

THE CHANGING WORLD OF COBOL

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HP GENERAL SYSTEMS

This talk will cover some of the differences between COBOL/3000 and ANSI COBOL-74 along with how HP users will be able to convert. There will also be a brief discussion of the directions the ANSI COBOL Committee is taking with the next version of the COBOL Standard.

NEW FEATURES IN COBOL-74

1. Indexed I/O
2. Relative I/O
3. Enhanced SORT/MERGE Facility
4. File Status
5. STRING/UNSTRING
6. Multiple COPYLIB Files

CONVERSION CONSIDERATIONS

1. Conversion Guide/Program
2. FIPS Pub 43
3. New Reserved Words
4. EXAMINE vs. INSPECT
5. Microcode Support
6. COPYLIB Editor
7. REMARKS/NOTE Paragraphs deleted

COBOL-80 DIRECTIONS (NOT FINAL)

I. NEW FEATURES

- A. CODASYL Data Base Facility
- B. Reference Modification
- C. 48 Levels of Subscripting
- D. USAGE BIT

II. FEATURES TO BE PHASED OUT OR DELETED

- A. 77 & 66 Level Data items
- B. LABEL RECORDS Clause/VALUE OF Clause
- C. ADD/SUBTRACT CORRESPONDING
- D. ALTER Statement
- E. PICTURE Character A
- F. Most IDENTIFICATION DIVISION Paragraphs
- G. File related clauses moved
- H. INSPECT TALLYING. . .REPLACING

THE CHANGING WORLD OF COBOL

- NEW FEATURES IN COBOL-74
- CONVERSION CONSIDERATIONS
- COBOL-80

NEW FEATURES

- INDEXED I/O
- RELATIVE I/O
- ENHANCED SORT/MERGE FACILITY
- FILE STATUS
- STRING/UNSTRING
- MULTIPLE COYPLIB FILES

S O R T S T A T E M E N T

SORT FILE-NAME-1 ON { ASCENDING
DESCENDING } KEY DATA-NAME-1 [DATA-NAME-2] . . .
[ON { ASCENDING
DESCENDING } KEY DATA-NAME-3 [DATA-NAME-4] . . .] . . .

[COLLATING SEQUENCE IS ALPHABET-NAME]
{ INPUT PROCEDURE IS SECTION-NAME-1 { THROUGH
THRU } SECTION-NAME-2 }
USING FILE-NAME-2 [, FILE-NAME-3] . . . }
{ OUTPUT PROCEDURE IS SECTION-NAME-3 { THROUGH
THRU } SECTION-NAME-4 }
GIVING FILE-NAME-4 }

MERGE STATEMENT

MERGE FILE-NAME-1 ON $\left\{ \begin{array}{c} \text{ASCENDING} \\ \text{DESCENDING} \end{array} \right\}$ KEY DATA-NAME-1 $\left[\text{, DATA-NAME-2} \right] \dots$
 $\left[\text{ON } \left\{ \begin{array}{c} \text{ASCENDING} \\ \text{DESCENDING} \end{array} \right\} \text{ KEY DATA-NAME-3 } \left[\text{, DATA-NAME-4} \right] \dots \right] \dots$

$\left[\text{COLLATING } \underline{\text{SEQUENCE}} \text{ IS ALPHABET-NAME} \right]$

USING FILE-NAME-2, FILE-NAME-3 $\left[\text{, FILE-NAME-4} \right] \dots$

$\left\{ \begin{array}{l} \underline{\text{OUTPUT PROCEDURE}} \text{ IS SECTION-NAME-1 } \left[\left\{ \begin{array}{c} \text{THROUGH} \\ \text{THRU} \end{array} \right\} \text{ SECTION-NAME-2} \right] \\ \text{GIVING FILE-NAME-5} \end{array} \right\}$

STRING STATEMENT

STRING $\left\{ \begin{array}{l} \text{IDENTIFIER-1} \\ \text{LITERAL-1} \end{array} \right\} \left[\begin{array}{l} , \text{IDENTIFIER-2} \\ , \text{LITERAL-2} \end{array} \right] . . . \underline{\text{DELIMITED}} \text{ BY } \left\{ \begin{array}{l} \text{IDENTIFIER-3} \\ \text{LITERAL-3} \\ \text{SIZE} \end{array} \right\}$

$\left[\left\{ \begin{array}{l} \text{IDENTIFIER-4} \\ , \text{LITERAL-4} \end{array} \right\} \left[\begin{array}{l} , \text{IDENTIFIER-5} \\ , \text{LITERAL-5} \end{array} \right] . . . \underline{\text{DELIMITED}} \text{ BY } \left\{ \begin{array}{l} \text{IDENTIFIER-6} \\ \text{LITERAL-6} \\ \text{SIZE} \end{array} \right\} \right] . . .$

INTO IDENTIFIER-7 $\left[\text{WITH POINTER IDENTIFIER-8} \right]$

$\left[; \text{ ON } \underline{\text{OVERFLOW}} \text{ IMPERATIVE-STATEMENT} \right]$

UNSTRING STATEMENT

UNSTRING IDENTIFIER-1

[DELIMITED BY [ALL] { IDENTIFIER-2
LITERAL-1 } [, OR [ALL] { IDENTIFIER-3
LITERAL-2 }] . . .]

INTO IDENTIFIER-4 [, DELIMITER IN IDENTIFIER-5] [, COUNT IN IDENTIFIER-6]

[, IDENTIFIER-7 [, DELIMITER IN IDENTIFIER-8] [, COUNT IN IDENTIFIER-9]] . . .

[WITH POINTER IDENTIFIER-10] [TALLYING IN IDENTIFIER-11]

[; ON OVERFLOW IMPERATIVE-STATEMENT]

CONVERSION CONSIDERATIONS

- CONVERSION GUIDE/PROGRAM
- FIPS PUB 43
- NEW RESERVED WORDS
- EXAMINE/INSPECT
- MICROCODE SUPPORT
- COPYLIB EDITOR
- REMARKS/NOTE PARAGRAPH



FEDERAL INFORMATION
PROCESSING STANDARDS PUBLICATION

1975 DECEMBER 1

U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards



**AIDS FOR
COBOL PROGRAM
CONVERSION
(FIPS PUB 21 to FIPS PUB 21-1)**

**CATEGORY: SOFTWARE
SUBCATEGORY: PROGRAMMING LANGUAGE**

E-04.10

The following Reserved Words have been added to ANSI COBOL in the 1974 standard:

ALSO	LENGTH
BOTTOM	LINAGE
CANCEL	LINAGE-COUNTER
CD	MERGE
CHARACTER	MESSAGE
CODE-SET	NATIVE
COLLATING	ORGANIZATION
COMMUNICATION	OVERFLOW
COUNT	POINTER
DATE	PRINTING
DAY	PROCEDURES
DEBUG-CONTENTS	QUEUE
DEBUG-ITEM	RECEIVE
DEBUG-LINE	REFERENCES
DEBUG-NAME	RELATIVE
DEBUG-SUB-1	REMOVAL
DEBUG-SUB-2	REWRITE
DEBUG-SUB-3	SEGMENT
DEBUGGING	SEND
DELETE	SEPARATE
DELIMITED	SEQUENCE
DELIMITER	SORT-MERGE
DESTINATION	STANDARD-1
DISABLE	START
DUPLICATES	STRING
DYNAMIC	SUB-QUEUE-1
EGI	SUB-QUEUE-2
EMI	SUB-QUEUE-3
ENABLE	SUPPRESS
END-OF-PAGE	SYMBOLIC
EOP	TABLE
ESI	TERMINAL
EXCEPTION	TEXT
EXTEND	TIME
INITIAL	TRAILING
INSPECT	UNSTRING

The following words are tentatively planned for HP extensions to COBOL at a future date. This list is subject to change.

C01	INTRINSIC
C02	LABELS
C03	NOLIST
C04	SEQ
C05	SW0
C06	SW1
C07	SW2
C08	SW3
C09	SW4
C10	SW5
C11	SW6
C12	SW7
CC	SW8
CONDITIONALLY	SW9
EBCDIC	UN-EXCLUSIVE
EXCLUSIVE	VOL
EXDATE	WHEN-COMPILED
FREE	

EXAMINE STATEMENT

EXAMINE IDENTIFIER

$\left\{ \begin{array}{l} \text{TALLYING } \left\{ \begin{array}{l} \text{UNTIL FIRST} \\ \text{ALL} \\ \text{LEADING} \end{array} \right\} \text{ LITERAL-1 } \left[\text{REPLACING BY LITERAL-2} \right] \\ \\ \text{REPLACING } \left\{ \begin{array}{l} \text{ALL} \\ \text{LEADING} \\ \text{[UNTIL] FIRST} \end{array} \right\} \text{ LITERAL-3 BY LITERAL-4} \end{array} \right\}$

INSPECT STATEMENT

?

Format 1

INSPECT identifier-1 TALLYING

$$\left\{ , \text{identifier-2} \text{ FOR } \left\{ , \left\{ \begin{array}{l} \text{ALL} \\ \text{LEADING} \\ \text{CHARACTERS} \end{array} \right\} \left\{ \begin{array}{l} \text{identifier-3} \\ \text{literal-1} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-4} \\ \text{literal-2} \end{array} \right\} \right\} \left[\dots \right] \left[\dots \right] \right\}$$

Format 2

INSPECT identifier-1 REPLACING

$$\left\{ \begin{array}{l} \text{CHARACTERS BY } \left\{ \begin{array}{l} \text{identifier-6} \\ \text{literal-4} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-7} \\ \text{literal-5} \end{array} \right\} \\ \left\{ , \left\{ \begin{array}{l} \text{ALL} \\ \text{LEADING} \\ \text{FIRST} \end{array} \right\} \left\{ , \left\{ \begin{array}{l} \text{identifier-5} \\ \text{literal-3} \end{array} \right\} \text{ BY } \left\{ \begin{array}{l} \text{identifier-6} \\ \text{literal-4} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-7} \\ \text{literal-5} \end{array} \right\} \right\} \left[\dots \right] \left[\dots \right] \right\} \end{array} \right\}$$

Format 3

INSPECT identifier-1 TALLYING

$$\left\{ , \text{identifier-2} \text{ FOR } \left\{ , \left\{ \begin{array}{l} \text{ALL} \\ \text{LEADING} \\ \text{CHARACTERS} \end{array} \right\} \left\{ \begin{array}{l} \text{identifier-3} \\ \text{literal-1} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-4} \\ \text{literal-2} \end{array} \right\} \right\} \left[\dots \right] \left[\dots \right] \right\}$$

REPLACING

$$\left\{ \begin{array}{l} \text{CHARACTERS BY } \left\{ \begin{array}{l} \text{identifier-6} \\ \text{literal-4} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-7} \\ \text{literal-5} \end{array} \right\} \\ \left\{ , \left\{ \begin{array}{l} \text{ALL} \\ \text{LEADING} \\ \text{FIRST} \end{array} \right\} \left\{ , \left\{ \begin{array}{l} \text{identifier-5} \\ \text{literal-3} \end{array} \right\} \text{ BY } \left\{ \begin{array}{l} \text{identifier-6} \\ \text{literal-4} \end{array} \right\} \left[\left[\begin{array}{l} \text{BEFORE} \\ \text{AFTER} \end{array} \right] \right] \text{ INITIAL } \left\{ \begin{array}{l} \text{identifier-7} \\ \text{literal-5} \end{array} \right\} \right\} \left[\dots \right] \left[\dots \right] \right\} \end{array} \right\}$$

NEW FEATURES FOR COBOL-80

- CODASYL DATA BASE FACILITY
- REFERENCE MODIFICATION
- 48-LEVEL SUBSCRIPTING
- USAGE BIT

FEATURES TO BE PHASED OUT IN COBOL-80

- 77 AND 66 LEVEL DATA ITEMS
- LABEL RECORDS CLAUSE/VALUE OF CLAUSE
- ADD/SUBTRACT CORRESPONDING
- ALTER STATEMENT
- PICTURE CHARACTER "A"
- MOST IDENTIFICATION DIVISION PARAGRAPHS
- FILE RELATED CLAUSES MOVED BETWEEN ENVIRONMENT AND DATA DIVISIONS
- INSPECT TALLYING, .REPLACING