

ANSI/VT100 Terminal Control Escape Sequences

When writing BASH or Perl scripts I find it dramatically improves its effectiveness and ease-of-use to employ colour and formatting controls. This is done through the use of ANSI Escape Codes.

The following is a partial listing of the VT100 control set. The ASCII “escape” character (decimal 027, hex 0x1B) is shown as `\e` since this is the code used in BASH and Perl. Bracketed tags are modifiable decimal parameters, e.g., `{ROW}` is replaced by a row number.

In Perl you just include “`\e`” in a variable or printed output, e.g.,:

```
print "\e[2J\ec";      #|Clear the screen, go Home, reset all settings
```

In BASH the technique is very similar:

```
Yellow=$"\e[01;33m"
Reset=$"\e[0m"

echo -n "This is ${Yellow}very${Reset} important!"
```

History

Some time in the 1960s or 1970s the Digital Equipment Corporation has a fabulously popular terminal called the VT100. This terminal had certain control sequences that would cause it to do things never done by display terminals until then. When a colour terminal was introduced the codes were expanded to include colour controls. These codes became a *de facto* standard that other terminals as well as the IBM PC (and subsequent clones) employed.

The VT100 codes have been expanded for PCs. I saw one site that called the codes “ANSIPlus”, but whether this is an official name or not I do not know. In any case, the codes below should work on all modern equipment.

Non-visual Codes (reset &c.)

Device Status		
Query Device Code	<code>\e[c</code>	Requests a Report Device Code response from the device.
Report Device Code	<code>\e[{code}Oc</code>	Generated by the device in response to Query Device Code request.
Query Device Status	<code>\e[5n</code>	Requests a Report Device Status response from the device.

Report Device OK	\e[0n	Generated by the device in response to a Query Device Status request; indicates that device is functioning correctly.
Report Device Failure	\e[3n	Generated by the device in response to a Query Device Status request; indicates that device is functioning improperly.
Query Cursor Position	\e[6n	Requests a Report Cursor Position response from the device.
Report Cursor Position	\e[{ROW}; {COLUMN}R	Generated by the device in response to a Query Cursor Position request; reports current cursor position.
Display Set-up		
Reset Device	\ec	Reset all terminal settings to default. On my PC this causes the screen to clear and cursor to go to the home position, but I don't know that this would always be the case.
Enable Line Wrap	\e[7h	Text wraps to next line if longer than the length of the display area.
Disable Line Wrap	\e[7l	Disables line wrapping.
Fonts		
Font Set G0	\e(Set default font.
Font Set G1	\e)	Set alternate font.
Cursor Control		
Cursor Home	\e[{ROW}; {COLUMN}H	Sets the cursor position. If no row/column parameters are provided (i.e., \eH) the cursor will move to the home position (the upper left of the screen).
Cursor Up	\e[{COUNT}A	Moves the cursor up by COUNT rows; the default count is 1.
Cursor Down	\e[{COUNT}B	Moves the cursor down by COUNT rows; the default count is 1.
Cursor Forward	\e[{COUNT}C	Moves the cursor forward by COUNT columns; the default count is 1.
Cursor Backward	\e[{COUNT}D	Moves the cursor backward by COUNT columns; the default count is 1.
Force Cursor Position	\e[{ROW}; {COLUMN}f	Identical to Cursor Home.
Save Cursor	\e[s	Save current cursor position.

Unsave Cursor	\e[u	Restores cursor position after a Save Cursor.
Save Cursor & Attrs	\e7	Save current cursor position.
Restore Cursor & Attrs	\e8	Restores cursor position after a Save Cursor.
Scrolling		
Scroll Screen	\e[r	Enable scrolling for entire display.
Scroll Screen	\e[{start};{end}r	Enable scrolling from row {start} to row {end}.
Scroll Down	\eD	Scroll display down one line.
Scroll Up	\eM	Scroll display up one line.
Tab (Tabulator) Control		
Set Tab	\eH	Sets a tab at the current position.
Clear and Reset Tabs	\e[##;##;#g	First number is clear function, second and third are new settings. The primary functions are: 0=Clear current horizontal. No number is the same as zero: \e[g == \e[0g 1=Clear current vertical 2=Clear all 3=Clear all horizontal 4=Clear all vertical
	\e[g	Clear horizontal tab at the cursor position.
	\e[1g	Clear vertical tab at the cursor position.
	\e[2;8;4g	Clear all tabs, then set horizontal tabs every 8 columns and vertical tabs every 4 lines.
	\e[3g	Clear all horizontal tabs. NB: This does not reset all TABs to their original 8-character spacing; rather it eliminates all TABs, so if you issue a TAB character the cursor will position itself at the right-most edge of the screen.
	\e[3;8g	Clear all horizontal tabs, then set new tabs every 8 spaces.
	\e[4;4g	Clear all vertical tabs, then set vertical tabs every 4 lines.
Erasing Text		
Erase to End of Line	\e[K	Erases from the current cursor position to the end of the current line.

Erase to Start of Line	<code>\e[1K</code>	Erases from the current cursor position to the start of the current line.
Erase Line	<code>\e[2K</code>	Erases the entire current line.
Erase Down	<code>\e[J</code>	Erases the screen from the current line down to the bottom of the screen.
Erase Up	<code>\e[1J</code>	Erases the screen from the current line up to the top of the screen.
Erase Screen	<code>\e[2J</code>	Erases the screen with the background colour and moves the cursor to home.
Printing (for terminals with a serial port that support local printing)		
Print Screen	<code>\e[i</code>	Print the current screen.
Print Line	<code>\e[1i</code>	Print the current line.
Stop Print Log	<code>\e[4i</code>	Disable log.
Start Print Log	<code>\e[5i</code>	Start log; all received text is echoed to a printer.
Define Key		
Set Key Definition	<code>\e[{key};" {string}"p</code>	Associates a string of text to a keyboard key. {key} indicates the key by its <u>ASCII</u> value in decimal.

Display Attributes (colour codes)

To set a colour or other visual attribute (e.g., bold) use the code sequence `\e[{attr1};...;{attrn}m`. For example, if you want to set the font colour to bold yellow with a red background the code would be `\e[1;33;41` or `\e[41;33;01` (the sequence of the codes is not important, and you can zero-pad if you like).

Code	Attribute	Foreground colours		Background colours	
0	Reset all attributes	30	Black	40	Black
1	Bright	31	Red	41	Red
2	Dim	32	Green	42	Green
4	Underscore	33	Yellow	43	Yellow
5	Blink	34	Blue	44	Blue
7	Reverse	35	Magenta	45	Magenta
8	Hidden	36	Cyan	46	Cyan
		37	White	47	White

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