Getting started

From Termux Wiki

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Termux is a terminal emulator application enhanced with large set of command line utilities ported to Android OS. The main goal is to bring Linux command line experience to users of mobile devices with no rooting or other special setup required.

How does it work?

The terminal emulator is basically an application that launches the command line program by using system call execve(2) (https://www.man7.org/linux/man-pages/man2/execve.2.html) and redirecting standard input, output and error streams onto the display.

Most terminal applications available on Android OS work with a very limited set of utilities which are usually provided either by the operating system or other rooting tools such as Magisk. We have decided to go further and port common software usually available on GNU/Linux systems to Android OS.

Termux is neither a virtual machine nor any other kind of emulated or simulated environment. All provided packages are cross-compiled with Android NDK and only have compatibility patches to get them working on Android. The operating system does not provide full access to its file systems, so Termux cannot install package files into standard directories such as /bin, /etc, /usr or /var. Instead, all files are installed into the private application directory located at

```
/data/data/com.termux/files/usr
```

We call that directory "prefix" and usually refer to it as "$PREFIX" which also an exported environment variable in the Termux shell. Note that this directory cannot be changed or moved to an SD-Card because:

- The file system must have support for unix permissions and special files such as symlinks or sockets.
- The prefix path is hardcoded into all binaries.

In addition to prefix, users can store files in the home directory (or "$HOME") available at

```
/data/data/com.termux/files/home
```

However, the file system is not the only difference from the traditional Linux distributions. For more information, read Differences from Linux (/wiki/Differences_from_Linux).

Is Termux the same as Linux?

Termux provides a package ecosystem similar to the one in Linux distributions. However you should be aware that Termux is just a regular application running on Android OS.

As such:

1. As stated previously, everything is installed into $PREFIX and not the standard directories like /bin or /etc.

2. The environment is single-user only. Beware of this when executing commands as root, since you can mess up permissions and SELinux labels!

3. Termux uses the same libc and dynamic linker as Android OS.

All these 3 major differences cause issues when trying to run programs that have been compiled for a typical GNU/Linux system.

More information is available on the page Differences from Linux (/wiki/Differences_from_Linux).

What can I do with Termux?

There are a number of common use-cases for the Termux application:

- Data processing with Python.
- Programming in a development environment.
- Downloading and managing files and pages using time-established tools.
- Learning the basics of the Linux command line environment.
- Running an SSH client.
- Synchronizing and backing up your files.

Of course, usage is not limited to the topics listed above. There are more than 1000 packages in our repositories. If these packages don't have what you're looking for, you can compile your own - we have a variety of build tools, including compilers for languages like C, C++, Go, Rust. Interpreters for common languages like NodeJS, Python, Ruby are available too.

Please note that Termux is not a rooting tool and will not give you root privileges unless you are skilled enough to break the Android OS security.

Is root required?

Normally Termux does not require device to be rooted. In fact it's primarily targeted for non-root users.

You may want to root your device to:

- Modify a device's firmware.
- Manipulate the parameters of the operating system or kernel.
- Non-interactively install/uninstall APKs.
- Have full R/W access to all file systems on device.
- Have direct access to hardware devices such as BT/Wi-Fi modules or serial lines.

- Install a Linux distribution on top of Android through chroot (not proot!) or containerization.
- Generally have "full" control over your device.

Otherwise root isn't necessary.

Are there any tutorials?

> ! This section or list **is incomplete**. Please help to improve it.

We are not capable of maintaining the whole documentation about Linux commands, shell scripting and other general-purpose information so links to external resources are provided instead.

Strongly suggesting to avoid YouTube tutorials, especially related to Hacking (/wiki/Hacking). There a lot of clickbait targeted on not experienced users. If you decide to follow them, ensure that you are understanding the executed commands. Also always check the content of downloaded files. If content of downloaded scripts is obfuscated, that should be alarm about potentially unsafe content.

Commands

Discover the commands which can be executed in Linux terminal.

- https://linuxjourney.com/ (https://linuxjourney.com/)

Shell scripting

Shell scripting is an essential part of using the terminal. These are guides for shell (Bash) scripting:

- http://mywiki.wooledge.org/BashGuide (http://mywiki.wooledge.org/BashGuide)
- https://www.tldp.org/LDP/Bash-Beginners-Guide/html/ (https://www.tldp.org/LDP/Bash-Beginners-Guide/html/)

These links may be useful for advanced users:

- https://wiki-dev.bash-hackers.org/ (https://wiki-dev.bash-hackers.org/) - reference with examples of Bash built-in commands use.

How can I contribute?

The best ways to contribute are:

- Improving the Termux Wiki pages, i.e. by fleshing out sections that could use additional information or by correcting errors in grammar.
- Submitting bug reports. Please only submit reports that are about Termux packages or applications. Other errors should be submitted elsewhere.
- Submitting package updates.
- Submitting pull requests with bug fixes and improvements.

All of the source code for Termux can be found at https://github.com/termux (https://github.com/termux).

See also

- FAQ (/wiki/FAQ)
- Development Environments (/wiki/Development_Environments)
- Editors (/wiki/Editors)
- Differences from Linux (/wiki/Differences_from_Linux)
- Package Management (/wiki/Package_Management)

- Recover a broken environment (/wiki/Recover_a_broken_environment)
- Software (/wiki/Software)