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4.63 `touch` — Change file access and modification times

4.63.1 Synopsis

`touch [–acm][ –r` *ref_file* **|** `–t` *time* `]` *file* . . .

Obsolescent Version :

`touch [–acm][`*date_time* `]` *file* . . .

4.63.2 Description

The `touch` utility shall change the modification and/or access times of files. The modification time is equivalent to the value of the *st_mtime* member of the *stat* structure for a file, as described in POSIX.1 {8}; the access time is equivalent to the value of *st_atime* .

The time used can be specified by the `–t` *time* option-argument, the corresponding time field(s) of the file referenced by the `–r` *ref_file* option-argument, or the *date_time* operand, as specified in the following subclauses. If none of these are specified, `touch` shall use the current time [the value returned by the equivalent of the POSIX.1 {8} *time* () function].

For each *file* operand, `touch` shall perform actions equivalent to the following functions defined in POSIX.1 {8}:

(1) If *file* does not exist, a *creat* () function call is made with the *file* operand used as the *path* argument and the value of the bitwise inclusive OR of S_IRUSR, S_IWUSR, S_IRGRP, S_IWGRP, S_IROTH, and S_IWOTH used as the *mode* argument.

(2) The *utime* () function is called with the following arguments:

   (a) The *file* operand is used as the *path* argument.

   (b) The *utimbuf* structure members *actime* and *modtime* are determined as described under 4.63.3.

4.63.3 Options

The `touch` utility shall conform to the utility argument syntax guidelines described in 2.10.2.

The following options shall be supported by the implementation:

`–a` Change the access time of *file*. Do not change the modification time unless `–m` is also specified.

`-c` Do not create a specified *file* if it does not exist. Do not write any diagnostic messages concerning this condition.

`-m` Change the modification time of *file*. Do not change the access time unless `-a` is also specified.

`-r` *ref_file* Use the corresponding time of the file named by the pathname *ref_file* instead of the current time.

`-t` *time* Use the specified *time* instead of the current time. The option-argument shall be a decimal number of the form:

[[*CC*]*YY*]*MMDD hhmm*[.*SS*]

where each two digits represents the following:

MM	The month of the year (01-12).
DD	The day of the month (01-31).
hh	The hour of the day (00-23).
mm	The minute of the hour (00-59).
CC	The first two digits of the year (the century).
YY	The second two digits of the year.
SS	The second of the minute (00-61).

Both *CC* and *YY* shall be optional. If neither is given, the current year shall be assumed. If *YY* is specified, but *CC* is not, *CC* shall be derived as follows:

If *YY* is:	*CC* becomes:
69-99	19
00-68	20

The resulting time shall be affected by the value of the **TZ** environment variable. If the resulting time value precedes the Epoch, `touch` shall exit immediately with an error status. The range of valid times past the Epoch is implementation defined, but shall extend to at least midnight 1 January 2000 UTC.

The range for *SS* is (00-61) rather than (00-59) because of leap seconds. If *SS* is 60 or 61, and the resulting time, as affected by the **TZ** environment variable, does not refer to a leap second: the resulting time shall be one or two seconds after a time where *SS* is 59. If *SS* is not given a value, it is assumed to be zero.

If neither the `-a` nor `-m` options were specified, `touch` shall behave as if both the `-a` and `-m` options were specified.

4.63.4 Operands

The following operands shall be supported by the implementation:

file A pathname of a file whose times are to be modified.

date_time (Obsolescent.) Use the specified *date_time* instead of the current time. The operand is a decimal number of the form:

MMDD hhmm[*yy*]

where *MM*, *DD*, *hh*, and *mm* are as described for the *time* option-argument to the `-t` option and the optional *yy* is interpreted as follows:

> If not specified, the current year shall be used. If *yy* is in the range 69-99, the year 1969-1999, respectively, shall be used. Otherwise, the results are unspecified.

If no `-r` option is specified, no `-t` option is specified, at least two operands are specified, and the first operand is an eight- or ten-digit decimal integer, the first operand shall be assumed to be a *date_time* operand. Otherwise, the first operand shall be assumed to be a *file* operand.

4.63.5 External Influences

4.63.5.1 Standard Input

None.

4.63.5.2 Input Files

None.

4.63.5.3 Environment Variables

The following environment variables shall affect the execution of `touch`:

LANG This variable shall determine the locale to use for the locale categories when both **LC_ALL** and the corresponding environment variable (beginning with **LC_**) do not specify a locale. See 2.6.

LC_ALL This variable shall determine the locale to be used to override any values for locale categories specified by the settings of **LANG** or any environment variables beginning with **LC_**.

LC_CTYPE This variable shall determine the locale for the interpretation of sequences of bytes of text data as characters (e.g., single- versus multibyte characters in arguments).

LC_MESSAGES This variable shall determine the language in which messages should be written.

TZ If the *time* option-argument (or operand; see above) is specified, **TZ** shall be used to interpret the time for the specified time zone.

4.63.5.4 Asynchronous Events

Default.

4.63.6 External Effects

4.63.6.1 Standard Output

None.

4.63.6.2 Standard Error

Used only for diagnostic messages.

4.63.6.3 Output Files

None.

4.63.7 Extended Description

None.

4.63.8 Exit Status

The `touch` utility shall exit with one of the following values:

0 The utility executed successfully and all requested changes were made.

>0 An error occurred.

4.63.9 Consequences of Errors

Default.

4.63.10 Rationale. *(This subclause is not a part of P1003.2)*

Examples, Usage

The functionality of `touch` is described almost entirely through references to functions in POSIX.1 {8}. In this way, there is no duplication of effort required for describing such side effects as the relationship of user IDs to the user database, permissions, etc.

The interpretation of time is taken to be ‘‘seconds since the Epoch,’’ as defined by 2.2.2.129. It should be noted that POSIX.1 {8} conforming implementations do not take leap seconds into account when computing seconds since the Epoch. When *SS* =60 is used on POSIX.1 {8} conforming implementations, the resulting time always refers to 1 plus ‘‘seconds since the Epoch’’ for a time when *SS* =59.

Note that although the `−t` *time* option-argument and the obsolescent *date_time* operand specify values in 1969, the access time and modification time fields are defined in terms of seconds since the Epoch (midnight on 1 January 1970 UTC). 1
Therefore, depending on the value of **TZ** when `touch` is run, there will never be more than a few valid hours in 1969 and there need not be any valid times in 1969.

History of Decisions Made

There are some significant differences between this `touch` and those in System V and BSD systems. They are upward compatible for existing applications from both implementations.

(1) In System V, an ambiguity exists when a pathname that is a decimal number leads the operands; it is treated as a time value. In BSD, no *time* value is allowed; files may only be `touch`ed to the current time. The [`−t` *time*] construct solves these problems for future portable applications (note that the `−t` option is not existing practice).

(2) The inclusion of the century digits, *CC*, is also new. Note that a ten-digit *time* value is treated as if *YY*, and not *CC*, were specified. The caveat about the range of dates following the Epoch was included as recognition that some UNIX systems will not be able to represent dates beyond the January 18, 2038, because they use *signed int* as a time holder.

One ambiguous situation occurs if `−t` *time* is not specified, `−r` *ref_file* is not specified, and the first operand is an eight- or ten-digit decimal number. A portable script can avoid this problem by using:

```
touch -- file
```

or

```
touch ./file
```

in this case.

The `−r` option was added because several comments requested this capability. This option was named `−f` in an earlier draft, but was changed because the `−f` option is used in the BSD version of `touch` with a different meaning.

At least one historical implementation of touch incremented the exit code if `−c` was specified and the file did not exist. This standard requires exit status zero if no errors occur.

4.64 `tr` — Translate characters

4.64.1 Synopsis

`tr [−cs]` *string1 string2*

`tr −s [−c]` *string1*

`tr −d [−c]` *string1*

`tr −ds [−c]` *string1 string2*

4.64.2 Description

The `tr` utility shall copy the standard input to the standard output with substitution or deletion of selected characters. The options specified and the *string1* and *string2* operands shall control translations that occur while copying characters and collating elements.

4.64.3 Options

The `tr` utility shall conform to the utility argument syntax guidelines described in 2.10.2.

The following options shall be supported by the implementation:

`−c` Complement the set of characters specified by *string1* . See 4.64.7.

`−d` Delete all occurrences of input characters that are specified by *string1* .

`−s` Replace instances of repeated characters with a single character, 1
as described in 4.64.7. 1