE CONSIDERED 'RESERVED' SINCE AT PRESENT THEY ARE DISCARDED ON INPUT BY LADDER.

STRUCTUR REQUIRES 3 SETS OF RECORDS (HEREAFTER CALLED 'CARDS') IN ITS SYSIN FILE. THE FIRST 12 CARDS, CALLED MONSTR CARDS, DESCRIBE THE NAMES USED IN THE BATCH FOR THE MONTH PART OF A LADEER REFERENCE. THE MONTH NAME MAY BE EITHER IN ALL CAPS OR ELSE ENTERED EXACTLY AS IN THE DATA IN UPPER AND LOWER CASE, DEPENDING ON WHETHER OPTION 9 IS SPECIFIED. EACH CARD HAS 2 DATA FIELDS. THE FIRST FIELD IS COLUMN 1, AND CONTAINS A NUMBER BETWEEN 1 AND 9 DEFINING THE LENGTH OF THE MONTH NAME. THE NAME FIELD ITSELF STARTS IN COLUMN 2. THE REMAINDER OF THE CARD IS IGNORED. THE MONTH NAMES MUST BE IN ORDER FROM JANUARY TO DECEMBER, AND ALL MUST BE PRESENT FOR EVERY RUN OF STRCT. IF OPTION 9 IS USED, THE MONTH NAMES MUST BE COMPLETELY UPPERCASE.

FOLLOWING THE MONSTR CARDS ARE 1 OR MORE SEASON CHANGE CARDS. THE LAST SEASON CHANGE CARD CONTAINS, STARTING IN COLUMN 1, THE FOLLOWING PATTERN OF 0'S AND X'S .. '00000000XXXXXX00'. THE REMAINDER OF THE CARD IS IGNORED. ALL OTHER SEASON CHANGE CARDS ARE IN THE FOLLOWING FORMAT, STARTING IN COLUMN 1 ..

YYYYMMDDTTTTTLL WHERE 'YYYYMMDD' IS THE DATE THE LAST PERFORMANCE TOOK PLACE. 'LL' IS THE NUMBER OF SECTIONS THAT ICISCAN PUT OUT FOR THE PERFORMANCE. IT IS EASY TO MAKE A BIG MISTAKE IN THESE CARDS BY 1) INCORRECTLY FIGURING (ESPECIALLY OVERESTIMATING) THE NUMBER OF SECTIONS PRESENT IN AT THE LAST PERFORMANCE BY FAILING TO NOTICE SOMETHING LIKE A ← DOUBLE 'AT' THAT DELETES THE ASTERISK STARTING THE SECTION (UNDERESTIMATING IS NOT SO SERIOUS). 2) FAILING TO ACCOUNT FOR

OF A

reason

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THE KINDS OF SECTIONS THAT ARE NOT SELECTED FOR OUTPUT BY ICISCAN, THAT IS, IF THE 'SECTION TYPES WANTED' FIELD OF ICISCAN'S OPTION CARD CONTAINS ONLY 'AP', THEN 'D' SECTIONS WILL NOT BE PUT OUT BY ICISCAN OR COUNTED BY STRCT. 'TTTTTTT' IS THE THEATRE, TYPED IN LOWER CASE AND PADDED ON THE RIGHT WITH BLANKS. *IF never* THE REMAINDER OF EACH CARD FOLLOWING THE 'LL' FIELD IS IGNORED.

FOLLOWING THE LAST SEASON CHANGE CARD IS THE OPTION CHAIN, WHICH CONSISTS OF 1 OR MORE CARDS. THE OPTION CARD HAS 32 OPTION LOCATIONS IN COLS 1-32. IN COLS 33-38 IS THE LINK TO THE INPUT BLK, IF ANY, FOR WHICH THE NEXT OPTION CARD WILL BE USED. IF THERE IS NO NEXT SET OF OPTIONS THEN 0'S ARE PREFERRED IN COLS 33-38. THE OPTIONS ON THE NEXT CARD ARE READ IMMEDIATELY AFTER THE READING OF THE BLK WHOSE NUMBER IS LISTED IN THE CURRENT OPTION CARD. IN PARTICULAR, THE BLK NUMBERED IN THE CURRENT OPTION CARD WILL BE SKIPPED IF THE NEXT OPTION CARD SPECIFIES THE SKIP OPTION. THE VERY FIRST OPTION CARD IN THE CHAIN IS READ IN AND TAKES EFFECT RIGHT AFTER THE FIRST BLK OF INPUT FROM THE FILE, PURE.

RECOMMENDED OPTIONS FOR ERROR CHECKING ARE .. 5,6,7,9,27.

IN BATCH 1, STRCT PRODUCED RELATIVELY FEW ERROR MESSAGES, BUT IF ERROR MESSAGES ARE FREQUENT IN SOME OTHER BATCH THEN OPTION 27 SHOULD BE THE FIRST TO GO.

PROGRAM NOTES ..

M IS A SCRATCH VARIABLE USED ONLY IN SHORT SEQUENCES.

IX IS A SCRATCH VARIABLE USED IN NO INNER PROCEDURE OR ON UNIT.

K AND L ARE SCRATCH VARIABLES, THEY ARE USED IN STRUCT, GTCK, AND GITM, BUT NOT IN COGO OR ERRMSG OR ANY ON UNIT.

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** SPECIFICATIONS FOR THE STRU/LADA FILES **

THE FOLLOWING 9 TYPES OF GROUPS OCCUR IN THE STRU FILE ..

- A AFTERPEICE TITLE GROUP, ALWAYS THE FIRST IN ITS SECTION
- P PERFORMANCE TITLE GROUP, ALWAYS THE FIRST GROUP IN ITS SECTION
- I INSTRUMENTAL TITLE, ALWAYS 1ST GRP IN SECTION.
- O OPERA TITLE , ALWAYS 1ST GRP IN SECTION.
- U MONOLOGUE WITH PARTS TITLE, ALWAYS 1ST GRP IN ITS SECTION.
- B BALLET TITLE, ALWAYS 1ST GRP IN ITS SECTION.
- E ENTERTAINMENT TITLE, ALWAYS 1ST GRP IN ITS SECTION.
- G 'ROLE-ACTOR GROUP', WITH TIME, ROLE, AND ACTOR ITEMS
- G LADDER GROUP, WITH AN L OR S ITEM.

ITEMS ARE TAGGED BY THE FOLLOWING CHARACTERS ..

- B PAGE ENTRY
- A ACTOR (ALSO MUSICIAN, DANCER, SINGER ETC.)
- R ROLE (ALSO SONG, ENTERTAINMENT, DANCE ETC.)
- T TIME ENTRY
- A (SMALL LETTER) AFTERPEICE TITLE
- P (SMALL LETTER) PLAY TITLE (MAINPEICE)
- U (SMALL LETTER) TITLE OF MONOLOGUE WITH PARTS
- B (SMALL LETTER) BALLET TITLE
- T (SMALL LETTER) TRICK TITLE
- I (SMALL LETTER) INSTRUMENTAL MUSIC TITLE
- O (SMALL LETTER) OPERA TITLE
- L LADDER REFERENCE OF THE 'AS' TYPE
- D LADDER REFERENCE OF THE 'SEE' TYPE
- C LADDER REFERENCE OF THE CGLE TYPE

ALL LADA FILE BLKS HAVE A TITLE OF AT LEAST THE NULL VARIETY. THE TITLE 'UN' IS TREATED JUST LIKE ANY OTHER TITLE. PERHAPS STRUCTUR SHOULD CONVERT 'UN' TITLES TO '' TITLES.

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STRU/STRS FILES DO NOT HAVE TITLE GRPS EXCEPT FOR TITLED SECTIONS.

THE TIME ENTRY, IF PRESENT, MUST PRECEDE ALL ROLE AND ACTOR ENTRIES IN THE GROUP.

ALL ROLE ENTRIES PRECEDE ANY ACTOR ENTRIES. ←

THE TITLE, IF ANY, OF AN AFTERPEICE, SONG, OR PERFORMANCE SECTION MUST BE THE FIRST GROUP IN ITS SECTION. THE TITLE ITEM MAY BE PRECEDED BY A PAGE ENTRY, HOWEVER, SINCE PAGE ENTRIES MAY OCCUR ANYWHERE.

A LADDER REFERENCE MAY NOT PRECEDE A PLAY, OPERA, OR AFTERPEICE TITLE.

A CGLE MUST BE PRECEDED BY AT LEAST ONE ROLE.

STRU FILE NOTES .. 9/12/71

- 1) EVERY TITLED SECTION HAS AT LEAST FC CAT SMOD AS 1ST 2 CHARS.
- 2) IF A SECTION HAS A TITLE THEN IT IS IN ITEM FORM, & THIS MAY BE OF LENGTH 0.
- 3) EVERY TITLED SECTION HAS AT LEAST A 0 LENGTH TITLE, (IF THERE ARE ANY CANDIDATES AT ALL AFTER THE THEATRE).
- 5) 'P GF' TYPES OF SECTIONS HAVE NO TITLE AT ALL, BUT THEATRE IS PRESERVED IN KEY.
- 6) AN RA GRP WITH NO ITEMS IS POSSIBLE DUE TO INPUT DATA ERROR, ELSE NOT.
- 7) NULL TIME ENTRIES CANNOT EXIST. THEY ALWAYS HAVE AT LEAST THE COLON.
- 8) NULL ROLE OR ACTORS (0 LENGTH) EXIST ONLY IF GTCK DELIVERS A 0 LENGTH C TO THE ROLE OR ACTOR LOOP.
(GITM ALWAYS DELIVERS AT LEAST 'ERRONEOUS ITEM'.)
- 9) LADDER REFERENCES HAVE ONLY S OR L OR C AS THEIR ITEM TYPE LETTERS, AND CAN OCCUR ONLY WHERE A ROLE OR AN ACTOR IS EXPECTED, THAT IS IN G GROUPS.
- 10) PAGE ITEMS ARE FIXED LENGTH (4 DATA, 6 INC ITEM CTRL) IF PRESENT.

1 FORMAT OF SECTION/BLK KEYS FOR STRUCTUR/LADDER/ITEMGET ..
RECORDED KEY LENGTH IS 12 BYTES.

BYTES 0 TO 2 ARE THE CODED DATE AND DATE SIGNIFICANCE BITS.
THE RIGHTMOST 3 BITS DEFINE WHETHER THE CORRESPONDING PART OF THE DATE (YEAR, MONTH, AND DAY RESPECTIVELY) IS DEFINITE OR UNCERTAIN. A ZERO BIT MEANS DEFINITE, ONE MEANS UNCERTAIN. THE BITS CORRESPOND TO YEAR, MONTH, AND DAY RESPECTIVELY LEFT TO RIGHT.

THE ACTUAL DATE REPRESENTATION IS ENCODED BY THE FORMULA,
 $IDATE = ((IYEAR - 1660) * 372 + (IMONTH - 1) * 31 + IDAY - 1) * 8$..

INTO THE BINARY FULLWORD, IDATE. AFTER THE SIGNIFICANCE BITS ARE ADDED TO IDATE, THE LAST 3 BYTES OF IDATE ARE CONCATENATED TO THE REST OF THE KEY. THE FULL RECORDED KEY IS WRITTEN FROM THE VARIABLE SKY.

BYTE 3 CONTAINS THE SECTION TYPE LETTER (SMOD) ..

- A) AFTERPEICE SECTION
- B) BALLET SECTION
- D) DANCING SECTION
- E) ENTERTAINMENT SECTION
- I) INSTRUMENTAL MUSIC SECTION
- M) MUSIC SECTION
- O) OPERA SECTION
- P) PERFORMANCE SECTION
- S) SINGING SECTION
- T) TRICK SECTION
- U) MONOLOGUE WITH PARTS SECTION

BYTES 4 TO 11 CONTAIN THE THEATRE ABBREVIATION, WHICH IS RIGHT-ADJUSTED AND PADDED ON THE RIGHT WITH BLANKS, IF NECESSARY.

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LADDER OVERVIEW

LADDER HAS THE TWO FUNCTIONS OF RETRIEVING LADDER REFERENCES AND OF PERFORMING COMPLEX UPDATES WITH THESE LADDER REFERENCES. THERE ARE 3 KINDS OF LADDER REFERENCES DISCUSSED SEPARATELY BELOW.

TITLE LADDER REFERENCES (TLE'S) MAY OCCUR AS THE FIRST LADDER REFERENCE IN ANY SECTION. TLE'S ARE IDENTIFIED BY A CAPITAL 'L' AS THEIR ITEM TYPE CHARACTER. THE REFERENCE MUST BE THE FIRST ITEM OF THE FIRST CAST GRP FOLLOWING THE TITLE OF THE SECTION. WHEN A TLE REFERENCE IS ENCOUNTERED DURING INPUT/SETUP IT IS SEARCHED FOR AND, IF FOUND AND SUCCESSFULLY MATCHED ON THE TITLE ITEM, IS PLACED BEHIND THE REFERRING BLK IN THE S BUFFER. INPUT/SETUP OF THE REFERRING BLK THEN CONTINUES, POSSIBLY INVOLVING CGLE'S. WHEN REFERRING BLK'S INPUT/SETUP IS FINISHED THEN THE TLE IS SET UP ON A SEPARATE CHAIN CALLED THE OUTPUT CHAIN, POINTED TO BY IGP3 AND IGP4.

AFTER ALL (ALL) INPUT/SETUP IS COMPLETE THE UPDATE STAGE STARTS. IN THIS STAGE LADDR GOES THROUGH THE INPUT CHAIN, AND HANDLES EACH GRP IN IT ON AN INDIVIDUAL BASIS. FOR CORRECT TLE CASES AND NON-LADDER CASES PROCESSING IS AS DESCRIBED IN THE SPECIFICATIONS, 'TYPING INSTRUCTIONS FOR THE LINDON STAGE PROJECT', 'DESCRIPTION OF THE CALENDAR', 5 MAY OCRB II. THIS IS CARRIED OUT BY RECHAINING GRPS AND ITEMS FROM THE INPUT CHAIN TO THE OUTPUT CHAIN, AND DELETING GRPS AND ITEMS FROM THE OUTPUT CHAIN. TLE PROCESSING OR SLE PROCESSING IS CARRIED ON SIMULTANEOUSLY WITH CGLE PROCESSING ON A GRP BY GRP BASIS. ALTHOUGH THE UPDATE STAGE HAS NOT BEEN THOUROUGHLY TESTED IT SHOULD WORK FOR CHINA DATA MATERIAL SINCE THIS PRESUMABLY DOES NOT HAVE ANY UPDATES EXCEPT THE REPLACE VARIETY WHICH HAS BEEN THOROUGHLY TESTED. ONE PROBLEM WHOSE SOLUTION HAS NOT BEEN UNDERTAKEN IS THAT OF REKEYING IN THE OUTPUT CHAIN. USING THE FACT THAT NAMES ARE SUPPOSED TO BE UNIQUE IN ANY ONE CONTEXT, IN THIS CASE A SECTION WITH ALL ITS LADDER REFERENCES, SIMPLIFIES THE PROGRAMMING QUITE A BIT. THE SIMPLIFICATION LIES IN THAT UPDATING AN ITEM INVOLVES ONLY ALTERING, IN SOME WAY, THE OUTPUT CHAIN. THE REFERRING ITEM IN THE INPUT CHAIN IS THEREAFTER 'UNREFERENCEABLE', BUT THE ITEM IN THE OUTPUT CHAIN CAN STILL BE AFFECTED BY A LATER ITEM IN THE INPUT CHAIN. FOR EXAMPLE IF THERE IS AN ACTOR, JOE, AT THE FAR END OF THE OUTPUT CHAIN, AND THERE ARE 2 REFERENCES TO IN IN THE INPUT, THE FIRST ONE BEING AN ADDITION OF SOME SORT, AND THE SECOND BEING A DELETION, THEN THE ORIGINAL JOE AT THE FAR END OF THE OUTPUT CHAIN WOULD SURVIVE AND THE JOE JUST ADDED WOULD BE DELETED. DELETIONS SHOULD PRECEDE ADDITIONS, HOWEVER EVEN THIS WILL NOT NECESSARILY PREVENT ALL TRAGEDIES.

'SEE' LADDER REFERENCES ARE PROCESSED MUCH LIKE TLE'S IN INPUT/SETUP. IN THE UPDATE STAGE, HOWEVER, THE PROCESSING IS AS DESCRIBED IN THE JUNE 9 GENERAL SPECIFICATIONS. THIS HAPPENS ON AN INPUT GRP BY INPUT GRP BASIS, AND PRECEDES REGULAR PROCESSING AND RECHAINING TO THE OUTPUT CHAIN FOR THE GRP. A CGLE GRP WILL HAVE SEE TYPE PROCESSING DONE ON IT WITH RESPECT TO THE REFERRED-TO GRP BEFORE OTHER PROCESSING IS DONE. THIS BUG SHOULD NOT CAUSE MUCH TROUBLE, ESPECIALLY AT PRESENT, SINCE THE MATERIAL APPEARS TO HAVE SO FEW 'SEE' REFERENCES (ONLY 1 IN BATCH 1).

TIME ENTRIES ARE NOT HANDLED IN 'SEE' REFERENCES. THEY ARE TAKEN FROM THE CURRENT TIME ENTRY, IF ANY, REGARDLESS.

IN THE OUTPUT FORMATTING STAGE ACTORS THAT WERE READ IN BY

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A 'SEE' LADDER REFERENCE

AND NOT DELETED ARE FORMATTED OUT WITH A QUESTION MARK FOLLOWING THEM. AT PRESENT THIS IS TRUE OF CGLE ACTORS AS WELL. THIS IS DONE IN ORDER TO LOCATE CGLE'S MORE EASILY ON THE PRINTOUT SINCE CGLE'S HAVE NOT BEEN TESTED THOROUGHLY, AND SUCCESSFUL ONES ARE SCARCE ON THE ERROR PRINTOUTS.

AFTER OUTPUT CHAIN SETUP, ANY CGLE'S LEFT ARE PUT THROUGH INPUT/SETUP PROCESSING AND CHAINED TO THE CAST GRPS THAT REFERRED TO THEM. THE LINK IS IN THE REFERRING GRP'S GCB IN THE GCG ARRAY, AND POINTS TO THE REFERRED-TO GRP'S GCB.

IN INPUT/SETUP REFERRED-TO CGLE GRPS ARE READ IN AND APPENDED TO THE S BUFFER AS THEIR REFERRING ITEMS ARE ENCOUNTERED. AFTER THIS THE GCG ELEMENT OF THE REFERRING GRP'S GCB IS SET TO CONTAIN THE LAST LOC OF THE REFERRED-TO GRP IN THE S BUFFER. AFTER THE TLE OR SLE SETUP STAGE, IF ANY, EACH GCB IN THE INPUT CHAIN IS EXAMINED TO SEE IF ITS GCG ELEMENT POINTS TO A REFERRED-TO CAST GRP IN THE S BUFFER. IF SO, THIS REFERRED-TO GRP IS ALSO SET UP, WITH THE GCG PTR IN THE REFERRING GRP NOW RESET TO POINT TO THE REFERRED-TO GRP'S GCB.

WHEN UPDATE PROCESSING IS DONE ON AN INPUT CHAIN GRP, IT IS AGAIN CHECKED TO SEE IF IT HAS A CGLE. IF SO, THEN THE REFERRED-TO GRP IS LOGICALLY SUBSTITUTED FOR THE OUTPUT CHAIN TEMPORARILY, AND THEN NORMAL UPDATE PROCESSING IS DONE ON IT. AFTER THE GRP IS PROCESSED, THE RESULT IS CHAINED TO THE ACTUAL OUTPUT CHAIN.

IF BLKSIZE PROBLEMS OCCUR FOR LADA IT WILL BE NECESSARY TO CHANGE BOTH THE DCB ON THE DD CARD AND THE S & Z BUFFERS IN LADDR. THIS, AS FAR AS I CAN SEE, IS AS SIMPLE AS IT SOUNDS, EXCEPT THAT CORE PROBLEMS MAY ARISE. THIS IS NEITHER A HIGH NOR A LOW PROBABILITY. LADDR'S OPTIONS ARE IN COLS 1-32, AND THE OPTION CHAIN IS IN COLS 33-38. THE REMAINDER OF EACH CARD IS IGNORED.

RECOMMENDED OPTIONS FOR A FIRST RUN ARE 2, 6, 7, AND 27.

GENERAL DESCRIPTION OF FILE USAGE

DDNAME USE

SYSIN	ALWAYS USED FOR OPTION CHAIN.
SYSPRINT	ALWAYS USED FOR PRINT FILE.
LADA	ALWAYS USED, INTERMEDIATE STORAGE, DA KEYED OUTPUT.
STRU	USED FOR DA KEYED INPUT WHEN OPTION 6 IS 0.
STRS	USED FOR SEQ UNKEYED INPUT WHEN OPTION 6 IS 1.
LADS	USED ONLY FOR SEQ UNKEYED OUTPUT WHEN OPTION 7 IS 1.

LADA IS USED FOR INTERMEDIATE STORAGE OF A SEASON'S PERFORMANCES, AND, IF OPTION 2 IS NOT SPECIFIED OR THE OUTPUT WANTED IS ONLY IN THE LAST SEASON PROCESSED, THEN LADA MAY ALSO SERVE AS THE OUTPUT FILE. THIS WOULD NECESSITATE CHANGING THE DISP PARAMETER TO 'KEEP' FOR THE LADA DD STATEMENT.

STRU IS THE MAIN (STRUCTURED DATA) INPUT FILE IF OPTION 6 IS NOT SPECIFIED, OTHERWISE STRS IS. IF USE OF STRU, LADS, OR STRS IS NOT SPECIFIED ON ANY OPTION CARD THEN ITS DD CARD NEED NOT BE PRESENT IN THE JCL DECK.

LADDER'S DATA OUTPUT IS IN THE SAME FORMAT AS THE STRU OR STRS FILE INPUT EXCEPT THAT LADDER ENTRIES AND PAGE ENTRIES ARE NO LONGER PRESENT. IN THE LADA FILE THE BLKS ARE LIKE THE KEYED STRU FILE BLKS. IN THE LADS FILE BLKS ARE UNKEYED, WITH THE KEY AND 2 BLANKS APPENDED TO THE FRONT OF THE BLK JUST AS WITH THE STRS FILE INPUT.

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INTERNAL PROGRAMMING NOTES

FOR LADDER K AND L ARE SCRATCH VARIABLES USED ONLY IN SHORT SEQUENCES OF INSTRUCTIONS.

IGP1=0 IF NO PRE-LADDER GRPS, =1 IF THERE IS AT LEAST ONE PRE-LADDER GROUP.

IGP2 PTS TO LAST PRE-LADDER GRP, =0 IF NO PRE-LADDER GRPS.

IGP3 PTS TO 1ST LADDER GRP, =0 IF NO LADDER GRPS.

IGP4 PTS TO LAST LADDER GRP, =0 ONLY IF NO RA GRPS AT ALL EXIST.

THE GCB (GROUP CONTROL BLOCK) LINK FORWARD VARIABLE IS GF.

THE ICB (ITEM CONTROL BLOCK) LINK FORWARD FIELD IS ILK.

THE LENGTH OF EACH ACTOR OR ROLE CHAIN IS KEPT IN THE CHAIN'S GCB.

THE KEYS SUBROUTINE SEARCHES THE OUTPUT CHAIN FOR AN ITEM CORRESPONDING TO ONE DESCRIBED IN THE CALL. THE CALLING SEQUENCE IS ..

1ST PARAMETER GRP IN WHICH KEY RESIDES (GCB NUMBER)

2ND PARAMETER OFFSET IN THE SUBGROUP OF THIS GROUP.

0= 1ST ON CHAIN AS DOES 1.

AN IMPLICIT PARAMETER IS THE ARRAY, SBITS, DEFINED ON SBITE. IN THIS ARRAY IF THE CORRESPONDING BIT IS A 1 THEN KEYING IS ATTEMPTED ON THAT PARTICULAR

KIND OF ITEM. IF MORE THAN ONE OF THE BITS IS 1 THEN THE ORDER OF SEARCHING IS .. ROLE THEN ACTOR, THEN TIME (SECOND BIT, THIRD BIT, THEN FIRST BIT).

THE VALUES RETURNED ARE IN IRG, IROF, AND RBITS RESPECTIVELY. IRG IS 0 IF THE SEARCH WAS UNSUCCESSFUL. OTHERWISE IRG IS THE NUMBER OF THE GCB FOR THE GRP WHICH CONTAINS THE KEY, AND IROF IS THE ITEM CONTROL BLOCK NUMBER (NOT OFFSET WITHIN SUBGRP, AS IN CALLING SEQUENCE, BUT ABSOLUTE). RBITS INDICATES WHICH KIND OF ITEM THE KEYING WAS ACHIEVED ON, BEING INTERPRETED THE SAME AS SBITS.

IN ADDITION, IGL INDICATES THE PREVIOUS GRP ON THE LADDER CHAIN IF ANY (=0 IF 1ST GRP), AND IIL INDICATES THE ABSOLUTE ITEM CONTROL BLOCK OF THE PRECEDING ITEM IN THE SUBGROUP, IF ANY (=0 IF NONE).

OTHER MORE EXTENSIVE, BUT LESS RELIABLE NOTES CAN BE FOUND IN THE FILING CABINET IN THE LAWRENCE ROOM.

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CONTROL OF THE SELECTION PROCESS AT ANY ONE POINT IN THE RUN LIES IN THE SELECTION CONTROL BLOCK (SCB), WHICH CONSISTS OF ONE DATE RANGE ENTRY AND 0 OR MORE SELECTION STATEMENT ENTRIES. A SELECTION STATEMENT ENTRY CONTAINS THE FOLLOWING ITEMS OF INFORMATION ..

- A) INCLUSIVENESS (A DIGIT FROM 1 TO 4)
- B) SECTION TYPE S
- C) THEATRE M
- D) TIME C
- E) TITLE T
- F) SYNTACTIC ROLE R
- G) SYNTACTIC ACTOR A

EACH ITEM, EXCEPT INCLUSIVENESS IS A VARYING LENGTH CHARACTER STRING. MATCHING OF A SORT RECORD WITH ANY SELECTION ENTRY IN THE PROPER DATE RANGE CAUSES THE RECORD AND POSSIBLY THE SORT RECORDS OF THE GROUP, SECTION, OR PERFORMANCE IN WHICH IT IS FOUND TO BE PUT INTO THE OUTPUT FILE. WHETHER ONLY THE MATCHING RECORD ITSELF OR THE ENTIRE GROUP, SECTION, OR PERFORMANCE IS PUT OUT DEPENDS ON THE INCLUSIVENESS ITEM OF THE SELECTION ENTRY ON WHICH THE MATCH WAS MADE,
1=RECORD, 2=GROUP, 3=SECTION, 4=PERFORMANCE.

THE LETTER FOLLOWING EACH TYPE OF ITEM IN THE ABOVE TABLE IS THE ITEM TAG USED IN INPUT CONTROL STATEMENTS TO SPECIFY THE TYPE OF EACH ITEM.

SELECTION BY A SELECTION ENTRY IS DETERMINED IN THE FOLLOWING WAY .. FIRST THE DATE OF THE SORT RECORD MUST BE IN THE DATE RANGE OF THE SCB. SECOND, EACH ITEM IN THE SELECTION ENTRY OTHER THAN INCLUSIVENESS, THAT HAS A NONZERO LENGTH MUST MATCH THE CORRESPONDING ITEM IN THE SORT RECORD.

THE SELECTION ENTRIES WILL BE DEFINED BY CONTROL RECORDS IN THE FORM OF SELECTION CONTROL STATEMENTS IN THE FILE SYSIN. SINCE IT IS EXPECTED THAT THIS FILE WILL CONSIST OF CARDS, EACH LETTER READ IN THE DATA PORTION OF A SELECTION ENTRY ITEM WILL BE TRANSLATED TO A LOWER CASE LETTER IF IT IS ENTERED IN UPPER CASE UNLESS THE LETTER IS PRECEDED BY A SLASH, IN WHICH CASE THE SLASH WILL BE LEFT OUT AND THE CHARACTER FOLLOWING IT WILL NOT BE TRANSLATED. A CHARACTER IMMEDIATELY FOLLOWING AN INITAIL SLASH, INCLUDING ANOTHER SLASH OR A BLANK, IS TAKEN AS IS AND IS COUNTED AS A NONBLANK CHARACTER FOR PURPOSES OF DELIMITING THE STATEMENT.

A SELECTION STATEMENT IS ONE THAT HAS AN INCLUSIVENESS TAG OF 1, 2, 3, 4, OR 6. AN ORDINARY SELECTION STATEMENT IS ONE THAT HAS AN INCLUSIVENESS TAG OF 1, 2, 3, OR 4.

EACH STATEMENT CONSISTS OF THE INCLUSIVENESS ITEM PLUS 0 OR MORE OTHER ITEMS, THE STATEMENT ENDING WITH 2 CONSECUTIVE BLANKS. EACH ITEM WILL START WITH A CHARACTER INDICATING WHAT SORT OF ITEM IT IS, TITLE, THEATRE, ROLE, ETC., FOLLOWED BY THE ITEM ITSELF, AND, EXCEPT FOR THE LAST ITEM IN A STATEMENT ENDING WITH THE '&' SIGN. THE LAST ITEM WILL BE DELIMITED BY THE 2 CONSECUTIVE BLANKS THAT END THE STATEMENT. AN ENTIRE GROUP OF STATEMENTS THAT FORM AN SCB WILL BE DELIMITED BY A STATEMENT WITH AN INCLUSIVENESS TAG OF 7.

FOLLOWING THIS STATEMENT PROCESSING OF SORT RECORDS WILL PROCEED UNTIL A DATE GREATER THAN THE 2ND DATE IN THE DATE RANGE ENTRY OF THE SCB IS ENCOUNTERED. THUS SELECTION SPECIFICATIONS SHOULD BE SET UP WITH DATE RANGES IN CHRONOLOGICAL ORDER.

EACH ORDINARY SELECTION STATEMENT CORRESPONDS TO ONE SCB ENTRY.

EACH REPEAT STATEMENT CORRESPONDS TO AS MANY SELECTION ENTRIES AS ARE DEFINED BY THE REPITIVE SPECIFICATIONS.

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AN ORDINARY SET WILL BE FORMED FROM THE ITEMS IN THE SELECTION STATEMENT AS WELL AS THE LAST ITEM OF EACH OTHER TYPE USED IN A PREVIOUS SELECTION STATEMENT UNLESS SPECIFIED OTHERWISE. AN EXAMPLE SHOULD ILLUSTRATE THIS ..

5 1738 05 23 1738 06 14

1MDL&T/HAMLET, /PRINCE OF /DENMARK
4MCG

THE STATEMENT ON THE FIRST LINE, LIKE ALL STATEMENTS, STARTS WITH THE STATEMENT TAG, IN THIS CASE 5, WHICH INDICATES THAT IT IS A DATE RANGE STATEMENT. THE DATE RANGE ITSELF IS IN A FIXED LENGTH FORMAT AND HENCE NEEDS NO DELIMITERS AT ITS END.

THE START OF THE SECOND STATEMENT IS INDICATED BY THE FIRST NONBLANK CHARACTER FOLLOWING THE END OF THE DATE RANGE STATEMENT. THE 1 IS AN INCLUSIVENESS CHARACTER INDICATING THAT IF A MATCH IS FOUND ON THE SELECTION ENTRY RESULTING FROM THIS STATEMENT THEN ONLY THE SORT RECORD ON WHICH THE

MATCH IS MADE NEED BE PUT OUT AS A RESULT OF THE MATCH. THE M FOLLOWING THE INCLUSIVENESS TAG INDICATES THAT THE ITEM FOLLOWING IS A THEATRE (THINK MOVIE). THE DL IS THE ITEM. THE '&' INDICATES THE END OF THE ITEM. CONTINUING ANALOGOUSLY THE 'T' INDICATES A TITLE, THE DOUBLE BLANKS FOLLOWING '/HAMLET, /PRINCE OF /DENMARK' INDICATE BOTH THE END OF '/HAMLET, /PRINCE OF /DENMARK' AND THE END OF THE STATEMENT.

AS A RESULT OF THE FIRST 2 STATEMENTS ANY SORT RECORD WITH A THEATRE ENTRY OF 'DL' AND A TITLE ENTRY OF '/HAMLET, /PRINCE OF /DENMARK' BETWEEN THE DATES OF MAY 23 1738 AND JUNE 14 1738 WILL BE PUT OUT. IN ADDITION THE STATEMENT INTERPRETER HAS REMEMBERED THE TWO ITEMS, THEATRE, AND TITLE, IN CASE OF LATER NEED. THIS USE IS ILLUSTRATED BY THE SELECTION ENTRY RESULTING FROM THE THIRD STATEMENT. THIS STATEMENT HAS ONLY ONE ITEM, A 'CG' THEATRE ENTRY, BUT SINCE IT HAS NOT BEEN TOLD OTHERWISE, THE STATEMENT INTERPRETER INTERPRETS THIS TO MEAN THAT THE OTHER KINDS OF ITEMS THAT HAVE BEEN DEFINED PREVIOUSLY, IN THIS CASE ONLY THE TITLE, '/HAMLET, /PRINCE OF /DENMARK', ARE TO REMAIN THE SAME. THAT IS, THE ENTRY CAUSES NOT ONLY MATCHING ON 'CG' BUT ON '/HAMLET, /PRINCE OF /DENMARK' AS WELL, EVEN THOUGH THE THIRD STATEMENT DOES NOT MENTION '/HAMLET, /PRINCE OF /DENMARK'. THE NUMBER 4, THE INCLUSIVENESS INDICATOR FOR THE THIRD STATEMENT INDICATES THAT IF A MATCH IS FOUND FOR THIS SELECTION ENTRY THEN THE ENTIRE SET OF SORT RECORDS RESULTING FROM THAT PERFORMANCE ARE TO BE PUT OUT .. 3 WOULD MEAN THE ANALOGOUS THING FOR THE SECTION, AND 2 FOR THE GROUP. THE WAY TO 'CLEAR' THE INTERPRETER'S MEMORY OF A PREVIOUSLY DEFINED ITEM IS TO REDEFINE IT (THE ITEM) AS A ZERO LENGTH CHARACTER STRING, FOR EXAMPLE ..

1T

WOULD CLEAR THE TITLE AS THOUGH IT HAD NOT BEEN MENTIONED PREVIOUSLY.

IT SHOULD BE REMEMBERED, HOWEVER, THAT THE ABOVE STATEMENT WOULD RESULT IN A SELECTION ENTRY. CLEARING WORKS JUST AS WELL IN A STATEMENT THAT HAS OTHER ITEMS IN IT ..

1T&MHAY

WOULD CLEAR THE TITLE, AND PROVIDE FOR SELECTION OF SECTIONS OCCURRING AT 'HAY' ON THE SAME BASIS AS THE PREVIOUS DEFAULTS EXCEPT THAT ANY TITLE WOULD BE ACCEPTABLE.

A STATEMENT BEGINNING WITH AN INCLUSIVENESS TAG OF '6' IS A REPEAT STATEMENT. THE REPEAT STATEMENT MAY CONTAIN ANYTHING THAT AN ORDINARY SELECTION ENTRY STATEMENT HAS, BUT IN ADDITION IT CONTAINS, IMMEDIATELY FOLLOWING THE INCLUSIVENESS TAG, 2 NUMBERS THAT FORM ITS REPETITIVE SPECIFICATION. THESE NUMBERS DEFINE RESPECTIVELY THE FIRST AND LAST PREVIOUSLY DEFINED SELECTION ENTRIES THAT ARE TO BE USED IN THE REPETITION. THESE DEFINED SELECTION ENTRIES ARE REPEATED EXCEPT FOR

MEMBER NAME DOCITEMS

CHANGES DEFINED IN THE USUAL WAY IN THE REMAINDER OF THE REPETITIVE STATEMENT. EXAMPLE, SUPPOSE THIS WERE THE 4TH STATEMENT.

6 1 2 AJONES&RHAMLET

TWO NEW SELECTION ENTRIES WOULD BE FORMED, THE FIRST REQUIRING DL, '/HAMLET, /PRINCE OF /DENMARK', JONES, AND HAMLET .. THE SECOND REQUIRING CG, '/HAMLET, /PRINCE OF /DENMARK', JONES, AND HAMLET. THE INCLUSIVENESS TAG OF EACH SELECTION ENTRY THUS FORMED WILL BE THE SAME AS THAT OF THE ORGINAL ENTRY UPON WHICH IT WAS BASED.

THE MEMORY OF THE STATEMENT INTERPRETER IS CLEARED BY A REPEAT STATEMENT EXCEPT FOR THE ITEMS USED IN THE STATEMENT. THE CLEARING IS DONE BEFORE THE ITEMS IN THE STATEMENT ARE PROCESSED, THUS NO DEFAULTS ARE USED.

REPEAT STATEMENTS AND DATE RANGE STATEMENTS MUST BEGIN IN COLUMN 1 OF A CARD OR THE EQUIVALENT.

ITEMGET REFERENCE SHEET

INCLUSIVENESS AND STATEMENT TYPE NUMBERS ..

- 0 CLEAR ALL DEFAULTS FOR SCB
- 1 SELECT RECORDS
- 2 SELECT GROUPS
- 3 SELECT SECTIONS
- 4 SELECT PERFORMANCES
- 5 SET UP DATE RANGE STATEMENT
- 6 START OF REPEAT TYPE STATEMENT
- 7 INITIATE SELECTION STAGE, END OF SELECTION SETUP STAGE.
- 8 CLEAR ALL DEFAULTS AND SCB, EXCEPT FOR DATE RANGE.
- 9 STOP EXECUTION IMMEDIATELY.

ITEM TYPE CHARACTERS ..

- S SECTION LETTER
- M THEATRE (MOVIE)
- C TIME ENTRY (CLOCK)
- T TITLE
- R ROLE
- A ACTOR

ITEMS ARE DELIMITED BY THE '&' IF FOLLOWED BY ANOTHER ITEM IN THE SAME SE, OTHERWISE THEY ARE DELIMITED BY THE DOUBLE BLANK THAT DELIMITS THE END OF THE STATEMENT. STATEMENTS ARE DELIMITED EXCLUSIVELY BY THE DOUBLE BLANK. SCB'S ARE DELIMITED BY A TYPE 7 STATEMENT.

FORMAT FOR A REPEAT SPECIFICATION IS ..

- COL 1 '6'
- COL 2 IGNORED
- COL 3-6 FIRST SE, RIGHT JUSTIFIED
- COL 7-10 2ND SE, RIGHT JUSTIFIED
- CO. 11-13 IGNORED
- COL 14 ITEM TYPE CHAR FOR 1ST ITEM

FORMAT FOR DATE RANGE STATEMENT ..

- COL 1 '5'
- COL 2 IGNORED
- COL 3-7 EARLIER YEAR
- COL 8 IGNORED
- COL 9-10 EARLIER MONTH NUMBER

MEMBER NAME	DOCITEMS
COL 11	IGNORED
COL 12-13	EARLIER DAY OF MONTH
COL 14	IGNORED
COL 15-18	LATER YEAR
COL 19	IGNORED
COL 20-21	LATER MONTH NUMBER
COL 22	IGNORED
COL 23-24	LATER DAY OF MONTH
COL 25	SEARCH RESUMES FOR NEXT STATEMENT.

IN ORDER TO SAVE CORE FOR MORE SE'S THE ITEMGET PROGRAM (NAME = CTRL) IS CONSTRUCTED AS AN OVERLAY OF 3 PROCEDURES, THE ROOT, THE CONTROL CARD INTERPRETER, AND THE SELECTOR.

CARD INPUT (SYSIN FILE) IS TO THE ROOT SECTION FOR THE OPTION CARD WHICH HAS 80 BINARY OPTION LOCATIONS. ALL OTHER SYSIN INPUT IS TO THE CONTROL CARD INTERPRETER. THIS INTERPRETER CONSIDERS ALL INPUT TO BE IN THE FORM OF STATEMENTS. OFFICIALLY A STATEMENT STARTS WITH A DIGIT FROM 0 TO 8, AND ENDS WITH 2 OR MORE CONSECUTIVE BLANKS. ACTUALLY THE INTERPRETER MAY BE SOMEWHAT MORE LENIENT, BUT DON'T COUNT ON IT.

MEMBER NAME DOCFRMAT

*** THE FORMAT PROGRAM ***

THIS PROGRAM, CALLED FRMAT, IS USED TO PRINT SORT RECORDS. IT CAN PRINT THE OUTPUT OF EITHER THE SORT/MERGE PROCESS OR THE ITEMS STEP. THE PRINTOUT IS FORMATTED SO AS TO PRINT MOST SORT RECORDS ON A SINGLE LINE. IF, HOWEVER, AN ITEM IS TOO LONG FOR ITS FIELD O THE LINE THEN THE REMAINDER OF THE ITEMS FOLLOWING IT WILL STILL BE PRINTED IN THEIR PROPER COLUMNS, BUT ON THE NEXT LINE. IF A SYNTACTIC ACTOR OVERFLOWS ITS FIELD THEN THE LAST PART OF THE ACTOR IS PRINTED AT THE BEGINNING OF THE NEXT LINE. MOST SUCH SYNTACTIC ACTORS ARE IN ERROR.

FRMAT HAS 2 INPUT FILES, SRTD & SYSIN. SRTD IS FOR SORT RECORD INPUT. SYSIN IS FOR THE OPTION CARD. THERE ARE 32 OPTION LOCCTIONS IN COLS 1-32. ONLY OPTION 1 IS MEANINGFUL. IT SHOULD BE A 0, EXCEPT FOR PROGRAM DEBUGGING. THE OTHER 31 OPTION LOCATIONS MUST CONTAIN EITHER 0'S OR 1'S. THE OUTPUT FILE IS SYSPRINT. IT IS FIXED LENGTH AND UNBLOCKED. BLKSIZE IS 133.

MEMBER NAME DOCMAIL

LSP MAILING LIST PROGRAM

INPUT TO THIS PROGRAM IS IN THE FORM OF 80 BYTE RECORDS (CARDS) THAT ARE DIVIDED INTO TWO 40 BYTE FIELDS, CORRESPONDING TO ONE LINE EACH OF AN ADDRESS. THE MAXIMUM NUMBER OF CARDS FOR ONE ADDRESS IS 3, CONSTITUTING A LIMIT OF 6 LINES FOR AN ADDRESS.

THE DELIMITER FOR SEPARATING ONE ADDRESS FROM ANOTHER IS THE '*' WHICH APPEARS SOMEWHERE IN THE LAST CARD OF EACH ADDRESS.

THE LAST ADDRESS MUST BE FOLLOWED BY A CARD HAVING AN ASTERISK IN COLUMN ONE.

THREE MODIFICATIONS ARE PERFORMED ON THE ADDRESS LIST BEFORE IT IS PRINTED ..

- 1) THE DELIMITING ASTERISK IS REMOVED.
- 2) THE ADDRESSES ARE SORTED ON THE 40 BYTES OF THE FIRST LINE.
- 3) IF THERE IS A '/' IN THE FIRST FIELD OF ANY ADDRESS THEN THE CHARACTERS PRECEDING THE SLASH ARE PLACED AFTER ALL THE OTHER NONBLANK CHARACTERS FOLLOWING THE '/' IN THE SAME FIELD, SEPARATED FROM THE NONBLANK CHARACTERS BY ONE BLANK. ALSO THE SLASH IS REMOVED AND THE RESULTING CHARACTER STRING IS PLACED LEFT-ADJUSTED ON THE FIRST PRINTED LINE OF THE ADDRESS.