ELLIOTT 900

Volume 2: PROGRAMMING INFORMATION

Part   7: MAGNETIC TAPE ROUTINES

Section 4: QMOPEN

CONTENTS

Chapter 1: INTRODUCTION

1.1 Function

This program is a SIR coded subroutine which opens a file on magnetic tape for reading and writing. A new header block may be written, or the original header block preserved, depending on the parameter used.

1.2 Form of Distribution

The routine is distributed on a SIR mnemonic tape, part of the MTBLOCK tape.

1.3 Method of Use

The program is assembled and entered as a SIR subroutine.

1.4 Configuration

The minimum configuration for running this program is a 903 central processor with 8192 words of store, a magnetic tape controller and at least one magnetic tape handler.

Chapter 2: FUNCTIONS

    2.1   Open File for Writing

        Enter by: 11   QMT

                   8   QMOPEN

                   0   FT

                   8   ERROR

              / 0   0

where FT points to the file table, ERROR to the error routine, and /0 0 is the special parameter for opening the file for writing.

        The header block on tape is compared with that specified in the file table. If the names are identical, or if the tape is headed "SCRATCH", the file is opened for reading and writing and a new header is written, over-writing the old, with the contents of words 10; to 35; of file table.

        Note that the original header block is read into the buffer specified in 1; and 2; of the file table. The user must place specific values in these locations before entering QMOPEN.

    2.2   Open File for Updating

        Enter by: 11   QMT

                   8   QMOPEN

                   0   FT

                   8   ERROR

              /8   0

where FT and ERROR have the meanings as above, in 2.1. /8 0 is the special parameter for opening the file for updating. The header block on tape is checked against the name in the file table, but it is not overwritten. If they agree, the file is opened for reading and writing and the normal exit is taken. The tape is positioned to read or overwrite the block following the header block.

        If the names do not agree, the file is not opened and the error exit is taken.

2.3 OPEN file for Reading

```
Enter by:   11   QMT
             8   QMOPEN
             0   FT
             8   ERROR
             0    0
```

where FT and ERROR have the meanings as in 2.1. and 0, 0 is the special parameter for opening the file for reading.

The name on the header block is checked against the name in the file table. If they agree, the buffer will hold the contents of the header block, the tape will be positioned to read the block following the header and the normal exit will be taken. If the names do not agree, the file is not opened, and the error exit is taken.

2.4 Exit

Normal exit is to the fourth location after entry. A, B and Q are undefined on exit.

2.5 Error Exit

The error exit is to the second location after entry. The contents of the A-register indicate the nature of the error. If the appropriate bit is set to one, the error implied is as follows:

Bit 18: Routine failed due to wrong name on header.

Bit 10: Zero character, i.e. false end of block, repeated hardware error.

Bit 4: Parity failure, repeated hardware error.

Bit 2: Handler in Manual or not available - Bits 10-3 are not defined in this case.

Bit 3: Missed data transfer; repeated hardware error.

Bit 16: Handler not available.

Bit 15: Instruction has been rejected as 'do nothing'.

Chapter 3: METHOD USED

The standard version of the routine uses block transfer for reading and writing onto tape. It does not use interrupts from the magnetic tape controller, these are suppressed.

On entering QMOPEN, the tape is rewound, if necessary. The header block on tape is read into the store area specified in the file table, and checked against the name in the file table, or tested if "SCRATCH". On normal exit, the relevant bits in MTIND are set, indicating the file is open for reading, writing or both. (Note that when the file is opened for writing, it is also set open for reading to enable the checking of blocks written).

If the file is not opened correctly, the relevant bits in MTIND are cleared before taking the error exit.

Chapter 4: STORE USED

QMOPEN occupies, 115 locations.

Chapter 5: STORE LOCATIONS AFFECTED

QMOPEN affects

2; 4; 8; and 9; of the users file table.

QMT and the store area specified by 1; and 2; of the file table.