

NAME

tzfile – timezone information

DESCRIPTION

The timezone information files used by **tzset(3)** are typically found under a directory with a name like */usr/share/zoneinfo*. These files use the format described in Internet RFC 8536. Each file is a sequence of 8-bit bytes. In a file, a binary integer is represented by a sequence of one or more bytes in network order (bigendian, or high-order byte first), with all bits significant, a signed binary integer is represented using two's complement, and a boolean is represented by a one-byte binary integer that is either 0 (false) or 1 (true). The format begins with a 44-byte header containing the following fields:

- The magic four-byte ASCII sequence “TZif” identifies the file as a timezone information file.
- A byte identifying the version of the file's format (as of 2021, either an ASCII NUL, “2”, “3”, or “4”).
- Fifteen bytes containing zeros reserved for future use.
- Six four-byte integer values, in the following order:

tz_h_ttisutcnt

The number of UT/local indicators stored in the file. (UT is Universal Time.)

tz_h_ttisstdcnt

The number of standard/wall indicators stored in the file.

tz_h_leapcnt

The number of leap seconds for which data entries are stored in the file.

tz_h_timecnt

The number of transition times for which data entries are stored in the file.

tz_h_typecnt

The number of local time types for which data entries are stored in the file (must not be zero).

tz_h_charcnt

The number of bytes of time zone abbreviation strings stored in the file.

The above header is followed by the following fields, whose lengths depend on the contents of the header:

- **tz_h_timecnt** four-byte signed integer values sorted in ascending order. These values are written in network byte order. Each is used as a transition time (as returned by **time(2)**) at which the rules for computing local time change.
- **tz_h_timecnt** one-byte unsigned integer values; each one but the last tells which of the different types of local time types described in the file is associated with the time period starting with the same-indexed transition time and continuing up to but not including the next transition time. (The last time type is present only for consistency checking with the POSIX.1-2017-style TZ string described below.) These values serve as indices into the next field.
- **tz_h_typecnt ttinfo** entries, each defined as follows:

```
struct ttinfo {
    int32_t      tt_utoff;
    unsigned char tt_isdst;
    unsigned char tt_desigidx;
};
```

Each structure is written as a four-byte signed integer value for **tt_utoff**, in network byte order, followed by a one-byte boolean for **tt_isdst** and a one-byte value for **tt_desigidx**. In each structure, **tt_utoff** gives the number of seconds to be added to UT, **tt_isdst** tells whether **tm_isdst** should be set by **localtime(3)** and **tt_desigidx** serves as an index into the array of time zone abbreviation bytes that follow the **ttinfo** entries in the file; if the designated string is “-00”, the **ttinfo** entry is a placeholder indicating that local time is unspecified. The **tt_utoff** value is never equal to -2^{31} , to let 32-bit clients negate it