Multics Change Request

Subject: MCR10056, 4-digit Year in Info Segment Dates
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Date: 2019-05-28

Multics defect Ticket #89: http://multics-trac.swenson.org/ticket/89 discusses a longer-range issue with dates in documents like .info segments, dates which typically include only a 2-digit year. Users may find such 2-digit year numbers ambiguous; the meaning of such year numbers is not immediately apparent.

convert_date_to_binary interprets such year numbers using the rule: if the 2-digit year number >= 70, then use “19” as a prefix for the 2-digit year in the date; otherwise, use “20” as the prefix. Thus, 01/01/70 is interpreted as 01/01/1970; 99-05-01 becomes 1999-05-01; and 16-08-11 becomes 2016-08-11.

To avoid such ambiguity in info segments, a change is needed in the help command to display dates in an info segment in 4-digit year format. For info segments created or changed in the future, the validate_info_seg command should report an error if it finds 2-digit year numbers in any title line date.

Proposed Changes

Changes to the help command:

This MCR proposes to change the help command to display all dates in info segment title lines using a 4-digit year format. This can be accomplished without changing existing info segments. Instead, help will extract the date item from the title line, apply convert_date_to_binary rules to this date string, then use date_time_$format to obtain a 4-digit date string, and replace the date item displayed in the title line. The 4-digit date format used for this display will be the standard:

iso_date: ^9999yc-^99my-^99dm

which returns a date starting with a 4-digit year-of-calendar, followed by a 2-digit month-of-year, and a 2-digit day-of-month. For example, 02/03/80 becomes 1980-02-03.

The iso_date format, which is one of the standard keywords accepted by date_time_$format, was selected because this format is recommended for worldwide usage by the International Standards Organization. The keyword iso_date stems from this recommendation.

Changes to validate_info_seg:

To avoid date ambiguity in any info segments changed or created in the future, the validate_info_seg (vis) command should require that date items in titles be specified in iso_date format. vis will be changed to report a severity 3 error for each date item in a title
line not in iso_date format. The error message will ask the developer to change the date from the string given in the title line to a corrected iso_date form of that date.

**Details of the Changes:**

The help command and its supporting help_ subroutine use the help_rql_.pl1 module to actually display an info segment. This module parses data within a single info segment, and responds to user requests to select and display particular help data. It prompts for the next help request, and processes each request to display help information.

As it parses a title line, this module will change the date item to be in iso_date format. These updated title lines are then displayed based upon the user requests.

A problem in handling longer help request names was also corrected. This problem was found during testing of the date changes.

help_rql_.pl1 is part of >sss>bound_info_rtns_, a bound segment that includes the help command, help_ subroutine, list_help, check_info_segs, etc.

The actual change proposed for help_rql_.pl1 is shown below:

```
Target bound seg:  bound_info_rtns_

SOURCE FILES:
    pl1:      help_rql_.pl1
EXTRA segs:      ioa_.info

compare_ascii [lpn help_rql_.pl1] ==

Inserted in B:
B326             date_time_$format
B327                             entry (char(*), fixed bin(71), char(*), char(*))
returns(char(250) var),
Preceding:
A323             get_line_length_$switch
A3218             operation      char (12) varying,
Changed by B to:
B3223             operation      char (24) varying,  /* maxlength must be longer than
longest defined_op */

Inserted in B:
B3817                     else do;             /* Replace stored date with iso_date */
B3818                     /* Replace stored date with iso_date */
B3818             Dates_.linfo (j).header = substr (Dates_.linfo (j).header, i+1);
B3819             Dates_.linfo (j).header =
B3820             "") || " " ||
B3821             ltrim (Dates_.linfo (j).header);
B3822             end;
Preceding:
A3812             end;
```
The `validate_info_seg` command will be changed to convert each date item in a title line to iso_date format, and compare that result with the original date item. If they differ, a new severity 3 error will report that an iso_date is required. The error will include the date as stored in the title, and the preferred iso_date form for that date. The user can then correct the error as appropriate.

An additional issue was found in `validate_info_seg` while preparing this change. Recent Multics Releases have included errata info segments describing changes needed in Multics manuals. Format of these errata files varies widely, depending upon the changes they describe. As such, `validate_info_seg` should treat them as general information content. The convention for naming these files is: MANUAL_ID.errata.info. Therefore, I propose adding .errata.info to the suffix list used by `validate_info_seg` to identify general content info segments.

`validate_info_seg.pl1` is part of >tools>bound_lib_utility_.

The actual change proposed in this code is shown below:

```plaintext
Target bound seg: bound_lib_utility_

SOURCE FILES:
  pl1: validate_info_seg.pl1
  EXTRA segs: validate_info_seg.info date_and_time.gi.info an82.errata.info
  add names: an validate_info_seg.info vis.info
  add names: an an82.errata.info errata.an82.info Standards_SDN.info

compare_ascii [lpn validate_info_seg.pl1] ==

Inserted in B:
B153
B154 need_iso_date init ("Date must be in iso_date format": change "^a" to "^a")

Preceding:
A150 /*** SEVERITY 4 messages ***/

A337 need_usage, no_entries, no_entry, no_hdr_name, no_sections,
Changed by B to:
B342 need_iso_date, need_usage, no_entries, no_entry, no_hdr_name, no_sections,

A488
Changed by B to:
B493 dcl iso_date char (10);

A823 then dtem_string = date_time_$format ("date", cv_fstime_ ((status_branch.dtem)), "", "");
Changed by B to:
B828 then dtem_string = date_time_$format ("iso_date", cv_fstime_ ((status_branch.dtem)), "", "");
```
Inserted in B:
B1558 | (index (string (current_names), ".errata.info") ^= 0)
Preceding:
A1553 | (index (string (current_names), ".error.info") ^= 0)
A1668     if db_sw & (code = 0)
A1669     then call ioa_ ("-Entry: ^a", date_time$format ("date_time",
entry_clock, ",", ",");
A1670     if code ^= 0
A1671     then call ERR_MSG (local.bad_date, 0, bad_date, entry_date, 0, 0);
A1672     else if header_date_sw
A1673     then if (header_clock < entry_clock)
A1674     then call ERR_MSG3 (local.entry_too_late, 0, entry_too_late);
Changed by B to:
B1673     if code = 0
B1674     then do;
B1675        iso_date = date_time$format ("iso_date", entry_clock, ",", ",");
B1676        if db_sw
B1677        then call ioa_ ("-Entry: ^a", iso_date);
B1678        if header_date_sw
B1679        then if (header_clock < entry_clock)
B1680        then call ERR_MSG3 (local.entry_too_late, 0,
entry_too_late);
B1681        if entry_date ^= iso_date
B1682        then call ERR_MSG5 (local.need_iso_date, 0, need_iso_date,
entry_date, iso_date);
B1683     end;
B1684     else call ERR_MSG (local.bad_date, 0, bad_date, entry_date, 0, 0);

A1679     if db_sw & (code = 0)
A1680     then call ioa_ ("-Header: ^a", date_time$format ("date_time",
header_clock, ",", ",");
A1681     if code ^= 0
A1682     then do;
A1683     call ERR_MSG (local.bad_date, 0, bad_date, header_date, 0, 0);
A1684     header_date_sw = ",b; /* don't compare against bad date
*/
A1685     end;
Changed by B to:
B1689     if code = 0
B1690     then do;
B1691        iso_date = date_time$format ("iso_date", header_clock, ",", ",");
B1692        if db_sw
B1693        then call ioa_ ("-Header: ^a", iso_date);
B1694        if header_date ^= iso_date
B1695        then call ERR_MSG5 (local.need_iso_date, 0, need_iso_date,
header_date, iso_date);
B1696     end;
B1697     else call ERR_MSG (local.bad_date, 0, bad_date, header_date, 0, 0);
In addition, while testing this change, several problems were found in command, subroutine, and general information info segs: validate_info_seg.info, date_and_time.gi.info, and ioa_.info. All of these files reside in >doc>info directory.

N.B.: vis output below includes the proposed check for 4-digit dates.
Note that the date in vis.info was not updated to a 2019 date, because information content in this file is not changing; only the format of its title date is changing. The original date value is preserved so check_info_segs does not show the validate_info_seg interface as being changed.

vis >doc>info>date_and_time.gi.info
>doc>info>date_and_time.gi.info

----------GENERAL info
LINE: 1 03/08/85 Date/Time Commands/AFs
Severity 3. Date must be in iso_date format: change "03/08/85" to "1985-03-08"
LINE: 3 <untitled>

cpa vis.archive::"date_and_time.gi.info" -orig >doc>is>date_and_time.gi.info -he
A >doc>is>date_and_time.gi.info (original)
B >user_dir_dir>Multics>GDixon>work>vis>vis.archive::date_and_time.gi.info (new)
A1 03/08/85 Date/Time Commands/AFs
A2
A3 These commands/active functions return information about dates and
A4 times:
Changed by B to:
B1 2019-05-23 Date/Time Commands/AFs
B2
B3 The following commands/active functions return information about dates
B4 and times.

A17 hour
A18
A19 Changed by B to:
B17
B18 hour
B19

A26 set_time_default, sdt
Changed by B to:
B26 set_time_default, std

Comparison finished: 3 differences, 16 lines.

For date_and_time.gi.info, the date is updated to 2019 because a bug in the information content of the file is being repaired (short name of set_time_default was corrected).

vis >doc>info>ioa_.info
>doc>info>ioa_.info

----------SUBROUTINE w/entries info
LINE: 1 09/23/85 ioa_
Severity 3. Date must be in iso_date format: change "09/23/85" to "1985-09-23"
LINE: 3 <untitled>
LINE: 28  Notes on Control Strings
Severity 1. This form is preferred:
   Notes on control strings
Severity 3. This section does not belong here.
LINE: 36  Entry points in ioa_
Severity 2. These lines end in white space:  28,  32

----------SUBROUTINE entry info
LINE: 40  :Entry: ioa_: nnl: 09/10 81 ioa_, ioa_$nnl
Severity 3. Date must be in iso_date format: change "09/10" to "1901-09-10"
LINE: 43  Function
LINE: 48  Syntax
Severity 2. Name "ioa_, ioa_$nnl" not present in Syntax line.
LINE: 52  Arguments
Severity 2. These lines end in white space:  54,  55,  58,  59

----------SUBROUTINE entry info
LINE: 63  :Entry: general_rs: 09/10/81 ioa_$general_rs
Severity 3. Date must be in iso_date format: change "09/10/81" to "1981-09-10"
LINE: 66  Function
LINE: 71  Syntax
LINE: 78  Arguments
Severity 2, line 78. Paragraph size (16 lines) exceeds limit of 15.
Severity 2. These lines end in white space:  74,  80,  83,  92,  97

----------SUBROUTINE entry info
LINE: 108 :Entry: general_rs_control_string: 08/29/85 ioa_$general_rs_control_string
Severity 3. Date must be in iso_date format: change "08/29/85" to "1985-08-29"
LINE: 111  Function
LINE: 116  Syntax
LINE: 124  Arguments

----------SUBROUTINE entry info
LINE: 153 :Entry: ioa_stream: ioa_stream_nnl: 09/10/81 ioa_$ioa_stream,
ioa_$ioa_stream_nnl
Severity 3. Date must be in iso_date format: change "09/10/81" to "1981-09-10"
LINE: 156  Function
LINE: 161  Syntax
Severity 2. Name "ioa_$ioa_stream_nnl" not present in Syntax line.
LINE: 165  Arguments
Severity 2. These lines end in white space:  167,  170,  171,  174

----------SUBROUTINE entry info
LINE: 179 :Entry: ioa_switch: ioa_switch_nnl: 09/10/81 ioa_$ioa_switch,
ioa_$ioa_switch_nnl
Severity 3. Date must be in iso_date format: change "09/10/81" to "1981-09-10"
LINE: 182  Function
LINE: 189  Syntax
Severity 2. Name "ioa_$ioa_switch_nnl" not present in Syntax line.
LINE: 193  Arguments
Severity 2. These lines end in white space:  197,  198,  202

----------SUBROUTINE entry info
LINE: 206 :Entry: rs: rsnnl: rsnp: rsnpnnl: 09/10/81 ioa_$rs, ioa_$rsnnl,
ioa_$rsnp, ioa_$rsnpnnl
Severity 3. Date must be in iso_date format: change "09/10/81" to "1981-09-10"
LINE: 208  Function
LINE: 217  Syntax
Sev 2. Name "ioa_$rsnnl, ioa_$rsnp, ioa_$rsnpnnl" not present in Syntax line.
LINE: 221 Arguments
LINE: 237 Notes
Sev 3. These lines of section exceed 71 chars: 239, 240, 241, 242
Sev 2. These lines end in white space: 223, 224, 227

The compare_ascii output for ioa_.info changes to correct the above errors is too voluminous to show here; but all changes are trivial in nature (as described by the errors above).

Testing

Changes to validate_info_seg and help were tested against typical command, subroutine, and general information info segs. The results with the changed vis command are shown above. Notice the severity 3 error messages reporting that “Date must be in iso_date format: ...”.

Changes to help were tested against the same command, subroutine, and general information info segs. The following help output demonstrates the change in date items for the main title line of ioa_.info, and for each of the entrypoint titles:

______________________________
help -pn >doc>info>ioa_.info
>doc>info>ioa_.info
(10 lines follow, 27 in introduction; 222 lines, 6 entry points in info)
1985-09-23  ioa_

The ioa_ subroutine is used for formatting a character string from fixed-point numbers, floating-point numbers, character strings, bit strings, and pointers. The character string is constructed according to the control characters entered in a "control string" and a variable list of arguments that are either edited into the output string in character form, or are used in some way to control the formatting of the string. The entire procedure is similar to formatted output in PL/I or FORTRAN.

7 more lines. More help? list_entry_points

Entry points in ioa_:
1981-09-10  ioa_,
ioa_$_nnl
1981-09-10  ioa_$_general_rs
1985-08-29  ioa_$_general_rs_control_string
1981-09-10  ioa_$_ioa_stream,
ioa_$_ioa_stream$_nnl
1981-09-10  ioa_$_ioa_switch,
ioa_$_ioa_switch$_nnl
1981-09-10  ioa_$_ioa_switch_nnl
1981-09-10  ioa_$_rs,
ioa_$_rsnnl, ioa_$_rsnp,
ioa_$_rsnpnnl

Returning to: 1985-09-23  ioa_
UNTITLED (7 lines): More help? q

The list_entry_points request of help was the request that failed to work, because the operation variable in which it was stored for comparison had a small max_length. (See the cpa output for help_rql_.pl1 for the change to the operation variable.)
**Documentation**

No interfaces are changing, so no user documentation updates are needed for help.info. Since the validate_info_seg command is changing, its associated validate_info_seg.info will have 4-digit dates stored in its title lines. This change was shown above.

However, this MCR proposes a change to the format used for all dates in info segment titles. This change should be described in Standards System Designer’s Notebook (AN82-00). The following ak82.errata.info will be added as part of this change.

```
pr vis::an82.errata.info
Function: This info segment provides errata and addenda information for the Multics manual AN82-00 titled:

STANDARDS
SYSTEM DESIGN’S NOTEBOOK

2019-05-25  Information for MR 12.7:
pg 11-2 under "SYNTAX OF INFO SEGMENTS"
Replace the "Title" paragraph with the following:

Title

Some rules apply to all three types of info segments. The first line in each info segment (or entrypoint description within a subroutine info segment) must be a brief title line, beginning with the date of the last modification. The title should be appropriate for a table of contents; for command or subroutine descriptions it will give the name(s) of the program including abbreviations. The date should be in iso_date format.

Examples of title lines:

1985-10-10  validate_info_seg, vis
1985-09-23  ioa_
...
:Entry: ioa_: nnl:  1981-09-19  ioa_,  ioa$_nnl

The last example above shows titles for a subroutine with several entrypoints. The first title line uses the standard title format for the introductory section of the info segment; this section describes the purpose and common characteristics of all the subroutine’s entrypoints. Subsequent sections describe each
entrypoint or group of entrypoints sharing a common calling sequence. Each section begins with an :Entry: title line naming the entrypoint(s) followed by a typical title line with iso_date and the full subroutine name(s) described by that section. The :Entry: and colon-separated names allow the help command to skip to the description of a particular entrypoint, and to produce output for its list_entry_points request.

The info_seg.gi.info segment also documents info seg format, in more detail than the Standards SDN manual. This info seg will be changed to document use of iso_date format in header lines. Other minor errors found by validate_info_seg will be corrected at the same time.

vis [lpn info_seg.gi.info -lb info]
>doc>is>info_seg.gi.info

----------GENERAL info
LINE: 1 04/12/85 Info Segment Standards
Severity 3. Date must be in iso_date format: change "04/12/85" to "1985-04-12"
LINE: 3 Introduction
LINE: 8 The following topics are addressed in th
Severity 4. Section not preceded by 2 blank lines.
LINE: 15 Notes
Severity 4. Section not preceded by 2 blank lines.
LINE: 19 Types of info segs
LINE: 34 Basic info seg format
LINE: 47 Paragraphs
LINE: 57 Header line
LINE: 72 Sections
LINE: 77 Section titles
Severity 4. Section not preceded by 2 blank lines.
LINE: 88 Using help
LINE: 105 List of info seg organization techniques
LINE: 119 Using standard section titles
LINE: 123 Command/active function info segs
Severity 4. Section not preceded by 2 blank lines.
LINE: 132 List of standard headings for commands/a
LINE: 252 Using multiple info writeups
LINE: 257 Multiple-entry info segs
LINE: 274 Using subroutine entry points
LINE: 279 Subroutine infos
LINE: 301 List of standard headings for subroutine
LINE: 318 Info naming conventions
Severity 3. These lines of section exceed 71 chars: 174
Severity 2. These blank lines contain white space: 194, 196, 199
Severity 2. These lines end in white space: 74, 89, 100, 101, 114, 139, 142, 198, 206
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cpa [lpn info_seg.gi.info -lb info] ==

A1 04/12/85 Info Segment Standards
Changed by B to:
B1 2019-05-28 Info Segment Standards

A58 An info seg begins with a heading line, consisting of a date on which
A59 it was last modified and a brief title. Change the date whenever you
A60 alter any part of the info seg; the format of the date is mm/dd/yy.
A61 Follow it with two spaces and the long (and short, if any) name of the
A62 module being described; for example,
A63       07/17/84 working_dir, wd
Changed by B to:
B58 An info seg begins with a header line, consisting of a date on which
B59 it was last modified and a brief title.
B60 Change the date whenever you alter any part of the info seg. The date
B61 is in iso_date format. Type "date_time_$format -ca iso_date" for a
B62 description of this format, or see sample header lines below.
B63
B64 Follow the date with two spaces and the long (and short, if any)
B65 name of the module being described; for example,
B66
B67       1985-10-10 validate_info_seg, vis
B68       1985-09-23 ioa_
B70

A66 The header line on a general information (GI, gi) info seg is the date
Changed by B to:
B73 The header line of a general information (.gi) info seg is the date

A69 07/20/84 The Multics Star and Equal Conventions.
Changed by B to:
B77 1986-07-30 Star and Equal Conventions (general information)

A74 paragraphs which follow. Any number of paragraphs can comprise a
Changed by B to:
B83 paragraphs which follow. Any number of paragraphs can comprise a

A89 Information, from the info segs, can be displayed via help in
Changed by B to:
B98 Information, from the info segs, can be displayed via help in

A100 of help. In order to display the data obtained in a meaningful
A101 manner some suggested organizational techniques and some rules for
Changed by B to:
B109 of help. In order to display the data obtained in a meaningful
B110 manner some suggested organizational techniques and some rules for
separates information for subroutine entrypoints to allow

optional arguments and control arguments are given in the Syntax

braces {}). The actual names of arguments and control arguments

Function: sends a message to another user or prints messages in any
mailbox to which you have sufficient access.

argument has a lengthy description, cross-reference it to the

Precede this line by two blank lines; leave two spaces after <date>.
The <long_name> and short_name> names are also add names on the
segment itself, with a suffix of info; the info suffix does not

Precede this line by two blank lines; leave two spaces after <iso_date>. The <long_name> and short_name> names are also add names
on the segment itself, with a suffix of info; the info suffix does not
A291 :Entry: command_query_: 07/20/84 command_query_$command_query_
Changed by B to:
B300 :Entry: command_query_: 1984-07-20 command_query_$command_query_

Comparison finished: 16 differences, 71 lines.

**Version History**

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Author</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-05-25</td>
<td>1.0</td>
<td>Gary Dixon</td>
<td>Initial revision of this MCR.</td>
</tr>
<tr>
<td>2019-05-26</td>
<td>1.1</td>
<td>Gary Dixon</td>
<td>Modify MCR based upon Documentation changes suggested by Eric Swenson.</td>
</tr>
<tr>
<td>2019-05-28</td>
<td>1.2</td>
<td>Gary Dixon</td>
<td>Modify info_seg.gi.info to require iso_date format in info seg header lines.</td>
</tr>
</tbody>
</table>