That question is actually several questions, and *"control characters"* addresses only a small part of it, e.g., the progress-bar for `curl` . More generally, these are common features of terminals (and terminal emulators).

Most of these common features are standardized in ECMA-48: Control Functions for Coded Character Sets. However, other features are *not*. They are implementation-defined.

ECMA-48 refers to *control functions*. That includes *control characters* and *control sequences* (often referred to as escape sequences, ANSI sequences, etc).

Some control characters are used for *simple* operations, e.g.,

- move the cursor to the previous column on the same row
- move the cursor to the first column on the same row
- move the cursor to the next tab stop on the same row
- move the cursor to the next row (and scroll the screen **if** on the last row already)

The progress-bar for `curl` is built using these simple operations. But control characters can do only so much, no more. Control sequences do more, e.g.,

- move the cursor to any row/column on the screen
- move the cursor to any row in the same column on the screen
- move the cursor to any column in the same row on the screen
- set tab-stops at any column on the screen
- move the cursor to the previous line
- make the screen scroll up or down without moving the cursor

So much for parallels between simple/complex. Control sequences also are used to change the color of text and background, erase text from the screen, show text in reverse-video (or bold, underline, blink).

Programs that draw a reverse-video (or colored) progress-bar use *control sequences*.

Although control sequences can do more, they can do only specific things. Putting them together to make text-editors, installation screens (and programs that draw colored progress-bars) gets complicated. Some of that is made simpler by using libraries that know about these things. Initially, we had termcap (and a database of a few hundred types of terminal), extended to terminfo (and a database of around a thousand types of terminal).

Even with standardization, there are dozens of terminal descriptions that you could ***use***. So we continue to use libraries for all but the most trivial of these applications. One is ncurses ("new-curses"), another is slang (technically "S-Lang").