TO: MSPM Distribution
FROM: Carla Marceau
SUBJECT: BQ.1.03
DATE: 07/16/68

The attached BQ.1.03 supersedes the old BQ.1.03, which
discusses a now obsolete subject. So throw away "interim
system control". A much-simplified system control will
appear soon.

Identification

Ring_1_error for interim Multics
C. Marceau

Purpose

When a ring 1 procedure, such as those in user control
or in the I/O system, encounters an "impossible" condition
it calls ring_1_error to bring this condition to the attention
of system programmers.

This mechanism exists in addition to the standard user
ring error handling (BY.11.00) and hard core error handling.

Usage

When an adminstrative ring procedure which may be executing
in a system process detects an error condition it responds
by making a call to one of the entries of ring_1_error.

1)   call ring_1_error$non_fatal (status,char_info);

      dcl status bit (*);

      dcl char_info char(*);   /*this argument is optional*/

Ring_1_error makes known the segment name and number of
its caller, the location of the call, its process id,
process-group-id, the status bits provided by its caller,
and the character information (char_info) if any. After
depositing this information in a trouble log (see below)
in a "non-fatal" error entry, ring_1_error returns to
its caller.

2)   If a procedure cannot continue because of some error,
      it executes

      Call ring_1_error$fatal (status,char_info);

    or Call ring_1_error (status,char_info);

These entries to ring_1_error deposit in the trouble log
in a "fatal" entry the same information as that provided
by their non-fatal cousin. However they do not return
to their caller, since the caller does not expect them
to return. Instead they call hcs_$terminate_proc to abort
the process in which they execute.

Trouble Log

To record trouble, ring_1_error deposits the pertinent
information in the segment ">system_log_dir>trouble_log".

A possible refinement is for ring_1_error$fatal, if it
executes in the initializer process, to call the listener,
placing the trouble log console at command level. A system
programmer who is babysitting for the system can now try
to debug the process. This refinement might be installed
later if it seems desirable and only after its consequences
have been carefully thought out. It offers an alternative
to a system crash. However, ring_1_error will normally
be called only in case of programming error or of something
impossible happening (which usually indicates crash is
imminent anyway).

Handling of errors within ring-1-error

As soon as ring_1_error is entered it sets a switch in
internal static to on, and resets the switch before it
returns. If ring_1_error is called recursively it detects
this by a check of the switch and immediately calls
terminate_proc.

If ring_1_error discovers any error conditions in its
attempt to report trouble, it calls terminate_proc.