Environment & Customization (Plus)

Linux Commands Course · Section 17

What Is the Shell Environment?

When you start a shell session, it loads configuration files that define your environment.

They control:

- Which variables are set (e.g., PATH)Which aliases and functions are available
- How your prompt looksWhich scripts run at login or for new terminals

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Profile and RC Files Overview

File	Loaded When	Purpose
<pre>~/.bash_profile ~/.bashrc ~/.profile /etc/profile /etc/profile.d/*.sh</pre>	login shells interactive shells login shells (if no .bash_profile) system-wide login setup system-wide scripts	Personal startup settings Aliases, functions, variables Environment setup Default for all users Extend /etc/profile

Login vs Non-Login Shells

Login shell → first shell after login (e.g., via console or SSH).
 Reads /etc/profile → ~/.bash_profile → optionally ~/.bashrc.
 Non-login shell → when opening a new terminal window or running a script.
 Reads ~/.bashrc only.

You can make .bash_profile load .bashrc manually:

```
if [ -f ~/.bashrc ]; then
    . ~/.bashrc
fi
```

Editing .bashrc

Add custom commands, aliases, and variables.

Example entries:

Custom aliases
alias ll='ls -lh --color=auto'
alias grep='grep --color=auto'

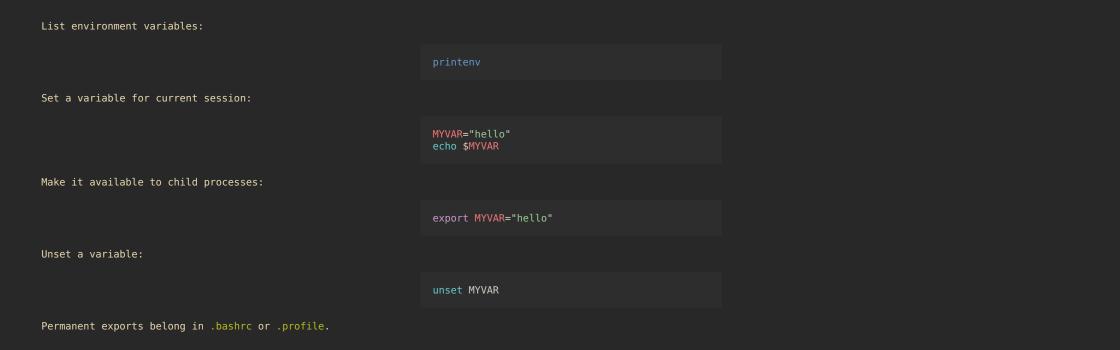
Custom PATH
export PATH="\$PATH:\$HOME/scripts"

Custom prompt
export PS1="\u@\h:\w\$ "

After editing, reload it:

source ~/.bashrc

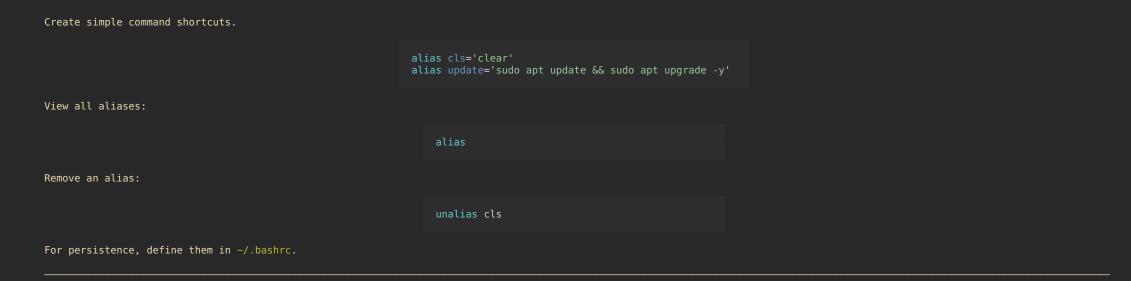
Environment Variables — export



The PATH Variable

PATH defines where the shell looks for executables.		
View it:		
	echo \$PATH	
Add a new directory to PATH (for current session):		
	export PATH="\$PATH:\$HOME/bin"	
To make it permanent, add the export line to your .bashrc.		
Check where a command is found:		
	which python	

Aliases — Shortcuts for Commands



Command Completion — bash-completion

```
bash-completion provides smart tab-completion for many commands.

Check if it's installed:

type _init_completion

Install if missing (Debian/Ubuntu):

sudo apt install bash-completion

Then source it in your .bashrc (if not already):

[[ $PS1 && -f /usr/share/bash-completion/bash_completion ]] && . /usr/share/bash-completion/bash_completion

Now commands like git, docker, and ssh autocomplete intelligently.
```

History Behavior - Environment Variables

Customize how Bash records your command history.	
HISTCONTROL	
Defines how duplicates and leading spaces are handled.	
	export HISTCONTROL=ignoredups:ignorespace
Options:	
 ignoredups — skip duplicate commands ignorespace — don't save commands starting with a space 	
HISTTIMEFORMAT	
Adds timestamps to history entries.	
	export HISTTIMEFORMAT="%F %T "
View history with time:	
	history

Other Useful History Variables

Variable	Description
HISTSIZE	number of commands kept in memory
HISTFILESIZE	number of lines kept in history file
HISTFILE	path to history file (usually ~/.bash_history)
HISTIGNORE	pattern list to skip saving certain commands

Example:

export HISTSIZE=5000
export HISTIGNORE="ls:cd:exit"

Making Persistent Customizations



Recap

- Startup files: .bashrc, .bash_profile, .profile, /etc/profile
 Variables: use export to persist and PATH to find commands
 Aliases: make common tasks faster
 bash-completion: improves workflow
 History tuning: timestamped and filtered history improves traceability

Customizing your shell makes Linux truly yours.