

I. Basic objects

permanent file
directory page
accounting block

II. Possible Operations

- A) permanent file
 - i) read
 - ii) copy another file to this one (needs the other file)
 - iii) append
 - iv) destroy

- B) directory page (seq of pages< BCD name, capability >)
 - i) get an entry (needs a BCD name, produces a capability)
 - ii) make an entry (needs a BCD name and a capability)
 - iii) delete an entry (needs a BCD name)
 - iv) destroy page

- C) accounting block
 - i) make a file
 - ii) make a directory page
 - iii) make an accounting block
 - iv) destroy

III. Capabilities

- a pair
 - A) an object
 - B) a set of allowed operations on the object.

IV. Basic Machine

a set of names
at any given time, each name has an associated capability

V. Basic Instructions

- A) given the name of a capability
perform one of the allowed operations of the capability
on the object of the capability, any other objects
needed being given by the names of capabilities for
them.

- B) given the name of a capability, decrease the allowed operations

VI. Implementation

- A) Capabilities
 - i) FNT entries
for capabilities for objects other than files, have a
special equipment type so that no normal operation
can be performed on it.

B) Operations

Have a PPU program for each of the basic objects that can perform the indicated operations..

Have CPU programs, that are available by control card, for calling the PPU programs.

e.g. need one of form: get entry (new FNT name, BCD name, directory page1, directory page2,...) which scans the directory pages in sequence looking for the given BCD name. If found, constructs on FNT entry with "new FNT name" (or uses an old one) with the located capability. If any directory page capability does not have the get entry operatio, or the BCD name does not appear in any of them, then an error exit occurs.

Have a directory which contains entries for some job numbers giving other directory pages. Some job numbers may have same directory page.

MAIN DIRECTORY(name1)

Will make an FNT entry for name contains the capability listed in the main directory for this jobs job number.

Get entry (name2,public,name1)

Name2- now contains a capability for a directory page for some public files.

Get entry(name3,SYSX,name2)

Name3 now is a file which was named in the public directory.

Get entry(name4,HES1,name1)

Name4 is now a file which was in my directory under name HES1.

To create a password of private files

Main directory(name1)
Get entry(name2,account,name1)
Make 0 page(name3,name2)
Make entry(name3,password,name1)

To put accounting block under password control

Make entry(name2,account,name3)
Delete entry(account,name1)

To create a private file under password control, with account block already under password control and to put an entry for read only use in this users main directory.

Main directory(name1)
Get entry(name2,password,name1)

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Get entry(name3,account,name2)
Make file(fname,name3)
Make entry(fname,entry name,name2)
Reduce capabilities (to read only,fname)
Make entry(fname,name2,name1)
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