

7/14/68

map (and subprocess)

a seq of quadruples $\langle FA, CMA, CNT, w \rangle$

where FA is the address of a word in a file

CMA is an address in central memory.

CNT is a positive integer (> 0)

w is Boolean

each subprocess has a map

with a subprocess is in the state called "running"

Then from time to time the following sequence of ~~events~~ ^{actions} will ~~occur~~ take place:

0) a cpu ^{and} cm will be selected

i) swap in

for each quadruple $\langle FA, CMA, CNT, w \rangle$ in the map, CNT words will be copied from the file to central memory ~~starting~~ starting at FA to CMA. The quadruples will be treated in order with

ii) run

an XT packet will be placed in the central registers and the cpu will be allowed to run a while

Then the XT packet will be copied out

iii) swap out

for each quadruple $\langle FA, CMA, CNT, w \rangle$ ~~in the map~~ ^{copied from central memory to the file} with $w = \text{true}$ CNT words will be ~~copied~~ starting at CMA to FA. The quadruples will be treated in order.

Note: This seq of ~~events~~ ^{actions} is not an atomic act, nor is each event in the sequence

Operation

2 parts

A) list of pairs $\langle \text{type}, \text{mask} \rangle$

B) some kind of action description (will depend on type of operation)

to invoke an operation ^{from} ~~while~~ in a subprocess (The only way to invoke operations)

give a seq (i_0, \dots, i_k) of indexes to a capability list (C_1, \dots, C_k)

The following conditions ^{will be checked} ~~must be satisfied~~:

$$\text{type}(C_{i_0}) \subseteq \text{operations} \quad (\text{set inclusion})$$

$$\text{type}(C_{i_j}) = \text{type}_j \quad 1 \leq j \leq k$$

$$\text{mask}(C_{i_j}) \supseteq \text{mask}_j \quad 1 \leq j \leq k \quad (\text{bit implication})$$

a) 2 means any bit on on left must be on on right

b) $\langle \text{type}_j, \text{mask}_j \rangle$ is ~~the~~ ^jth item in list of pairs for Obj (C_{i_0})

~~Then the action~~

If no conditions are satisfied then the action will be taken

Capability

a triplet $\langle \text{obj}, \text{triples}, \text{mas} \rangle$

~~note: all objects~~

Objects

files

have
~~two~~ a protected mode
→ only one process may
write have a block
with w or (mmap)

processes

subprocesses

operations

capability lists

directory pages

allocation blocks (accounting blocks)