

SYNTALDKU

SYNTAL PROGRAMS
 TRANSLATOR
 AUG. 1971
 W. SLAWSON

OPERATION:

ASSUMING THAT THE INPUT IS A FILE ON DISK 1 AND THAT THE MONITOR
 PRINTS OUT THE DOLLAR SIGNS:

\$A DK3 2/DK1 3,5,7,10

\$GLOAD

\$LOADER V--

>QWP,WA,WS,WR,WT,WL,WH(ALT MODE)

OPTION?

(CR)

FILENAME?

GLUB SRC

THE PROGRAM WILL PRINT THE INPUT TEXT AND VARIOUS TIMING PARAMETERS
 ON THE PRINTER (DAT 6) AND WILL PRINT THE NUMBER OF STATEMENTS
 GENERATED AND THE NUMBER OF ERRORS AT THE END OF THE RUN ON THE
 TELETYPE.

C

TO RUN THE SECOND PASS OF THE PROGRAM - THE MERGE AND SYNTHESIS
 PROGRAMS - THE FOLLOWING PROCEDURE IS FOLLOWED:

\$A DK3 2/MTF 7/MTF1 10

\$GLOAD

>QWSYNG,WMMG,WFM,EMSTOT,WREMSM(ALT MODE)

THIS ASSUMES THAT TWO TAPES ARE MOUNTED ON THE MAGNETIC TAPE DRIVES.
 THE TELETYPE WILL PRINT ERRORS (SELF-EXPLANATORY) AND WILL ADVISE
 WHEN THE RUN IS FINISHED.

NOTE: COMMUNICATION BETWEEN THE FIRST AND SECOND PASSES IS
 ACCOMPLISHED THROUGH A FILE CALLED "TEMPOR SRC" WRITTEN ON
 DK3. ORDINARILY THE USER NEED NOT BE CONCERNED WITH THIS
 FILE, BUT IF THERE IS A DELAY BETWEEN RUNNING THE FIRST AND
 SECOND PASSES OF A JOB, THE USER MAY MERGE AND SYNTHESIZE A
 "TEMPOR SRC" FILE WRITTEN - DURING THE DELAY - BY SOMEONE
 ELSE.

PROGRAM ORGANIZATION:

IN THE FOLLOWING TABLE A TAB MEANS "HAS AS A SUBROUTINE"
 WP(MAIN PROGRAM)

WA(ANALYSER)

WS(SCANNER)

DECODE PACKAGE (EMS-STANDARD)

WL (PRINT TEXT ROUTINE)

BUFOUT (EMS-STANDARD)

WR (READ TEXT ROUTINE)

BUFIN(EMS-STANDARD)

DECODE-ENCODE PACKAGE (EMS-STAND.)

WR (READ TEXT)

PUSHI (FILE: WH)

PUSHF

POPI

POPF

WT (WRITE OUTPUT STATEMENT)

WL (PRINT TEXT)

BUFOUT (EMS-STANDARD)

COMMON VARIABLES:

/MAIN/ ARGSTD THE STANDARD VALUES FOR EACH ARGUMENT OF A PRIMITIVE STATEMENT. EX. SG,TF, AND CNTRL. INITIALIZED TO -1.0, WHICH MEANS THAT A MISSING ARGUMENT IS GIVEN THE VALUE OF THE MOST RECENT OCCURANCE OF THAT ARGUMENT. A POSITIVE VALUE (OR ZERO) IS ASSIGNED IN PLACE OF MISSING ARGUMENTS.

FATAL NUMBER OF ERRORS DETECTED. INITIALIZED TO ZERO.

FON1 THE NAME OF THE STATEMENT RETURNED BY SCAN.

FON2 THE SECOND NAME OF A STATEMENT WHEN APPRICABLE: EX: IN D,NAME THE NAME OF THE MACRO IS RETURNED IN FON2.

/CIO/ INDEV DATA SLOT FOR THE INPUT TEXT. INIT. 3

NOTTY DATA SLOT FOR PRINTING THE TEXT. INIT 6

LXTTY DATA SLOT FOR PRINTING ERRORS. INIT 6

IOTDEV DATA SLOT FOR OUTPUT STATEMENTS INIT 2

/CWST/ TF TRANSFER FUNCTION NUMBER. USED IN TF AND CNTRL.

V VOICE NUMBER.

M MODE. SOMETIMES TONE GENERATOR NUMBER AS IN TF.

AZ AMPLITUDE OF THE SOURCE. IN TF AND CNTRL

FZ FREQUENCY OF THE FUNDAMENTAL. IN TF AND CNTRL

TIME TIME IN THE PRIMITIVES.

REST UNUSED

TOTIME CUMULATIVE TIME IN MSEC.

FON UNUSED

BUF THE ARGUMENTS (VALUES) NOT SUPPLIED BY OTHER VARIABLES IN /CWST/.

NOTE: /CWST/ IS FOR COMMUNICATION BETWEEN WA (READST)AND WT (WST). THE VALUES OF THE VARIABLES ARE IN THEIR FINAL FORM AS THEY WILL BE JUST BEFORE OUTPUT BY WST.

/CCHG/ PX,HX,SX,GX INDEXES FOR ARGUMENT STRINGS FOR THE MASTER ENVELOPES POCO, HRPIN, SWISH, AND GLISS.

PXMX,HXMX,SXMX,GXMX. UPPER BOUNDS FOR PX,HX,SX,GX.

POCSWT,HRPSWT,SWISWT,GLISWT FLAGS THAT INDICATE THAT THE RESPECTIVE MASTER ENVELOPES ARE (---SWT.NE.0) OR ARE NOT (---SWT.EQ.0) IN EFFECT.

POCARY,HRPARY,SWARY,GLARY STORAGE FOR THE ARGUMENT STRINGS FOR THE MASTER ENVELOPES.

SWIST,GLIST "INITIAL, VALUES FOR SWISH AND GLISS.

SWIED,GLIED "FINAL, O"NEW" VALUES FOR SWISH AND GLISS.

SWINC,GLINC INCREMENTS FOR SWISH AND GLISS.

FACL,FACF,FACTF FACTORS AFFECTED BY HRPIN,GLISS, AND SWISH RESPECTIVELY. (BEAT IS THE ANALOGOUS FACTOR FOR POCO.)

GLITOT,SWITOT THE UPPER BOUND OF THE TIME VARIABLE FOR GLISS AND SWISH.

POCTT,HRPTT,SWITT,POCTT RUNNING TIME FOR POCO, ETC.

/COPT/ OPTION FOR SETTING VARIOUS PROGRAM OPTIONS. INITIALIZED TO ZERO. OPTION (1).EQ.1 MEANS PRINT OUTPUT STATEMENTS. OPTION(2).EQ.1 MEANS PRINT OUTPUT OF SCAN. OPTION(3)EQ.1 MEANS SUPPRESS PRINTING OF THE TEXT. OPTION 1,2,3,ETC. ARE SET BY TYPING SUCCESSIVE ONE DIGIT NUMBERS IN RESPONSE TO THE QUESTION, "OPTION?" PRINTED ON THE TELETYPE AT THE BEGINNING OF THE PROGRAM.

/CMAC/ MACSTO STORAGE FOR MACRO TEXT. FORMAT IS OF THE FORM:
1ST WORD, NUMBER OF WORDS IN THIS STATEMENT. 2ND AND FOLLOWING

WORDS, THE STATEMENT TEXT, NEXT WORD, NUMBER OF WORDS IN STATEMENT 2, ETC. <<<NOTE>>> MACSTO IS A REAL ARRAY. ARGPLC SUPPOSE I IS THE INDEX IN ARGPLC (MACPLC & MACNAM). FOR THE ITH MACRO, ARGPLC(I) IS THE INDEX (LOCATION) IN DUMARG AND IN ARGVAL WHERE THE DUMMY VARIABLES BEGIN. MACPLC FOR THE ITH MACRO, MACPLC(I) IS WHERE IN MACSTO THE BODY OF THE MACRO IS STORED.

MACNAM THE NAME OF THE ITH MACRO.

DUMARG DUMMY ARGUMENTS FOR ALL THE MACROS (SYMBOLIC).

ARGVAL VALUES OF THE DUMMY ARGUMENTS IN DUMARG.

MACMAX THE MAXIMUM LENGTH OF MACSTO (TOTAL MACRO TEXT).

MACNBR THE NUMBER OF THE MACRO CURRENTLY BEING PROCESSED, USED AS THE INDEX OF ARGPLC, MACPLC, AND MACNAM.

WBR SAME AS MACNBR, USED FOR COMMUNICATION.

MACFLG UNUSED.

ICLFLG THE CALL LINE OF A MACRO HAS JUST BEEN DECODED BY SCAN. (COMPARE WITH EXPFLG BELOW).

NBR SAME AS MACNBR, USED FOR THE PUSH-DOWN STORE.

MXNMAC MAXIMUM NUMBER OF MACROS. (LENGTH OF ARGPLC, ETC.)

MXNDUM MAXIMUM NUMBER OF DUMMY VARIABLES. (LENGTH OF DUMARG, ETC.)

/CRPT/ STORE STORAGE FOR REPET SPAN. ORGANIZED AS MACSTO.

MXSTOR LENGTH OF STORE. (THE UPPER BOUND).

NESTMX MAXIMUM NUMBER OF NESTED REPETS.

/CKON/ NOTMOD UNUSED

IARGUB UPPER BOUND ON NUMBER OF ARGUMENTS (OUTPUT), UPPER BOUND OF S, BUF, AND ARGSTD.

ISYMBU MAXIMUM LENGTH OF A SYMBOL IN CHARACTERS. EQUALS 5.

ICHRST MAXIMUM NUMBER OF CHARACTERS IN A STATEMENT (INPUT). UNUSED (I THINK).

IWDST THE LENGTH OF THE CURRENT STATEMENT (INPUT) IN WORDS.

ITFMAX UPPER BOUND OF THE TRANSFER FUNCTION TABLES.

NEST CURRENT LEVEL OF NESTING OF REPETS.

/CPKN/ ORIGBT DURATION IN MILLISECONDS OF THE UNIT OF TIME "THE BEAT" (SLAG) ORIGINALLY DEFINED BY THE MM STATEMENT.

BEAT THE CURRENT VALUE OF THE UNIT OF TIME.

AZMX THE CURRENT MAXIMUM VALUE OF LEVEL IN SOURCE FOR TF AND CNTRL; FOR THE FIRST SG IN THE SG STATEMENT.

LENG LENGTH OF THE CURRENT STATEMENT (OUTPUT).

MYP TYPE CODE FOR OUTPUT STATEMENTS.

LGTH LENGTH IN WORDS OF THE CURRENT INPUT STATEMENT.

/CRTN/ IRETURN THE CURRENT RETURN INDEX, STORED IN THE PUSH-DOWN LIST.

/LIST/ L00001 THE PUSHDOWN LIST. THE POINTER IS THE FIRST WORD IN THE "ARRAY". IT IS, IN GENERAL, A MIXED INTEGER AND REAL ARRAY, SERVICED BY THE PUSH AND POP ROUTINES. FILE NAME "WH"

LSTLNG UPPER BOUND OF L00001.

LSTCNT CURRENT INDEX IN L00001.

/CPRT/ VOITME ACCUMULATIVE TIME IN MSECS IN THE JTH VOICE WHERE J IS THE ARRAY'S INDEX

S THE OUTPUT ARGUMENTS (USED FOR COMMUNICATION FROM SCAN TO READST (WA)).

MTEMP THE SWITCH THAT CONTROLS WHAT CHARACTER IS PRINTED

FIRST IN THE PRINT ROW.
 J THE CURRENT VOICE NUMBER.
 EXPFLG FLAG THAT IS THE DEPTH OF THE MACRO CALLS.
 WHEN NON-ZERO, INDICATES THAT A MACRO IS BEING EXPANDED
 (THAT IS, THE "BODY" IS BEING PROCESSED. CONTRAST WITH
 ICLFLG ABOVE.)

/CBEAT/ CTIME THE ACCUMULATIVE TIME IN MSECS IN THE CURRENT
 VOICE.
 BEATM THE ACCUMULATIVE NUMBER OF "BEATS" IN THE CURRENT VOICE.

/CRD/ G THE INPUT STATEMENT IMAGE.
 IRDFEL FAILURE FLAG FROM THE READ SUBROUTINE.
 MXWDSG THE MAXIMUM LENGTH OF AN INPUT STATEMENT IN WORDS.

/NCSTM/NCSTM NUMBER OF STATEMENTS OUTPUTTED.

FORMATS:

OUTPUT OF TRANSLATOR (WST) AND INPUT OF MERGE (WMMG OR WMMD).
 IN MERGE PROGRAM READ INTO ARRAY "BUF" REAL ARRAY 160 POSI-
 TIONS (320 WORDS).

INDEX IN

BUF	CONTENTS
1	RESERVED FOR BUFIN AND BUFOUT
2	LENGTH OF STATEMENT (ACTUAL NUMBER OF WORDS INCLUDING THE LENGTH.)
3	STATEMENT TYPE (0-24 MEANS WSLEO STATEMENT. 100 MEANS TF OR CNTRL STATEMENT. 200 MEANS SG STATEMENT. 998 MEANS END OF VOICE. 999 MEANS END OF RUN.)
4	TIME IN MSECS, SOUND GENERATOR NUMBER, ETC. DEPENDING ON THE STATEMENT TYPE.

NOTE: FORMAT OF SG STATEMENTS (TYPE 200) BEGINNING WITH LOCA-
 TION 4 IS: TIME, SG NUMBER, DB, HZ, SG NUMBER, DB, HZ, ETC.
 FORMAT OF TF STATEMENTS (TYPE 100) BEGINNING WITH LOCATION
 4 IS: TIME, SOURCE (CAN BE SG NUMBER OR IF MINUS NOISE EXCITA-
 TION), DB IN SOURCE, HZ IN SOURCE, BANDWIDTH RESONANCE ONE,
 FREQUENCY OF RESONANCE ONE, BW OF RESON. 2, FQ. RESON 2,
 BW3 , FQ3, BW4, FQ4.

OUTPUT OF MERGE (INPUT OF SYN PROGRAM).