

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] \leftarrow 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] \leftarrow 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