```
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR      TTTTTTTTTTTTTTT LLL
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR      TTTTTTTTTTTTTTT LLL
LLL                 IIIIIIIII     BBBBBBBBBBBB     RRRRRRRRRRRR      TTTTTTTTTTTTTTT LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBB         BBB  RRR         RRR         TTT       LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR            TTT       LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR            TTT       LLL
LLL                    III        BBBBBBBBBBBB     RRRRRRRRRRRR            TTT       LLL
LLL                    III        BBB         BBB  RRR   RRR               TTT       LLL
LLL                    III        BBB         BBB  RRR   RRR               TTT       LLL
LLL                    III        BBB         BBB  RRR   RRR               TTT       LLL
LLL                    III        BBB         BBB  RRR      RRR            TTT       LLL
LLL                    III        BBB         BBB  RRR      RRR            TTT       LLL
LLL                    III        BBB         BBB  RRR      RRR            TTT       LLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBBB     RRR         RRR         TTT       LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBaB     RRR         RRR         TTT       LLLLLLLLLLLLLLL
LLLLLLLLLLLLLLL     IIIIIIIII     BBBBBBBBBBBB     RRR         RRR         TTT       LLLLLLLLLLLLLLL
```

FILEID**LIBCRC

```
LL              IIIIII    BBBBBBBB      CCCCCCCC  RRRRRRRR      CCCCCCCC
LL              IIIIII    BBBBBBBB      CCCCCCCC  RRRRRRRR      CCCCCCCC
LL                II      BB      BB  CC          RR      RR  CC
LL                II      BB      BB  CC          RR      RR  CC
LL                II      BB      BB  CC          RR      RR  CC
LL                II      BB      BB  CC          RR      RR  CC
LL                II      BBBBBBBB    CC          RRRRRRRR    CC
LL                II      BBBBBBBB    CC          RRRRRRRR    CC
LL                II      BB      BB  CC          RR  RR      CC
LL                II      BB      BB  CC          RR  RR      CC
LL                II      BB      BB  CC          RR    RR    CC              ....
LL                II      BB      BB  CC          RR    RR    CC              ....
LLLLLLLLLL      IIIIII    BBBBBBBB      CCCCCCCC  RR      RR    CCCCCCCC      ....
LLLLLLLLLL      IIIIII    BBBBBBBB      CCCCCCCC  RR      RR    CCCCCCCC      ....

LL              IIIIII      SSSSSSSS
LL              IIIIII      SSSSSSSS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II        SSSSSS
LL                II        SSSSSS
LL                II              SS
LL                II              SS
LL                II              SS
LL                II              SS
LLLLLLLLLL      IIIIII    SSSSSSSS
LLLLLLLLLL      IIIIII    SSSSSSSS
```

Table of contents

```
0000     1          .TITLE  LIB$CRC - Calculate cyclic redundancy check
0000     2          .IDENT  /1-006/         ; File: LIBCRC.MAR Edit: RKR1006
0000     3
0000     4 ;
0000     5 ;*****************************************************************************
0000     6 ;*                                                                           *
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0000    24 ;*                                                                           *
0000    25 ;*                                                                           *
0000    26 ;*****************************************************************************
0000    27 ;
0000    28
0000    29 ;++
0000    30 ; FACILITY: General Utility Library
0000    31 ;
0000    32 ; ABSTRACT:
0000    33 ;
0000    34 ;       Calculate the CRC of a data stream
0000    35 ;
0000    36 ; ENVIRONMENT: User Mode, AST Reentrant
0000    37 ;
0000    38 ;--
0000    39 ; AUTHOR: Donald G. Petersen, CREATION DATE: 30-Dec-77
0000    40 ;
0000    41 ; MODIFIED BY:
0000    42 ;
0000    43 ;       DGP,30-Dec-77 : VERSION 00
0000    44 ; 01    - Original
0000    45 ;
0000    46 ; 1-001 - Updated version number and copyright notice.  JBS 16-NOV-78
0000    47 ; 1-002 - Add "," to PSECT directive.  JBS 21-DEC-78
0000    48 ; 1-003 - Add R2 and R3 to the entrymask since they are clobbered by
0000    49 ;         the CRC instruction.  JBS 21-DEC-78
0000    50 ; 1-004 - Enhance to recognize additional classes of string descriptors
0000    51 ;         by invoking LIB$ANALYZE_SDESC_R3 to extract length and
0000    52 ;         address of 1st data byte.  RKR 26-MAY-1981.
0000    53 ; 1-005 - Add special-case code to process classes of descriptors that
0000    54 ;         "read" like fixed strings more efficiently.  RKR 7-OCT-1981
0000    55 ; 1-006 - Redirect jsb from LIB$ANALYZE_SDESC_R3 to
0000    56 ;         LIB$ANALYZE_SDESC_R2.  RKR 18-NOV-1981.
```

```
                                D 4
                                .SBTTL  DECLARATIONS
                                ;
                                ; INCLUDE FILES: NONE
                                ;
                                
                                ; EXTERNAL SYMBOLS
                                        .DSABL  GBL                     ; Only explicit externals
                                        .EXTRN  LIB$ANALYZE_SDESC_R2    ; Extract length and address of
                                                                        ; 1st data byte of string.
                                ;
                                ; MACROS:
                                ;
                                        $DSCDEF                         ; symbols for parts of a
                                                                        ; descriptor
                                
                                ;
                                ; EQUATED SYMBOLS: NONE
                                ;
                                
                                ;
                                ; OWN STORAGE: NONE
                                ;
                                
                                ;
                                ; PSECT DECLARATIONS:
                                ;
00000000                        .PSECT _LIB$CODE PIC, SHR, LONG, EXE, NOWRT
                                
```

```
                                                .SBTTL  LIB$CRC  - Calculate cyclic redundancy check
                                        ;++
                                        ; FUNCTIONAL DESCRIPTION:
                                        ;
                                        ;       The CRC of the data stream specified is calculated and returned.
                                        ;
                                        ; CALLING SEQUENCE:
                                        ;
                                        ;       crc.wl.v = LIB$CRC (table.rl.ra, inicrc.rl.r, stream.rt.dx)
                                        ;
                                        ;
                                        ; INPUT PARAMETERS:
                                        ;
                                00000004        TABLE = 4               ; Adr. of table
                                00000008        INICRC = 8              ; Adr. of adr. of initial CRC longword
                                0000000C        STREAM = 12             ; Adr. of data stream desc.
                                        ;
                                        ; IMPLICIT INPUTS:
                                        ;
                                        ;       NONE
                                        ;
                                        ; OUTPUT PARAMETERS:
                                        ;
                                        ;       NONE
                                        ;
                                        ; IMPLICIT OUTPUTS:
                                        ;
                                        ;       NONE
                                        ;
                                        ; FUNCTION VALUE:
                                        ;
                                        ;       crc.wl.v
                                        ;
                                        ; SIDE EFFECTS:
                                        ;
                                        ;       NONE
                                        ;
                                        ;--
                                        ;
                                000C    .ENTRY LIB$CRC, ^M<R2,R3>       ; Entry point
                        50      0C AC   MOVL    STREAM(AP), R0          ; Address of STREAM descriptor
                        02      03 A0   CMPB    DSC$B_CLASS(R0), #DSC$K_CLASS_D ; read like fixed ?
                                0C      BGTRU   1$                      ; used general path
                                        ;
                        50      0C BC   MOVQ    @STREAM(AP), R0         ; length ->R0, addr -> R1
61      50      08 BC   04 BC   CRC     @TABLE(AP), @INICRC(AP), R0, (R1)       ; calc crc
                                04      RET                             ; return result in R0
                                        ;
                  00000000'GF   16      JSB     G^LIB$ANALYZE_SDESC_R2  ; Extract: length->R1, addr->R2
62      51      08 BC   04 BC   CRC     @TABLE(AP), @INICRC(AP), R1, (R2) ; Calculate CRC
                                04      RET                             ; return result in R0
                                        .END
```

```
DSC$B_CLASS                     = 00000003
DSC$K_CLASS_D                   = 00000002
INICRC                          = 00000008
LIB$ANALYZE_SDESC_R2              ********  X   00
LIB$CRC                           00000000 RG   02
STREAM                          = 0000000C
TABLE                           = 00000004
```

Psect synopsis

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 (0.)	00 (0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
ABS	00000000 (0.)	01 (1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
_LIB$CODE	00000026 (38.)	02 (2.)	PIC USR CON REL LCL SHR EXE RD NOWRT NOVEC LONG

Performance indicators

Phase	Page faults	CPU Time	Elapsed Time
Initialization	29	00:00:00.05	00:00:01.29
Command processing	118	00:00:00.34	00:00:05.76
Pass 1	132	00:00:01.11	00:00:08.64
Symbol table sort	0	00:00:00.11	00:00:00.47
Pass 2	38	00:00:00.32	00:00:04.72
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	3	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	324	00:00:01.95	00:00:20.90

```
The working set limit was 900 pages.
7651 bytes (15 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 136 non-local and 1 local symbols.
138 source lines were read in Pass 1, producing 13 object records in Pass 2.
8 pages of virtual memory were used to define 7 macros
```

Macro library statistics

Macro library name	Macros defined
_255DUA28:[SYSLIB]STARLET.MLB;2	4

```
190 GETS were required to define 4 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS$:LIBCRC/OBJ=OBJ$:LIBCRC MSRC$:LIBCRC/UPDATE=(ENH$:LIBCRC)
```

LIBCVTDX
LIS

LIBCVTMAC
LIS

LIBCRCTAB
LIS

LIBCVTDF
LIS

LIBCUSTOM
LIS

LIBCREDIR
LIS

LIBCUTATB
LIS

LIBCOMMON
LIS

LIBCRC
LIS