MULTIPROGRAMMING OPERATING SYSTEM (MOS) PROJECT

First Version

ASSUMPTIONS:

- Jobs entered without error in input file
- No physical separation between jobs
- Job outputs separated in output file by 2 blank lines
- Program loaded in memory starting at location 00
- No multiprogramming, load and run one program at a time
- SI interrupt for service request

NOTATION

M: memory; IR: Instruction Register (4 bytes)
IR [1, 2]: Bytes 1, 2 of IR/Operation Code
IR [3, 4]: Bytes 3, 4 of IR/Operand Address
M[&]: Content of memory location &
IC: Instruction Counter Register (2 bytes)
R: General Purpose Register (4 bytes)
C: Toggle (1 byte)
: Loaded/stored/placed into

MOS (MASTER MODE)

SI = 3 (Initialization)
Case SI of
1: Read
2: Write
3: Terminate
Endcase

READ

IR [4] ← 0
Read next (data) card from input file in memory locations IR [3,4] through IR [3,4] +9
If M [IR [3,4]] = $END, abort (out-of-data)
EXECUTEUSERPROGRAM

WRITE

IR [4] ← 0
Write one block (10 words of memory) from memory locations IR [3,4] through IR [3,4] + 9 to output file
EXECUTEUSERPROGRAM

TERMINATE

Write 2 blank lines in output file
MOS/LOAD

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LOAD
        m ← 0
        While not  e-o-f
            Read next (program or control) card from input file in a buffer
                Control card:   $AMJ, end-while
                                $DTA, MOS/STARTEXECUTION
                                $END, end-while
                Program Card: If m = 100, abort (memory exceeded)
                                Store buffer in memory locations m through m + 9
                                m ← m + 10
        End-While
        STOP

MOS/STARTEXECUTION
        IC ← 00
        EXECUTEUSERPROGRAM

EXECUTEUSERPROGRAM (SLAVE MODE)
Loop
        IR ← M [IC]
        IC ←  IC+1
        Examine IR[1,2]
            LR:     R ← M [IR[3,4]]
            SR:     R → M [IR[3,4]]
            CR:     Compare R and M [IR[3,4]]
                    If equal C ← T else C ← F
            BT:     If C = T then IC ← IR [3,4]
            GD:     SI = 1
            PD:     SI = 2
            H:      SI = 3
        End-Examine
End-Loop
```