

NAME

bool, *chtype*, *cchar_t*, *attr_t*, *SCREEN*, *WINDOW*, **TRUE**, **FALSE**, **ERR**, **OK**, **CCHARW_MAX**, *curscr*, *newscr*, *stdscr*, **COLORS**, **COLOR_PAIRS**, **COLS**, **LINES**, **ESCDELAY**, **TABSIZE** – *curses* data types, constants, and global variables

SYNOPSIS

```
#include <curses.h>

/* data types */
typedef /* ... */ bool;
typedef /* ... */ chtype;
typedef /* ... */ cchar_t;
typedef /* ... */ attr_t;
typedef /* ... */ SCREEN;
typedef /* ... */ WINDOW;

/* constants */
const bool TRUE;
const bool FALSE;

const /* ... */ ERR;
const /* ... */ OK;

/* extension */
const /* ... */ CCHARW_MAX;

/* variables */
int COLORS;
int COLOR_PAIRS;
int COLS;
int LINES;
WINDOW * curscr;
WINDOW * stdscr;

/* extensions */
int ESCDELAY;
int TABSIZE;
WINDOW * newscr;
```

DESCRIPTION

This page summarizes data types, constants, and variables provided by the *curses* library. Locate further discussion in **curses(3X)**.

Depending on *ncurses*'s build-time configuration, the variables may instead be macros (see **cursthreads(3X)** and **cursoption(3X)**) that provide read-only access to the library's state. In either case, applications should treat them as read-only to avoid confusing the library.

CONSTANTS**TRUE, FALSE**

The *curses* library defines **TRUE** and **FALSE** to represent the values of the Boolean data type.

ERR, OK

curses and *terminfo* functions frequently return these constant integral values indicating failure and success, respectively.

CCHARW_MAX

This integral value, an *ncurses* extension, indicates the maximum number of *wchar_t* wide characters that can be stored in a *curses* complex character *cchar_t*.

DATA TYPES

bool

curses defines an integral type *bool*. X/Open Issue 4 *curses* (1996) preceded the ISO C99 and ISO C++98 standards, each of which also defined a Boolean data type of the same name.

ncurses's configure script attempts to discover the data type used by the system's C and C++ compilers, to reuse them as its own *bool*.

chtype

The *chtype* integral type combines a ("narrow", 8-bit) character with attributes encoding the character's *rendition*, such as the styling of its typeface and/or foreground and background colors. See, for example, **addch**(3X), **attron**(3X), and **inch**(3X).

cchar_t, attr_t

chtype is too small for the standard C library's wide-character type, *wchar_t*. *cchar_t* is a type that can accommodate an *attr_t* and enough wide characters to store what Unicode terms a *grapheme cluster* (a "user-perceived character" [UAX #29], which may nevertheless require several character encoding units to represent). *attr_t* is an integral type storing "wide" attributes that apply to *cchar_ts*. See, for example, **add_wch**(3X), **attr_on**(3X), and **in_wch**(3X).

SCREEN

curses manages a terminal device with this structure type; see **initscr**(3X).

WINDOW

curses represents rectangular portions of the terminal screen with the *WINDOW* structure type; see subsection "Overview" of **ncurses**(3X).

VARIABLES**curscr, newscr, stdscr**

When a *curses* application calls **initscr**(3X) or **newterm**(3X), the library creates a window named **stdscr** that is the same size as the terminal screen, (minus any lines reserved by **ripoffline**(3X) or **slk_init**(3X)) and is the implicit window used by functions that interact with a window but do not take a parameter identifying one; many *curses* functions use it. An application need not use **stdscr**; it might prefer to tile the display into multiple windows instead.

The library records updates to the terminal screen in a window named **curscr**. This object is referred to as the "physical screen" in **curscr_refresh**(3X) and **curscr_outopts**(3X).

ncurses collects pending updates to the terminal screen in a window named **newscr**. This object is referred to as the "virtual screen" in the **curscr_kernel**(3X), **curscr_refresh**(3X), and **curscr_outopts**(3X). When the screen is refreshed, *curses* determines a minimal set of updates using the terminal's capabilities to make **curscr** look like **newscr**.

COLORS

Once a *curses* screen is initialized, **COLORS** contains the number of colors supported by the terminal; see **curscr_color**(3X).

COLOR_PAIRS

Once a *curses* screen is initialized, **COLOR_PAIRS** contains the number of color pairs supported by the terminal; see **curscr_color**(3X).

COLS, LINES

Once a *curses* screen is initialized, **COLS** and **LINES** contain its width and height in character cells, respectively; that is, the number of columns and lines.

ESCDELAY

When reading key strokes from a window in keypad mode, *curses* distinguishes the ESC character resulting from a user's press of the "Escape" key on the input device from one beginning an escape sequence (commonly produced by function keys), by waiting after receiving the escape character to see if further characters are available on the input stream within a short interval. **ESCDELAY** stores this interval in milliseconds.

If **keypad**(3X) is disabled for the *curses* window receiving input, a program must disambiguate escape

sequences itself.

TABSIZE

The *curses* library converts a tab character to this number of spaces as it adds a tab to a window; see **curs_addch**(3X).

NOTES

Initialize a *curses* screen with either **initscr**(3X) or **newterm**(3X).

If *ncurses* is configured to provide separate *curses* and *tinfn* libraries, most of these symbols reside in the former. Both use the **bool** data type.

EXTENSIONS

The **CCHARW_MAX** constant, and **ESCDELAY**, **TABSIZE**, and **newscr** variables, are extensions, the first of these originating in *ncurses*.

PORTABILITY

Applications employing *ncurses* extensions should condition their use on the visibility of the **NCURSES_VERSION** preprocessor macro.

The X/Open Curses standard documents all of the foregoing types and symbols except for **CCHARW_MAX**, **newscr**, **TABSIZE**, and **ESCDELAY**.

X/Open Curses describes **curscr** only as “an internal data structure”; SVr4 gave more details, noting its use “for certain low-level operations like clearing and redrawing a screen containing garbage”. Neither specified its interaction with the rest of the interface beyond use as an argument to **clearok**(3X) and **wrefresh**(3X).

newscr is a feature of SVr4 *curses*. When refreshing the screen, it is used as a working area for combining the standard window **stdscr** with any others the application may have created with **newwin**(3X). When the update of **newscr** is complete, *curses* modifies **curscr** to match **newscr**.

TABSIZE is a feature of SVr4 *curses*.

- SVr4 initially sets **TABSIZE** from the terminal description’s **init_tabs** (it) capability. After that, it can be altered by applications using SVr4 *curses*.
- SVr4 *curses* uses **TABSIZE**’s value to compute the position of tab stops when updating both the virtual screen with **addch**(3X) and the physical screen with **mvcur**(3X).
- In *ncurses*, **TABSIZE**’s value affects only the virtual screen. The library uses the terminal type description’s **init_tabs** (it) capability to compute hardware tabs (that is, tab stops on the physical screen).
- Other implementations differ. For instance, NetBSD *curses* allows **TABSIZE** to be set through an environment variable. *ncurses* does not.

NetBSD *curses* does not support hardware tabs; it uses the **init_tabs** (it) capability and the **TABSIZE** variable only to update the virtual screen.

ESCDELAY is a feature of AIX *curses*.

- AIX treats **ESCDELAY**’s value as counting *fifths* of milliseconds.
- AIX’s default **ESCDELAY** equals 0.1 seconds.
- AIX also enforces a limit of 10,000 seconds for **ESCDELAY**; *ncurses* does not enforce an upper limit.

ncurses has long interpreted **ESCDELAY** as a count of milliseconds, making it impossible to be completely compatible with AIX. Consequently, most users have decided either to override the value, or to rely upon its default.

SEE ALSO

[UAX #29] “Unicode Standard Annex #29: Unicode Text Segmentation” (<https://unicode.org/reports/tr29/>)

getcchar(3X) further discusses the *ncurses* extension **CCHARW_MAX**.

curses(3X), **curs_color**(3X), **curs_opaque**(3X), **curs_terminfo**(3X), **curs_threads**(3X), **term_variables**(3X), **terminfo**(5)