

# 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

LOAD

$m \leftarrow 0$

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  $m + 9$

$m \leftarrow m + 10$

End-While

STOP

MOS/STARTEXECUTION

$IC \leftarrow 00$

    EXECUTEUSERPROGRAM

EXECUTEUSERPROGRAM (SLAVE MODE)

Loop

$IR \leftarrow M [IC]$

$IC \leftarrow IC + 1$

    Examine  $IR[1,2]$

        LR:  $R \leftarrow M [IR[3,4]]$

        SR:  $R \rightarrow M [IR[3,4]]$

        CR: Compare  $R$  and  $M [IR[3,4]]$

            If equal  $C \leftarrow T$  else  $C \leftarrow F$

        BT: If  $C = T$  then  $IC \leftarrow IR [3,4]$

        GD:  $SI = 1$

        PD:  $SI = 2$

        H:  $SI = 3$

End-Examine

End-Loop