

NAME

slk_init, **slk_set**, **slk_wset**, **slk_refresh**, **slk_noutrefresh**, **slk_label**, **slk_clear**, **slk_restore**, **slk_touch**, **slk_attron**, **slk_attrset**, **slk_attroff**, **slk_attr_on**, **slk_attr_set**, **slk_attr_off**, **slk_attr**, **slk_color**, **extended_slk_color** – *curses* soft label key routines

SYNOPSIS

```
#include <curses.h>

int slk_init(int fmt);

int slk_set(int labnum, const char *label, int align);
int slk_wset(int labnum, const wchar_t *label, int align);

char *slk_label(int labnum);

int slk_refresh(void);
int slk_noutrefresh(void);
int slk_clear(void);
int slk_restore(void);
int slk_touch(void);

int slk_attron(const chtype attrs);
int slk_attroff(const chtype attrs);
int slk_attrset(const chtype attrs);
int slk_attr_on(attr_t attrs, void *opts);
int slk_attr_off(const attr_t attrs, void *opts);
int slk_attr_set(const attr_t attrs, short pair, void *opts);
/* extension */
attr_t slk_attr(void);

int slk_color(short pair);
/* extension */
int extended_slk_color(int pair);
```

DESCRIPTION

These functions manipulate the soft function key labels that some hardware terminals support. For those terminals that do not have soft labels, *curses* takes over the bottom line of **stdscr**, reducing its vertical size and the value of **LINES** by one. By default, *curses* uses eight labels of up to eight characters each.

ncurses furthermore supports a mode comprising twelve labels of up to five characters each, following a convention associated with the IBM PC/AT keyboard. *ncurses* simulates this mode by taking over up to two lines at the bottom of the screen; it does not try to use any hardware support for this mode.

Initialization

slk_init must be called before **initscr** or **newterm**. If **initscr** eventually uses a line from **stdscr** to emulate the soft labels, then *fmt* determines how the labels are arranged on the screen.

- 0** indicates a 3–2–3 arrangement of the labels.
- 1** indicates a 4–4 arrangement
- 2** indicates the PC-like 4–4–4 mode.
- 3** is again the PC-like 4–4–4 mode, but in addition an index line is generated, helping the user to associate each label with its numbered function key. **LINES** and the vertical size of **stdscr** are further reduced.

Labels

Populate the labels with normal strings (**slk_set**) or wide-character strings (**slk_wset**). Each function takes three parameters.

labnum is the label number, from **1** to **8** (12 if *fmt* in **slk_init** is **2** or **3**);

label is be the string to put on the label, up to eight (five if *fmt* in **slk_init** is 2 or 3) characters in length. A empty string or a null pointer sets up a blank label.

align is 0, 1, or 2, aligning **label** to the left, center, or right, respectively, within the 8 (5) character cells housing it.

slk_label obtains the string assigned to label number *labnum*, with any leading and trailing blanks stripped.

Screen Updates

slk_refresh and **slk_noutrefresh** affect the soft key label lines as **wrefresh** and **wnoutrefresh** do the *curses* window.

The **slk_clear** routine clears the soft labels from the screen.

The **slk_restore** routine restores the soft labels to the screen after a **slk_clear** has been performed.

The **slk_touch** routine forces all the soft labels to be output the next time a **slk_noutrefresh** is performed.

Video Attributes

The **slk_attron**, **slk_attrset**, **slk_attroff**, and **slk_attr** routines correspond to **attron**, **attrset**, **attroff**, and **attr_get**, respectively. They have an effect only if soft labels are simulated on the bottom line of the screen. The default highlight for soft key labels is **A_STANDOUT** (as in System V *curses*, which does not document this fact).

Colors

The **slk_color** routine corresponds to **color_set**. It has an effect only if soft labels are simulated on the bottom line of the screen.

Because **slk_color** accepts only *short* (signed 16-bit integer) values, this implementation provides **extended_slk_color**, which accepts an *int* value of at least 32 bits.

RETURN VALUE

Functions that return integers return **ERR** upon failure and **OK** upon success.

In *ncurses*,

slk_attr

returns the attribute used for the soft keys.

slk_attroff, **slk_attron**, **slk_clear**, **slk_noutrefresh**, **slk_refresh**, **slk_touch**

return **ERR** if the terminal or the softkeys were not initialized.

slk_attrset

returns **ERR** if the terminal or the softkeys were not initialized.

slk_attr_set

returns **ERR** if the terminal or the softkeys were not initialized, or the color pair is outside the range 0..**COLOR_PAIRS**-1.

slk_color

returns **ERR** if the terminal or the softkeys were not initialized, or the color pair is outside the range 0..**COLOR_PAIRS**-1.

slk_init

returns **ERR** if the format parameter is outside the range 0..3.

slk_label

returns *NULL* on error.

slk_set

returns **ERR** if the terminal or the softkeys were not initialized, or the *labnum* parameter is outside the range of label counts, or if the format parameter is outside the range 0..2, or if memory for the labels cannot be allocated.

NOTES

Most applications would use **slk_noutrefresh** because a **wrefresh** is likely to follow soon.

EXTENSIONS

X/Open Curses documents the *opts* argument as reserved for future use, saying that it must be a null pointer. *Thencurses 6 ABI* uses it for the functions that accept a color pair parameter to support extended color pairs.

For functions which modify the color, e.g., **slk_attr_set**, if *opts* is set it is treated as a pointer to *int*, and used to set the color pair instead of the *short* pair parameter.

PORTABILITY

X/Open Curses Issue 4 describes these functions. It specifies no error conditions for them.

SVr4 describes a successful return value only as “an integer value other than *ERR*”.

- X/Open added functions like the SVr4 attribute-manipulation functions **slk_attron**, **slk_attroff**, and **slk_attrset**, but which use *attr_t* parameters (rather than *chtype*), along with a reserved *opts* parameter.

Two of these new functions (unlike the SVr4 functions) have no provision for color: **slk_attr_on** and **slk_attr_off**.

The third function (**slk_attr_set**) has a color pair parameter.

- It added *const* qualifiers to parameters (unnecessarily), and
- It added **slk_color**.

Although **slk_start** is declared in the *curses* header file, it was not documented by SVr4 other than its presence in a list of *libtermLib.so.1* symbols. Reading the source code (i.e., *Illumos*):

- **slk_start** has two parameters:
 - *ng* (number of groups) and
 - *gp* (group pointer).
- Soft-key groups are an array of *ng* integers.
- In SVr4, **slk_init** calls **slk_start** passing a null for *gp*. For this case, **slk_start** uses the number of groups *ng* (3 for the 3-2-3 layout, 2 for the 4-4 layout) which **slk_init** provided.

If *ng* is neither 2 or 3, **slk_start** checks the terminfo **fln** (*label_format*) capability, interpreting that as a comma-separated list of numbers, e.g., “3,2,3” for the 3-2-3 layout.

Finally, if there is no **fln** capability, **slk_start** returns **ERR**.

- If **slk_start** is given a non-null *gp*, it copies the *ng* elements of the group of soft-keys, up to 16.

If there are more than 16 elements, **slk_start** returns **ERR**.

- The format codes 2 and 3 for **slk_init** were added by *ncurses* in 1996. *PDCurses* 2.4 added this feature in 2001.

The function **slk_attr** was added by *ncurses* in 1996.

X/Open Curses does not specify a limit for the number of colors and color pairs which a terminal can support. However, in its use of *short* for the parameters, it carries over SVr4’s implementation detail for the compiled terminfo database, which uses signed 16-bit numbers. This implementation provides extended versions of those functions which use *int* parameters, allowing applications to use larger color- and pair-numbers.

HISTORY

SVr3 introduced these functions:

```
slk_clear
slk_init
slk_label
slk_noutrefresh
```

slk_refresh
slk_restore
slk_set
slk_touch

SVr4 added these functions:

slk_attroff
slk_attron
slk_attrset
slk_start

X/Open Curses added these:

slk_attr_off
slk_attr_on
slk_attr_set
slk_color
slk_wset

SEE ALSO

curses(3X), **curs_attr**(3X), **curs_initscr**(3X), **curs_refresh**(3X), **curs_variables**(3X)