Identification

User Log
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Purpose

The user log contains an entry for every login and logout
occurring at a Multics installation. A login occurs whenever
a user explicitly requests and receives admission to the
system and a successful login implies positive identification
of the user and validation of his right to use the system.
A logout implies that a user, who is currently logged
in and is using the system, formally ceases to use the
system and must log in again in order to use the system
at a later time. (The terms logout and login do not refer
to such an occurrence as suspending and restarting an
absentee process-group, since this occurs without the
user's knowledge and restarting the group does not require
the user's intervention.)

The user log records all logins and logouts occurring
at an installation. Reference to the log can help to
clarify questions which arise concerning computer usage.
For example, John Doe may claim that his bill for the
preceding month is excessive, since he did not use the
computer at all that month. A shuffle through the user
log will determine if and when he logged in and aid in
solving the dispute.

In addition a record is kept in the user log of unsuccessful
attempts to log in. This record may be useful in detecting
attempted violations of system privacy.

Discussion

The user log is kept in a segment in the Log Directory and
has path name

>log_dir>user_log

When the user_log segment becomes full, it is renamed
"user_log_n" where n is the (3-digit) number of user log
segments which have become full. Then a new current log
segment is created, named >log_dir>user_log. Thus at
some time the log directory may contain user_log_001,

user_log_002, and so on to, say, user_log_010. The first
entry in each log segment records the date and time of
its creation. Old log segments are available to the system
administrator or to the locksmith for all eternity (the
duration of eternity being determined by the system
administrator).

The user log is accessible to the system control process-group
(includes the user control processes, see BQ.0) for appending
from the administrative ring. To append an entry to the
user log, user control processes execute the user_log_keeper
procedure (see below). (Because of hardware limitations
it is expensive to implement the append attribute without
read and write attributes, and therefore the system control
process-group will initially possess all three attributes
with respect to the User Log. In a later version of Multics
this will hopefully be unnecessary.) The User Log is
accessible to the system administrator and to the system
locksmith for reading but not for writing or appending.

User Log Keeper

To place an entry in the User Log, the user control module
or absentee monitor makes the call to the ring 1 procedure
(callable from ring 1):

        call user_log_keeper (type, entry);

where entry is a character string containing the information
to be placed in the user log, and type indicates the general
nature of the entry:

        type = 1 indicates login
        type = 2 indicates attempted login
        type = 3 indicates logout
        type = 4 indicates automatic logout

The log keeper formats each entry and writes the following
information into the log:

        1) the date and time
        2) the type of entry
        3) the entry

The log keeper uses the techniques described in BY.3.01
for appending to the User Log. Then the user_log_keeper
attempts to write the entry into the output stream (indirect
frame) "user_log_typewriter". If the system control process
has attached an operations typewriter to this frame then
the user log entry is also written out at the typewriter.
Otherwise, the call to write is unsuccessful and abandoned.
The installation controls printing of the user log by
controlling attachment of the "user_log_typewriter" frame
in the system control procedure (see BQ.1.01).

The user log segments are in the form of ascii text such
as can be produced or printed by the editor or print commands.
For convenience, an administrative command is available
to enable the system administrator to print out relevant
sections of the log:

        print_user_log time1   time2   sw

Print_user_log causes that portion of the log written
between time1 and time2 to be printed. If sw = 1, print_
user_log requests a printout on the offline printer.
Note that since the average user does not have access
to the User Log, print_user_log will not function for
him. Instead it will signal an error, using the Multics
command system standard error handling mechanism (see
BY.11.00).