

## Partea 1: Gestiunea pachetelor software

### 1. Comenzi și utilitare de bază

- 1.2. Instalați pachetul debian "jed", descărcand varianta pentru arhitectura amd64. Observați că dpkg nu rezolvă dependințele și va trebui să le instalați voi manual. Urmăriți pe această resursă sirul dependințelor și instalați-le pe fiecare pe rând. Păstrați în sistem pachetele descărcate. Link-ul pentru Ubuntu 20 , Ubuntu 18

```
ubuntu@ubuntu-VirtualBox:~$ wget http://archive.ubuntu.com/ubuntu/pool/universe/j/jed/jed_0.99.19-7_amd64.deb
--2025-11-25 08:29:55-- http://archive.ubuntu.com/ubuntu/pool/universe/j/jed/jed_0.99.19-7_amd64.deb
Resolving archive.ubuntu.com (archive.ubuntu.com)... 185.125.190.82, 185.125.190.81, 91.189.91.81, ...
Connecting to archive.ubuntu.com (archive.ubuntu.com)|185.125.190.82|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 129562 (127K) [application/vnd.debian.binary-package]
Saving to: 'jed_0.99.19-7_amd64.deb'

jed_0.99.19-7_a 100%[=====] 126.53K  353KB/s   in 0.4s

2025-11-25 08:29:55 (353 KB/s) - ‘jed_0.99.19-7_amd64.deb’ saved [129562/129562]

ubuntu@ubuntu-VirtualBox:~$ dpkg -i jed_0.99.19-7_amd64.deb
dpkg: error: requested operation requires superuser privilege
ubuntu@ubuntu-VirtualBox:~$ sudo dpkg -i jed_0.99.19-7_amd64.deb
Selecting previously unselected package jed.
(Reading database ... 200012 files and directories currently installed.)
Preparing to unpack jed_0.99.19-7_amd64.deb ...
Unpacking jed (1:0.99.19-7) ...
dpkg: dependency problems prevent configuration of jed:
  jed depends on jed-common (= 1:0.99.19-7); however:
    Package jed-common is not installed.

dpkg: error processing package jed (--install):
  dependency problems - leaving unconfigured
Processing triggers for man-db (2.12.0-4build2) ...
Errors were encountered while processing:
  jed
ubuntu@ubuntu-VirtualBox:~$
```

- 1.3. Verificați instalarea pachetului cu ajutorul comenii dpkg -l jed. Optional, rulați următoarele comenzi pentru a afla mai multe detalii despre pachetele instalate

```
ubuntu@ubuntu-VirtualBox:~$ dpkg -l jed
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/half-conf/Half-inst/trig-aWait/Trig-pend
|/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version       Architecture Description
||+-=-----+-----+-----+-----+
iU  jed          1:0.99.19-7  amd64        editor for programmers (textmode version)
```

```

ubuntu@ubuntu-VirtualBox:~$ dpkg -l '*jed*'
Desired=Unknown/Install/Remove/Purge/Hold
| Status=Not/Inst/Conf-files/Unpacked/half-inst/trig-aWait/Trig-pend
||/ Err?=(none)/Reinst-required (Status,Err: uppercase=bad)
||/ Name          Version       Architecture Description
+++=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-
iU  jed           1:0.99.19-7   amd64      editor for programmers (textmode version)
un  jed-common    <none>        <none>      (no description available)
ubuntu@ubuntu-VirtualBox:~$ dpkg -l | grep Usage: grep [OPTION]... PATTERN [FILE]...
Try 'grep --help' for more information.
ubuntu@ubuntu-VirtualBox:~$ dpkg -l | grep jed
iU  jed           1:0.99.19-7   amd64      editor for programmers (textmode version)
ode version)
ubuntu@ubuntu-VirtualBox:~$ dpkg -L jed
/.
/usr
/usr/bin
/usr/bin/jed
/usr/share
/usr/share/doc
/usr/share/man
/usr/share/man/man1
/usr/share/man/man1/jed.1.gz
/usr/share/doc/jed
ubuntu@ubuntu-VirtualBox:~$ apt-cache show jed
Package: jed
Architecture: amd64
Version: 1:0.99.20~pre.180+dfsg-2
Priority: optional
Section: universe/editors
Origin: Ubuntu
Maintainer: Ubuntu Developers <ubuntu-devel-discuss@lists.ubuntu.com>

```

```

ubuntu@ubuntu-VirtualBox:~$ apt-cache showpkg jed
Package: jed
Versions:
1:0.99.20~pre.180+dfsg-2 (/var/lib/apt/lists/ro.archive.ubuntu.com_ubuntu_dists_noble_universe_binary-amd64_Packages)
  Description Language: en
    File: /var/lib/apt/lists/ro.archive.ubuntu.com_ubuntu_dists_noble_universe_binary-amd64_Packages
    MD5: 0817fb02c803282d7ae2e219c951fa9
  Description Language: en
    File: /var/lib/apt/lists/ro.archive.ubuntu.com_ubuntu_dists_noble_universe_i18n_Translation-en
    MD5: 0817fb02c803282d7ae2e219c951fa9

1:0.99.19-7 (/var/lib/dpkg/status)
  Description Language: en
    File: /var/lib/dpkg/status
    MD5:

Reverse Depends:
  jed-extra, jed
  tmexpand, jed
  slang-xfig, jed
  slang-wildcard, jed
  slang-tess, jed
  slang-sqlite, jed
  slang-gsl, jed
  slang-gdbm, jed
  slang-expat, jed
  slang-curl, jed
  slang-cfitsio, jed
Dependencies:
  1:0.99.20~pre.180+dfsg-2 - libc6 (2.2.34) libgpm2 (2.1.20.7) libssl2 (2.2.2.4) jed-common (5:1:0.99.20~pre.180+dfsg-2) gpm (0 (null))
  1:0.99.19-7 - libc6 (2.2.15) libgpm2 (2.1.20.4) libssl2 (2.2.2.4) jed-common (5:1:0.99.19-7) gpm (0 (null))

```

#### 1.4. Căutarea unui pachet pe baza unui şablon (şir de caractere) se face prin:

```

ubuntu@ubuntu-VirtualBox:~$ apt-cache search editor
docbook-xml - standard XML documentation system for software and systems
ed - classic UNIX line editor
editorconfig-doc - coding style indenter across editors - documentation
exuberant-ctags - build tag file indexes of source code definitions
gir1.2-gtksource-5 - gir files for the GTK+ syntax highlighting widget
gnome-text-editor - simple text editor for GNOME
gparted - GNOME partition editor
gparted-common - GNOME partition editor -- common data
ibus-mozc - Mozc engine for IBus - Client of the Mozc input method
jfsutils - utilities for managing the JFS filesystem
libedit-dev - BSD editline and history libraries (development files)
libedit2 - BSD editline and history libraries
libeditorconfig-dev - coding style indenter across editors - development files
libeditorconfig0 - coding style indenter across editors - library
libgtksourceview-5-0 - shared libraries for the GTK 4 syntax highlighting widget
libgtksourceview-5-common - common files for the GTK 4 syntax highlighting widget
libgtksourceview-5-doc - documentation for the GTK 4 syntax highlighting widget
libreoffice-math - office productivity suite -- equation editor
mailcap - Debian's mailcap system, and support programs
mozc-data - Mozc input method - data files
mozc-server - Server of the Mozc input method
nano - small, friendly text editor inspired by Pico

```

- 1.5. Căutarea unui fișier într-un pachet, pe baza unui şablon (şir de caractere) se face prin:

```
ubuntu@ubuntu-VirtualBox:~$ dpkg -S /usr/bin/jed
jed: /usr/bin/jed
```

- 1.6. Instalare pachet cu apt-get. Adaugati temporar (per comandă) proxy-ul necesar pentru a putea instala prin rețea UTCN:

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get install mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl
  libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64
  libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-template-perl
  libmecab2 libprotobuf-lite32t64 mecab-ipadic
  mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libipc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libaio1t64 libcgi-fast-perl libcgi-pm-perl
  libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64
  libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-template-perl
  libmecab2 libprotobuf-lite32t64 mecab-ipadic
  mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-common mysql-server
  mysql-server-8.0 mysql-server-core-8.0
0 upgraded, 20 newly installed, 0 to remove and 117 not upgraded
.
```

- 1.7. Dezinstalare pachet cu apt-get

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get remove mysql-server
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libaiolt64 libcgi-fast-perl libcgi-pm-perl
  libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64
  libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-template-perl
  libmecab2 libprotobuf-lite32t64 mecab-ipadic
  mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Use 'sudo apt autoremove' to remove them.
The following packages will be REMOVED:
  mysql-server
0 upgraded, 0 newly installed, 1 to remove and 117 not upgraded.
After this operation, 42.0 kB disk space will be freed.
Do you want to continue? [Y/n] Y
(Reading database ... 200839 files and directories currently installed.)
Removing mysql-server (8.0.44-0ubuntu0.24.04.1) ...
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get purge jed
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  jed-common libaiolt64 libcgi-fast-perl libcgi-pm-perl
  libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64
  libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-template-perl
  libmecab2 libprotobuf-lite32t64 libslang2-modules
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0 slsh
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get autoremove
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be REMOVED:
  jed-common libaiolt64 libcgi-fast-perl libcgi-pm-perl
  libevent-core-2.1-7t64 libevent-pthreads-2.1-7t64
  libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-template-perl
  libmecab2 libprotobuf-lite32t64 libslang2-modules
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0
  mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0 slsh
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get autoclean
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get check
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ubuntu@ubuntu-VirtualBox:~$
```

### 1.8. Update/Upgrade

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get update
Hit:1 http://ro.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease
 [126 kB]
Get:3 http://ro.archive.ubuntu.com/ubuntu noble-updates InRelease
 [126 kB]
Get:4 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease
 [24.3 kB]
Get:5 http://ro.archive.ubuntu.com/ubuntu noble-backports InRelease
 [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64
 Packages [1,317 kB]
Get:7 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble/main
 amd64 Packages [140 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/main amd64
 Components [21.5 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/main amd64
 c-n-f Metadata [9,448 B]
Get:10 http://security.ubuntu.com/ubuntu noble-security/restrict
 ed amd64 Components [212 B]
```

```

ubuntu@ubuntu-VirtualBox:~$ sudo apt-get upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following upgrades have been deferred due to phasing:
  ubuntu-pro-client ubuntu-pro-client-l10n
The following packages have been kept back:
  libegl-mesa0 libgbm1 libgd3 libgl1-mesa-dri libglx-mesa0
  libxatracker2 linux-generic-hwe-24.04
  linux-headers-generic-hwe-24.04
  linux-image-generic-hwe-24.04 mesa-libgallium
  mesa-vulkan-drivers
The following packages will be upgraded:
  bluez bluez-cups bluez-obexd cloud-init coreutils
  cups-filters cups-filters-core-drivers dconf-cli
  dconf-gsettings-backend dconf-service distro-info-data
  firmware-sof-signed fwupd gdm3 gir1.2-gdm-1.0 gir1.2-gtk-4.0
  gir1.2-nm-1.0 gir1.2-packagekitlib-1.0 gnome-control-center

```

### 1.9. Instalați sublime, adăugând repository-ul.

```

ubuntu@ubuntu-VirtualBox:~$ wget -O - https://download.sublimetext.com/sublimehq-pub.gpg | sudo gpg --dearmor -o /etc/apt/trusted.gpg
.d/sublimehq-pub.gpg
--2025-11-25 09:19:33-- https://download.sublimetext.com/sublimehq-pub.gpg
Resolving download.sublimetext.com (download.sublimetext.com)... 104.236.0.104
Connecting to download.sublimetext.com (download.sublimetext.com)|104.236.0.104|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 7109 (6.9K) [application/octet-stream]
Saving to: 'STDOUT'

[  0%]----- 100%[=====] 6.94K --.-KB/s   in 0s
2025-11-25 09:19:34 (1.02 GB/s) - written to stdout [7109/7109]

ubuntu@ubuntu-VirtualBox:~$ echo "deb https://download.sublimetext.com/ apt/stable/" | sudo tee /etc/apt/sources.list.d/sublime-text.list
deb https://download.sublimetext.com/ apt/stable/
ubuntu@ubuntu-VirtualBox:~$
```

```

ubuntu@ubuntu-VirtualBox:~$ sudo apt-get update
Ign:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Ign:2 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease
Ign:3 http://ro.archive.ubuntu.com/ubuntu noble InRelease
Ign:4 http://ro.archive.ubuntu.com/ubuntu noble-updates InRelease
Ign:5 http://ro.archive.ubuntu.com/ubuntu noble-backports InRelease
Get:6 https://download.sublimetext.com apt/stable/ InRelease [3,271 B]
Get:7 https://download.sublimetext.com apt/stable/ Packages [10.8 kB]
Ign:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Ign:2 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease
Ign:3 http://ro.archive.ubuntu.com/ubuntu noble InRelease
Ign:4 http://ro.archive.ubuntu.com/ubuntu noble-updates InRelease
Ign:5 http://ro.archive.ubuntu.com/ubuntu noble-backports InRelease
Ign:2 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease
Ign:3 http://ro.archive.ubuntu.com/ubuntu noble InRelease
Ign:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Ign:4 http://ro.archive.ubuntu.com/ubuntu noble-updates InRelease
Ign:5 http://ro.archive.ubuntu.com/ubuntu noble-backports InRelease
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get install sublime-text
[sudo] password for ubuntu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  sublime-text
0 upgraded, 1 newly installed, 0 to remove and 13 not upgraded.
Need to get 15.9 MB of archives.
After this operation, 54.3 MB of additional disk space will be used.
Get:1 https://download.sublimetext.com apt/stable/ sublime-text 4200 [15.9 MB]
Fetched 15.9 MB in 8s (1,970 kB/s)
Selecting previously unselected package sublime-text.
(Reading database ... 200049 files and directories currently installed.)
Preparing to unpack .../sublime-text_4200_amd64.deb ...
Unpacking sublime-text (4200) ...
Setting up sublime-text (4200) ...
Processing triggers for desktop-file-utils (0.27-2build1) ...
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1.lubuntu3) ...
```

- 1.10. PROBLEMĂ. Identificați și instalați pachetele lipsă din următoarea listă: mc, vim, nano, emacs.

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get install mc vim nano emacs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
nano is already the newest version (7.2-2ubuntu0.1).
nano set to manually installed.
The following additional packages will be installed:
  emacs-bin-common emacs-common emacs-el emacs-gtk
  gsasl-common guile-3.0-libs libgc1 libgcc-14-dev libgccjit0
  libgsasl18 libgssglue1 libmailutils9t64 libmysqlclient21
  libnsl2 libntlm0 libpq5 libssh2-1t64 libtree-sitter0
  libwebpdecoder3 mailcap mailutils mailutils-common mc-data
  mysql-common postfix vim-runtime
Suggested packages:
  emacs-common-non-dfsg mailutils-mh mailutils-doc arj catdvi
  | texlive-binaries dbview djvuibre-bin epub-utils
  genisoimage gv imagemagick libaspell-dev links | w3m | lynx
  odt2txt python python-boto python-tz unar wimtools
  postfix-cdb postfix-doc postfix-ldap postfix-lmdb
  postfix-mta-sts-resolver postfix-mysql postfix-pcre
  postfix-pgsql postfix-sqlite procmail sasl2-bin
  | dovecot-common ctags vim-doc vim-scripts
The following NEW packages will be installed:
  emacs emacs-bin-common emacs-common emacs-el emacs-gtk
  gsasl-common guile-3.0-libs libgc1 libgcc-14-dev libgccjit0
  libgsasl18 libgssglue1 libmailutils9t64 libmysqlclient21
  libnsl2 libntlm0 libpq5 libssh2-1t64 libtree-sitter0
  libwebpdecoder3 mailcap mailutils mailutils-common mc
  mc-data mysql-common postfix vim vim-runtime
0 upgraded, 29 newly installed, 0 to remove and 13 not upgraded.
Need to get 55.6 MB/80.4 MB of archives.
```

ii	emacs	1:29.3+1~ubuntu2	all
)			GNU Emacs editor (metapackage)
ii	emacs-bin-common	1:29.3+1~ubuntu2	amd64
	chitecture dependent files		GNU Emacs editor's shared, ar
ii	emacs-common	1:29.3+1~ubuntu2	all
	chitecture independent infrastructure		GNU Emacs editor's shared, ar
ii	emacs-el	1:29.3+1~ubuntu2	all
ii	emacs-gtk	1:29.3+1~ubuntu2	amd64
	UI support)		GNU Emacs editor (with GTK+ G
ii	emacsen-common	3.0.5	all
cSEN			Common facilities for all ema
ii	libxdmcp6:amd64	1:1.1.3-0ubuntu6	amd64
	rotocol library		X11 Display Manager Control P
ii	libxvmc1:amd64	2:1.0.12-2build3	amd64
ii	mc	3:4.8.30-1ubuntu0.1	amd64
	ul file manager		X11 Video extension library
ii	mc-data	3:4.8.30-1ubuntu0.1	all
	ul file manager -- data files		Midnight Commander - a powerf
ii	nano	7.2-2ubuntu0.1	amd64
	nspired by Pico		small, friendly text editor i
ii	pcmciautils	018-14build1	amd64
6			PCMCIA utilities for Linux 2.
ii	vim	2:9.1.0.016-1ubuntu7.9	amd64
tor			Vi IMproved - enhanced vi edi
ii	vim-common	2:9.1.0.016-1ubuntu7.9	all
ii	vim-runtime	2:9.1.0.016-1ubuntu7.9	all
ii	vim-tiny	2:9.1.0.016-1ubuntu7.9	amd64
	tor - compact version		Vi IMproved - Common files
			Vi IMproved - Runtime files
			Vi IMproved - enhanced vi edi

```
ubuntu@ubuntu-VirtualBox:~$ mc --version
GNU Midnight Commander 4.8.30
Built with GLib 2.80.0
Built with S-Lang 2.3.3 with terminfo database
Built with libssh2 1.11.0
With builtin Editor and Aspell support
With subshell support as default
With support for background operations
With mouse support on xterm and Linux console
With support for X11 events
With internationalization support
With multiple codepages support
With ext2fs attributes support
Virtual File Systems:
  cpiofs, tarfs, sfs, extfs, ext2undelfs, ftpfs, sftpfs, fish
Data types:
  char: 8; int: 32; long: 64; void *: 64; size_t: 64; off_t: 64;
ubuntu@ubuntu-VirtualBox:~$
```

```
ubuntu@ubuntu-VirtualBox:~$ vim -version
VIM - Vi IMproved 9.1 (2024 Jan 02, compiled Sep 05 2025 19:44:46)
Garbage after option argument: "-version"
More info with: "vim -h"
ubuntu@ubuntu-VirtualBox:~$
```

```
ubuntu@ubuntu-VirtualBox:~$ nano --version
GNU nano, version 7.2
(C) 2023 the Free Software Foundation and various contributors
Compiled options: --disable-libmagic --enable-utf8
ubuntu@ubuntu-VirtualBox:~$ |
```

```
ubuntu@ubuntu-VirtualBox:~$ emacs --version
GNU Emacs 29.3
Copyright (C) 2024 Free Software Foundation, Inc.
GNU Emacs comes with ABSOLUTELY NO WARRANTY.
You may redistribute copies of GNU Emacs
under the terms of the GNU General Public License.
For more information about these matters, see the file named COPYING.
```

2. Setare alternative (update-alternatives) - ce sa se execute in locul unei anumite comenzi. De exemplu, python este un alternative pentru python2.7 sau python3 (in functie de sistem)

### 2.1. Executati comenzile

```
ubuntu@ubuntu-VirtualBox:~$ update-alternatives --query editor
Name: editor
Link: /usr/bin/editor
Slaves:
  editor.1.gz /usr/share/man/man1/editor.1.gz
  editor.da.1.gz /usr/share/man/da/man1/editor.1.gz
  editor.de.1.gz /usr/share/man/de/man1/editor.1.gz
  editor.fr.1.gz /usr/share/man/fr/man1/editor.1.gz
  editor.it.1.gz /usr/share/man/it/man1/editor.1.gz
  editor.ja.1.gz /usr/share/man/ja/man1/editor.1.gz
  editor.pl.1.gz /usr/share/man/pl/man1/editor.1.gz
  editor.ru.1.gz /usr/share/man/ru/man1/editor.1.gz
  editor.tr.1.gz /usr/share/man/tr/man1/editor.1.gz
Status: auto
Best: /bin/nano
Value: /bin/nano

Alternative: /bin/ed
Priority: -100
Slaves:
  editor.1.gz /usr/share/man/man1/ed.1.gz

Alternative: /bin/nano
Priority: 40
Slaves:
  editor.1.gz /usr/share/man/man1/nano.1.gz

Alternative: /usr/bin/emacs
Priority: 0
Slaves:
  editor.1.gz /usr/share/man/man1/emacs.emacs.1.gz

Alternative: /usr/bin/mcedit
Priority: 25
Slaves:
  editor.1.gz /usr/share/man/man1/mcedit.1.gz

Alternative: /usr/bin/vim.basic
Priority: 30
Slaves:
  editor.1.gz /usr/share/man/man1/vim.1.gz
  editor.da.1.gz /usr/share/man/da/man1/vim.1.gz
  editor.de.1.gz /usr/share/man/de/man1/vim.1.gz
  editor.fr.1.gz /usr/share/man/fr/man1/vim.1.gz
  editor.it.1.gz /usr/share/man/it/man1/vim.1.gz
  editor.ja.1.gz /usr/share/man/ja/man1/vim.1.gz
  editor.pl.1.gz /usr/share/man/pl/man1/vim.1.gz
  editor.ru.1.gz /usr/share/man/ru/man1/vim.1.gz
  editor.tr.1.gz /usr/share/man/tr/man1/vim.1.gz

Alternative: /usr/bin/vim.tiny
Priority: 15
Slaves:
  editor.1.gz /usr/share/man/man1/vim.1.gz
  editor.da.1.gz /usr/share/man/da/man1/vim.1.gz
  editor.de.1.gz /usr/share/man/de/man1/vim.1.gz
  editor.fr.1.gz /usr/share/man/fr/man1/vim.1.gz
  editor.it.1.gz /usr/share/man/it/man1/vim.1.gz
```

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /usr/bin/editor
lrwxrwxrwx 1 root root 24 Mar 31 2024 /usr/bin/editor -> /etc/alternatives/editor
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/alternatives/editor
lrwxrwxrwx 1 root root 9 Nov 25 08:55 /etc/alternatives/editor -> /bin/nano
ubuntu@ubuntu-VirtualBox:~$ update-alternatives --list editor
/bin/ed
/bin/nano
/usr/bin/emacs
/usr/bin/mcedit
/usr/bin/vim.basic
/usr/bin/vim.tiny
```

editor => nano:



```
ubuntu@ubuntu-VirtualBox:~$ sudo update-alternatives --config editor
[sudo] password for ubuntu:
There are 6 choices for the alternative editor (providing /usr/bin/editor).

  Selection    Path          Priority   Status
-----*
* 0          /bin/nano      40         auto mode
  1          /bin/ed        -100       manual mode
  2          /bin/nano      40         manual mode
  3          /usr/bin/emacs   0          manual mode
  4          /usr/bin/mcedit  25         manual mode
  5          /usr/bin/vim.basic 30         manual mode
  6          /usr/bin/vim.tiny 15         manual mode

Press <enter> to keep the current choice[*], or type selection number: 5
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/editor (e
ditor) in manual mode
```

editor => vim

```
ubuntu@ubuntu-VirtualBox:~$ update-alternatives --display editor
editor - manual mode
  link best version is /bin/nano
  link currently points to /usr/bin/vim.basic
  link editor is /usr/bin/editor
  slave editor.1.gz is /usr/share/man/man1/editor.1.gz
  slave editor.da.1.gz is /usr/share/man/da/man1/editor.1.gz
  slave editor.de.1.gz is /usr/share/man/de/man1/editor.1.gz
  slave editor.fr.1.gz is /usr/share/man/fr/man1/editor.1.gz
  slave editor.it.1.gz is /usr/share/man/it/man1/editor.1.gz
  slave editor.ja.1.gz is /usr/share/man/ja/man1/editor.1.gz
  slave editor.pl.1.gz is /usr/share/man/pl/man1/editor.1.gz
  slave editor.ru.1.gz is /usr/share/man/ru/man1/editor.1.gz
  slave editor.tr.1.gz is /usr/share/man/tr/man1/editor.1.gz
/bin/ed - priority -100
  slave editor.1.gz: /usr/share/man/man1/ed.1.gz
/bin/nano - priority 40
  slave editor.1.gz: /usr/share/man/man1/nano.1.gz
/usr/bin/emacs - priority 0
  slave editor.1.gz: /usr/share/man/man1/emacs.emacs.1.gz
/usr/bin/mcedit - priority 25
  slave editor.1.gz: /usr/share/man/man1/mcedit.1.gz
/usr/bin/vim.basic - priority 30
  slave editor.1.gz: /usr/share/man/man1/vim.1.gz
  slave editor.da.1.gz: /usr/share/man/da/man1/vim.1.gz
  slave editor.de.1.gz: /usr/share/man/de/man1/vim.1.gz
  slave editor.fr.1.gz: /usr/share/man/fr/man1/vim.1.gz
  slave editor.it.1.gz: /usr/share/man/it/man1/vim.1.gz
  slave editor.ja.1.gz: /usr/share/man/ja/man1/vim.1.gz
  slave editor.pl.1.gz: /usr/share/man/pl/man1/vim.1.gz
  slave editor.ru.1.gz: /usr/share/man/ru/man1/vim.1.gz
  slave editor.tr.1.gz: /usr/share/man/tr/man1/vim.1.gz
/usr/bin/vim.tiny - priority 15
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-alternatives --set editor /bin/nano
update-alternatives: using /bin/nano to provide /usr/bin/editor (editor) in
  manual mode
ubuntu@ubuntu-VirtualBox:~$
```

```
ubuntu@ubuntu-VirtualBox:~$ update-alternatives --display editor
editor - manual mode
  link best version is /bin/nano
  link currently points to /bin/nano
  link editor is /usr/bin/editor
  slave editor.1.gz is /usr/share/man/man1/editor.1.gz
  slave editor.da.1.gz is /usr/share/man/da/man1/editor.1.gz
  slave editor.de.1.gz is /usr/share/man/de/man1/editor.1.gz
  slave editor.fr.1.gz is /usr/share/man/fr/man1/editor.1.gz
  slave editor.it.1.gz is /usr/share/man/it/man1/editor.1.gz
  slave editor.ja.1.gz is /usr/share/man/ja/man1/editor.1.gz
  slave editor.pl.1.gz is /usr/share/man/pl/man1/editor.1.gz
  slave editor.ru.1.gz is /usr/share/man/ru/man1/editor.1.gz
  slave editor.tr.1.gz is /usr/share/man/tr/man1/editor.1.gz
/bin/ed - priority -100
  slave editor.1.gz: /usr/share/man/man1/ed.1.gz
/bin/nano - priority 40
  slave editor.1.gz: /usr/share/man/man1/nano.1.gz
/usr/bin/emacs - priority 0
  slave editor.1.gz: /usr/share/man/man1/emacs.emacs.1.gz
/usr/bin/mcedit - priority 25
  slave editor.1.gz: /usr/share/man/man1/mcedit.1.gz
/usr/bin/vim.basic - priority 30
  slave editor.1.gz: /usr/share/man/man1/vim.1.gz
  slave editor.da.1.gz: /usr/share/man/da/man1/vim.1.gz
  slave editor.de.1.gz: /usr/share/man/de/man1/vim.1.gz
  slave editor.fr.1.gz: /usr/share/man/fr/man1/vim.1.gz
  slave editor.it.1.gz: /usr/share/man/it/man1/vim.1.gz
  slave editor.ja.1.gz: /usr/share/man/ja/man1/vim.1.gz
  slave editor.pl.1.gz: /usr/share/man/pl/man1/vim.1.gz
  slave editor.ru.1.gz: /usr/share/man/ru/man1/vim.1.gz
  slave editor.tr.1.gz: /usr/share/man/tr/man1/vim.1.gz
/usr/bin/vim.tiny - priority 15
  slave editor.1.gz: /usr/share/man/man1/vim.1.gz
  slave editor.da.1.gz: /usr/share/man/da/man1/vim.1.gz
```

2.2. PROBLEMĂ. Aflați cel puțin o altă comandă (program) generică ce are alternative și afișați alternativele ei.

```
ubuntu@ubuntu-VirtualBox:~$ update-alternatives --list x-www-browser
/usr/bin/firefox
/usr/bin/google-chrome-stable
ubuntu@ubuntu-VirtualBox:~$
```

## Partea 2: Servicii

1. Incercati si testati urmatoarele utilitare interactive de control a serviciilor: rcconf, sysv-rc-conf, bum.

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get install rcconf sysv-rc-conf bum
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package rcconf
E: Unable to locate package sysv-rc-conf
E: Unable to locate package bum
```

2. Controlul serviciilor cu "update-rc.d".

- 2.1. Serviciile Linux se pot controla folosind scripturile din directorul "/etc/init.d/".

Totusi, daca pornim sistemul sau daca se schimba nivelul de rulare (runlevel), aceste scripturi sunt cautele in alt loc, in /etc/rcX.d/, unde X este numarul corepunzator nivelului de rulare. De obicei, la instalarea unui nou serviciu, acesta e pornit si va fi pornit automat de cate ori repornim calculatorul, datorita scriptului de instalare din "/etc/init.d/" si a legaturilor spre acel script create in directoarele "/etc/rcX.d/".

```
ubuntu@ubuntu-VirtualBox:~$ /etc/init.d/
-bash: /etc/init.d/: Is a directory
ubuntu@ubuntu-VirtualBox:~$ ls /etc/init.d/
alsa-utils          grub-common      slapd
anacron             kerneloops      speech-dispatcher
apache2              keyboard-setup.sh spice-vdagent
apache-htcacheclean kmod            ssh
apparmor            mysql           sssd
apport              openvpn         sysstat
bluetooth           plymouth        ufw
console-setup.sh    plymouth-log    unattended-upgrades
cron                postfix         uuidd
cups               procps         whoopsie
dbus               rsync          x11-common
adm3               saned
```

2.2. Pentru a porni manual un serviciu (de exemplu apache2), folosim comanda:

```
ubuntu@ubuntu-VirtualBox:~$ sudo /etc/init.d/apache2 start
Starting apache2 (via systemctl): apache2.service.
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; pre>
   Active: active (running) since Tue 2025-11-25 10:34:14 EET; 8s ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 4264 ExecStart=/usr/sbin/apachectl start (code=exited, status>
   Main PID: 4267 (apache2)
      Tasks: 6 (limit: 9431)
     Memory: 12.3M (peak: 12.9M)
        CPU: 108ms
      CGroup: /system.slice/apache2.service
              └─4267 /usr/sbin/apache2 -k start
                  ├─4269 /usr/sbin/apache2 -k start
                  ├─4270 /usr/sbin/apache2 -k start
                  ├─4271 /usr/sbin/apache2 -k start
                  ├─4272 /usr/sbin/apache2 -k start
                  └─4273 /usr/sbin/apache2 -k start

Nov 25 10:34:14 ubuntu-VirtualBox systemd[1]: Starting apache2.service - T>
Nov 25 10:34:14 ubuntu-VirtualBox apachectl[4266]: AH00558: apache2: Could>
Nov 25 10:34:14 ubuntu-VirtualBox systemd[1]: Started apache2.service - Th>
lines 1-20/20 (END)
```

2.3. Pentru a vedea situatia serviciului apache2 vom folosi comanda:

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 23 11:55 /etc/rc6.d/K01apache2 -> ../init.d/apache2
```

2.4. Oprire serviciu:

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:38 /etc/rc6.d/K01apache2 -> ../init.d/apache2
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d -f apache2 remove
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2
ls: cannot access '/etc/rc?.d/*apache2': No such file or directory
ubuntu@ubuntu-VirtualBox:~$
```

2.5. Adaugare serviciu la bootare:

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d apache2 defaults
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc6.d/K01apache2 -> ../init.d/apache2
ubuntu@ubuntu-VirtualBox:~$
```

2.6. Adaugare serviciu cu prioritate 91 de start/kill:

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d apache2 defaults 91
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc6.d/K01apache2 -> ../init.d/apache2
ubuntu@ubuntu-VirtualBox:~$
```

2.7. Adaugare serviciu cu prioritati diferite de start si kill:

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d apache2 defaults 20 80
ubuntu@ubuntu-VirtualBox:~$
```

- 2.8. Start/Kill la nivele de rulare specifice, de exemplu, pornirea apache cu prioritate 20 pe nivelele 2, 3, 4, 5 si oprire cu prioritate 80 pe nivelele 0, 1, 6:

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d apache2 start 20 2 3 4 5 . stop 80 0 1 6 .
update-rc.d: warning: start and stop actions are no longer supported; falling back to defaults
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2*
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:41 /etc/rc6.d/K01apache2 -> ../init.d/apache2
ubuntu@ubuntu-VirtualBox:~$
```

2.9. PROBLEME.

- 2.9.1. Urmăriți în directoarele /etc/rcX.d/ efectul comenzi: update-rc.d apache2 start 20 2 3 4 . start 30 5 . stop 80 0 1 6 .

```
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d apache2 start 20 2 3 4 . start 30 5 . stop 80 0 1 6 .
[sudo] password for ubuntu:
update-rc.d: warning: start and stop actions are no longer supported; falling back to defaults
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2*
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc0.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc1.d/K01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc2.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc3.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc4.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc5.d/S01apache2 -> ../init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 10:49 /etc/rc6.d/K01apache2 -> ../init.d/apache2
ubuntu@ubuntu-VirtualBox:~$
```

2.9.2. Setați în header-ul (LSB) de comentariu al scriptului "/etc/init.d/apache2" aceleași opțiuni ca și în comanda de mai sus.

```
GNU nano 7.2                               /etc/init.d/apache2 *

#!/bin/sh
### BEGIN INIT INFO
# Provides:          apache2
# Required-Start:    $local_fs $remote_fs $network $syslog $name
# Required-Stop:     $local_fs $remote_fs $network $syslog $name
# Default-Start:    2 3 4 5
# Default-Stop:     0 1 6
# X-Start-Priority-2: 20
# X-Start-Priority-3: 20
# X-Start-Priority-4: 20
# X-Start-Priority-5: 30
# X-Stop-Priority: 80
# X-Interactive:    true
# Short-Description: Apache2 web server
# Description:       Start the web server
#   This script will start the apache2 web server.
### END INIT INFO

DESC="Apache httpd web server"
NAME=apache2
DAEMON=/usr/sbin/$NAME
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/init.d/apache2
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*apache2*
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc0.d/K01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc1.d/K01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc2.d/S01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc3.d/S01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc4.d/S01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc5.d/S01apache2 ->
./init.d/apache2
lrwxrwxrwx 1 root root 17 Nov 25 22:14 /etc/rc6.d/K01apache2 ->
./init.d/apache2
ubuntu@ubuntu-VirtualBox:~$
```

3. Script Init pentru pornire automata, la bootare a unei aplicatii/serviciu:

```
GNU nano 7.2
#!/bin/sh
### BEGIN INIT INFO
# Provides: myservice
# Required-Start: $local_fs $remote_fs $network
# Required-Stop: $local_fs $remote_fs $network
# Default-Start: 2 3 4 5
# Default-Stop: 0 1 6
# Short-Description: My Custom Service
# Description: Description of my custom service
### END INIT INFO

#
# Below is the source function library (optional on Ubuntu)
#
if [ -f /etc/init.d/functions ]; then
    . /etc/init.d/functions
fi

#
if [ -f /etc/default/myservice ]; then
    . /etc/default/myservice
fi

#
# Below is the Script controlling the service
#
case "$1" in
start)
    echo -n "Start service myservice"
    /usr/sbin/myservice start
    ;;
stop)
    echo -n "Stop service myservice"
    /usr/sbin/myservice stop
    ;;
restart)
    echo -n "Restart service myservice"
    /usr/sbin/myservice restart
    ;;
*)
    echo "Usage: $0 {start|stop|restart}"
    exit 1
    ;;
esac
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/init.d/myservice
ubuntu@ubuntu-VirtualBox:~$ sudo chmod +x /etc/init.d/myservice
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d myservice defaults
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc0.d/K01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc1.d/K01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc2.d/S01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc3.d/S01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc4.d/S01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc5.d/S01myservice -> ../init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc6.d/K01myservice -> ../init.d/myservice
ubuntu@ubuntu-VirtualBox:~$
```

```

GNU nano 7.2                               /usr/sbin/myservice *
#!/bin/bash

case "$1" in
    start)
        echo "myservice started"
        ;;
    stop)
        echo "myservice stopped"
        ;;
    restart)
        echo "myservice restarted"
        ;;
    *)
        echo "Usage: $0 {start|stop|restart}"
        exit 1
        ;;
esac

```

```

ubuntu@ubuntu-VirtualBox:~$ sudo nano /usr/sbin/myservice
ubuntu@ubuntu-VirtualBox:~$ sudo chmod +x /usr/sbin/myservice
ubuntu@ubuntu-VirtualBox:~$ sudo /etc/init.d/myservice start
Start service myservice myservice started
ubuntu@ubuntu-VirtualBox:~$ sudo /etc/init.d/myservice restart
Restart service myservice myservice restarted
ubuntu@ubuntu-VirtualBox:~$ sudo /etc/init.d/myservice stop
Stop service myservice myservice stopped
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/rc?.d/*myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc0.d/K01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc1.d/K01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc2.d/S01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc3.d/S01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc4.d/S01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc5.d/S01myservice -> ../
init.d/myservice
lrwxrwxrwx 1 root root 19 Nov 25 22:27 /etc/rc6.d/K01myservice -> ../
init.d/myservice
ubuntu@ubuntu-VirtualBox:~$ sudo update-rc.d myservice defaults
ubuntu@ubuntu-VirtualBox:~$

```

## 5. Scripturi CRON (planificare de task-uri)

### 5.1. Deschideți și înțelegeți conținutul fișierului "/etc/crontab".

```
ubuntu@ubuntu-VirtualBox:~$ cat /etc/crontab
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab`
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.

SHELL=/bin/sh
# You can also override PATH, but by default, newer versions inherit it from the environment
#PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin

# Example of job definition:
# .----- minute (0 - 59)
# | .----- hour (0 - 23)
# | | .---- day of month (1 - 31)
# | | | .-- month (1 - 12) OR jan,feb,mar,apr ...
# | | | | --- day of week (0 - 6) (Sunday=0 or 7) OR sun,mon,tue,wed,thu,fri,sat
# |
# * * * * * user-name command to be executed
17 * * * * root    cd / && run-parts --report /etc/cron.hourly
25 6 * * * root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.daily; }
47 6 * * 7 root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.weekly; }
52 6 1 * * root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.monthly; }
#
ubuntu@ubuntu-VirtualBox:~$
```

### 5.2. Listați conținutul directoarelor

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/cron.hourly/
total 0
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/cron.daily/
total 32
-rwxr-xr-x 1 root root  311 Sep 25  2023 @anacron
-rwxr-xr-x 1 root root  539 Mar 18  2024 apache2
-rwxr-xr-x 1 root root  376 Jul  8 17:50 apport
-rwxr-xr-x 1 root root 1478 Mar 22  2024 apt-compat
-rwxr-xr-x 1 root root  123 Feb  5 2024 dpkg
lrwxrwxrwx 1 root root   37 Nov 14 22:31 google-chrome -> /opt/google
/chrome/cron/google-chrome
-rwxr-xr-x 1 root root  377 Apr  8 2024 logrotate
-rwxr-xr-x 1 root root 1395 Mar 29  2024 man-db
-rwxr-xr-x 1 root root  518 Jan  9 2024 sysstat
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/cron.monthly/
total 4
-rwxr-xr-x 1 root root 313 Sep 25  2023 @anacron
ubuntu@ubuntu-VirtualBox:~$ ls -l /etc/cron.d/
total 16
-rw-r--r-- 1 root root 219 Nov 17  2023 anacron
-rw-r--r-- 1 root root 201 Apr  8  2024 e2scrub_all
-rw-r--r-- 1 root root 712 Nov 17 13:39 php
-rw-r--r-- 1 root root 396 Jan  9  2024 sysstat
ubuntu@ubuntu-VirtualBox:~$ |
```

- 5.3. Creează în directorul HOME al contului curent un script (e.g. "/home/aso1/aso-cron") cu următorul conținut:

```
ubuntu@ubuntu-VirtualBox:~$ cd ~
ubuntu@ubuntu-VirtualBox:~$ pwd
/home/ubuntu
ubuntu@ubuntu-VirtualBox:~$ nano aso-cron
ubuntu@ubuntu-VirtualBox:~$ cat aso-cron
#!/bin/bash
logger CRON ASO
mkdir -p /tmp`whoami`/cron
ubuntu@ubuntu-VirtualBox:~$
```

- 5.4. Setați drepturi de execuție pentru scriptul create

```
ubuntu@ubuntu-VirtualBox:~$ chmod +x aso-cron
ubuntu@ubuntu-VirtualBox:~$ ll | grep aso-cron
-rwxrwxr-x 1 ubuntu ubuntu 55 Nov 25 22:42 aso-cron*
ubuntu@ubuntu-VirtualBox:~$
```

- 5.5. Adăugați o intrare în fișierul "/etc/crontab" prin care să rulați scriptul creat după aprox. 3 minute (setați ora corespunzătoare). Urmăriți efectul rulării scriptului prin execuția comenziilor:

```
ubuntu@ubuntu-VirtualBox:~$ cd ~
ubuntu@ubuntu-VirtualBox:~$ nano aso-cron
ubuntu@ubuntu-VirtualBox:~$ cat aso-cron
#!/bin/bash
logger CRON ASO
mkdir -p /tmp`whoami`/cron
ubuntu@ubuntu-VirtualBox:~$ chmod +x aso-cron
ubuntu@ubuntu-VirtualBox:~$ date
Tue Nov 25 10:55:30 PM EET 2025
ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/crontab
ubuntu@ubuntu-VirtualBox:~$ cat /etc/crontab
# /etc/crontab: system-wide crontab
# Unlike any other crontab you don't have to run the `crontab`
# command to install the new version when you edit this file
# and files in /etc/cron.d. These files also have username fields,
# that none of the other crontabs do.

SHELL=/bin/sh
# You can also override PATH, but by default, newer versions inherit it from the environment
#PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin

# Example of job definition:
# ----- minute (0 - 59)
# | ----- hour (0 - 23)
# | | ----- day of month (1 - 31)
# | | | ----- month (1 - 12) OR jan,feb,mar,apr ...
# | | | | ----- day of week (0 - 6) (Sunday=0 or 7) OR sun,mon,tue,wed,thu,fri,sat
# | | | |
# * * * * * user-name command to be executed
17 * * * * root    cd / && run-parts --report /etc/cron.hourly
25 6 * * * root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.daily; }
47 6 * * 7 root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.weekly; }
52 6 1 * * root    test -x /usr/sbin/anacron || { cd / && run-parts --report /etc/cron.monthly; }
58 22 * * * ubuntu  /home/ubuntu/aso-cron
#
```

```
ubuntu@ubuntu-VirtualBox:~$ tail -f /var/log/syslog
2025-11-25T22:53:26.142794+02:00 ubuntu-VirtualBox dbus-daemon[678]: [system] Activating via systemd: service name='org.freedesktop.nm_dispatcher' units='dbus-org.freedesktop.nm-dispatcher.service' requested by ':1.14' (uid=0 pid=848 comm="/usr/sbin/NetworkManager --no-daemon" label="unconfined")
2025-11-25T22:53:26.153798+02:00 ubuntu-VirtualBox systemd[1]: Starting NetworkManager-dispatcher.service - Network Manager Script Dispatcher Service...
2025-11-25T22:53:26.251881+02:00 ubuntu-VirtualBox dbus-daemon[678]: [system] Successfully activated service 'org.freedesktop.nm_dispatcher'
2025-11-25T22:53:26.252451+02:00 ubuntu-VirtualBox systemd[1]: Started NetworkManager-dispatcher.service - Network Manager Script Dispatcher Service...
2025-11-25T22:53:36.292484+02:00 ubuntu-VirtualBox systemd[1]: NetworkManager-dispatcher.service: Deactivated successfully.
2025-11-25T22:53:43.657989+02:00 ubuntu-VirtualBox tracker-miner-fs-3[4151]: (tracker-extract-3:4151): GLib-GIO-WARNING **: 22:53:43.056: Error creating IO channel for /proc/self/mountinfo: Invalid argument (g-io-error-quark, 13)
2025-11-25T22:54:41.783668+02:00 ubuntu-VirtualBox tracker-miner-fs-3[4168]: (tracker-extract-3:4168): GLib-GIO-WARNING **: 22:54:41.781: Error creating IO channel for /proc/self/mountinfo: Invalid argument (g-io-error-quark, 13)
2025-11-25T22:54:53.818652+02:00 ubuntu-VirtualBox tracker-miner-fs-3[4174]: (tracker-extract-3:4174): GLib-GIO-WARNING **: 22:54:53.815: Error creating IO channel for /proc/self/mountinfo: Invalid argument (g-io-error-quark, 13)
2025-11-25T22:55:01.417596+02:00 ubuntu-VirtualBox CRON[4182]: (root) CMD (command -v debian-sal > /dev/null && debian-sal 1 1)
2025-11-25T22:55:25.288848+02:00 ubuntu-VirtualBox tracker-miner-fs-3[4187]: (tracker-extract-3:4187): GLib-GIO-WARNING **: 22:55:25.286: Error creating IO channel for /proc/self/mountinfo: Invalid argument (g-io-error-quark, 13)
2025-11-25T22:57:01.511734+02:00 ubuntu-VirtualBox cron[751]: (systeme) RELOAD (/etc/crontab)
2025-11-25T22:58:01.564879+02:00 ubuntu-VirtualBox CRON[4289]: (ubuntu) CMD ( /home/ubuntu/aso-cron)
2025-11-25T22:58:01.608771+02:00 ubuntu-VirtualBox ubuntu: CRON ASO
```

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /tmp/ubuntu/cron
total 0
```

## 5.6. Aceeași cerință, dar prin adăugarea intrării de CRON într-un fișier

```
ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/cron.d/aso
ubuntu@ubuntu-VirtualBox:~$ cat /etc/cron.d/aso
# Schdul CRON pentru ASO
SHELL=/bin/bash
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin

9 23 * * * ubuntu /home/ubuntu/aso-cron
ubuntu@ubuntu-VirtualBox:~$ date
Tue Nov 25 11:07:36 PM EET 2025
crontab: error reading crontab: Permission denied.

2025-11-25T23:08:36.340543+02:00 ubuntu-VirtualBox systemd[1]: NetworkManager-dispatcher.service: Deactivated successfully.
2025-11-25T23:09:01.127664+02:00 ubuntu-VirtualBox CRON[4317]: (root) CMD ([ -x /usr/lib/php/sessionclean ] && if [ ! -d /run/systemd/system ]; then /usr/lib/php/sessionclean; fi)
2025-11-25T23:09:01.141071+02:00 ubuntu-VirtualBox systemd[1]: Starting phpsessionclean.service - Clean php session files...
2025-11-25T23:09:01.163362+02:00 ubuntu-VirtualBox CRON[4319]: (ubuntu) CMD (/home/ubuntu/aso-cron)
2025-11-25T23:09:01.197298+02:00 ubuntu-VirtualBox ubuntu: CRON ASO
2025-11-25T23:09:01.617323+02:00 ubuntu-VirtualBox systemd[1]: phpsessionclean.service: Deactivated successfully.
2025-11-25T23:09:01.617547+02:00 ubuntu-VirtualBox systemd[1]: Finished phpsessionclean.service - Clean php session files.
```

```
ubuntu@ubuntu-VirtualBox:~$ ls -l /tmp/ubuntu/cron
total 0
```

- 5.7. Aceeași cerință, dar prin adăugarea intrării CRON în fișierul crontab al utilizatorului (neprivilegat curent, e.g. aso1)

```
GNU nano 1.2          /tmp/crontab.pES3WQ/crontab
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
15 23 * * * /home/ubuntu/aso-cron
```

```
ubuntu@ubuntu-VirtualBox:~$ crontab -e
no crontab for ubuntu - using an empty one
```

```
Select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/mcedit
 4. /usr/bin/vim.tiny
 5. /usr/bin/emacs
 6. /bin/ed
```

```
Choose 1-6 [1]: 1
crontab: installing new crontab
```

```

ubuntu@ubuntu-VirtualBox:~$ sudo ls -l /var/spool/cron/crontabs/
total 4
-rw----- 1 ubuntu crontab 1124 Nov 25 23:13 ubuntu
ubuntu@ubuntu-VirtualBox:~$ sudo cat /var/spool/cron/crontabs/ubuntu
# DO NOT EDIT THIS FILE - edit the master and reinstall.
# (/tmp/crontab.xTS8kb/crontab installed on Tue Nov 25 23:13:00 2025)
# (Cron version -- $Id: crontab.c,v 2.13 1994/01/17 03:20:37 vixie Exp $)
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
15 23 * * * /home/ubuntu/aso-cron

ubuntu@ubuntu-VirtualBox:~$ tail -f /var/log/syslog
2025-11-25T23:13:00.407240+02:00 ubuntu-VirtualBox crontab[4381]: (ubuntu) REPLACE (ubuntu)
2025-11-25T23:13:00.410868+02:00 ubuntu-VirtualBox crontab[4381]: (ubuntu) END EDIT (ubuntu)
2025-11-25T23:13:10.031477+02:00 ubuntu-VirtualBox crontab[4413]: (ubuntu) BEGIN EDIT (ubuntu)
2025-11-25T23:13:26.109061+02:00 ubuntu-VirtualBox NetworkManager[848]: <info> [1764105206.1074] dhcpc4 (enp0s8): state changed new lease, address=192.168.56.102
2025-11-25T23:13:26.112732+02:00 ubuntu-VirtualBox dbus-daemon[678]: [system] Activating via systemd: service name='org.freedesktop.nm_dispatcher' unit='dbus-org.freedesktop.nm-dispatcher.service' requested by ':1.14' (uid=0 pid=848 comm="/usr/sbin/NetworkManager --no-daemon" label="unconfined")
2025-11-25T23:13:26.140403+02:00 ubuntu-VirtualBox systemd[1]: Starting NetworkManager-dispatcher.service - Network Manager Script Dispatcher Service...
2025-11-25T23:13:26.169312+02:00 ubuntu-VirtualBox dbus-daemon[678]: [system] Successfully activated service 'org.freedesktop.nm_dispatcher'
2025-11-25T23:13:26.170406+02:00 ubuntu-VirtualBox systemd[1]: Started NetworkManager-dispatcher.service - Network Manager Script Dispatcher Service.
2025-11-25T23:13:28.225700+02:00 ubuntu-VirtualBox crontab[4413]: (ubuntu) END EDIT (ubuntu)
2025-11-25T23:13:36.289678+02:00 ubuntu-VirtualBox systemd[1]: NetworkManager-dispatcher.service: Deactivated successfully.
2025-11-25T23:15:01.308557+02:00 ubuntu-VirtualBox CRON[4441]: (root) CMD (command -v debian-sal >/dev/null && debian-sal 1 1)
2025-11-25T23:15:01.324811+02:00 ubuntu-VirtualBox CRON[4443]: (ubuntu) CMD (/home/ubuntu/aso-cron)
2025-11-25T23:15:01.349714+02:00 ubuntu-VirtualBox ubuntu: CRON ASO
^C

ubuntu@ubuntu-VirtualBox:~$ ls -l /tmp/asol/cron
ls: cannot access '/tmp/asol/cron': No such file or directory
ubuntu@ubuntu-VirtualBox:~$ |

```

Exercitii optionale:

1. Setarea unui repository cache folosind "apt-cacher"

- 1.1. Instalam utilitarul apt-cacher

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get install apt-cacher
[sudo] password for ubuntu:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
libberkeleydb-perl libcompress-raw-bzip2-perl
libcompress-raw-lzma-perl libcompress-raw-zlib-perl
libfilesys-df-perl libio-compress-lzma-perl
libio-compress-perl libio-interactive-perl
libio-interface-perl libipc-shareelite-perl
libnetaddr-ip-perl libsocket6-perl libsys-syscall-perl
libwww-curl-perl
Suggested packages:
libfreezethaw-perl libio-socket-inet6-perl
libcurl4-gnutls-dev
The following NEW packages will be installed:
apt-cacher libberkeleydb-perl libcompress-raw-bzip2-perl
libcompress-raw-lzma-perl libcompress-raw-zlib-perl
libfilesys-df-perl libio-compress-lzma-perl
libio-compress-perl libio-interactive-perl
libio-interface-perl libipc-shareelite-perl
libnetaddr-ip-perl libsocket6-perl libsys-syscall-perl
libwww-curl-perl
0 upgraded, 15 newly installed, 0 to remove and 13 not upgraded.
Need to get 857 kB of archives.
After this operation, 3,165 kB of additional disk space will be
used.
Do you want to continue? [Y/n] y
Get:1 http://ro.archive.ubuntu.com/ubuntu noble/main amd64 libfi
lesys-df-perl amd64 0.92-7build4 [11.2 kB]
Get:2 http://ro.archive.ubuntu.com/ubuntu noble/universe amd64 l
```

- 1.2. Deschidem fisierul de configurare:
- 1.3. Aici putem adauga directivei path\_map definitii de aliases pentru diferitele surse externe, de exemplu:

```
GNU nano 7.2                               /etc/apt-cacher/apt-cacher.conf

# Permitted installer files -- this is the perl regular expression which matches
# all installer-type files (files that are uniquely identified by their full
# path but don't need to be checked for freshness). These are typically files
# used by Debian/Ubuntu Installer, Debian Live and apt.
#
#installer_files_regex = (?:^|/)(?:vmlinuz|linux|initrd\.gz|(?::VALID_PACKAGE_NAME(?:_|%5f)%VALID_VERSION[_\.\.])?changelog|NEWS\.D>
#
# Perl regular expression which matches Index files from which to read checksums
# if checksum is enabled.
#
#checksum_files_regex = (?:^|/)(?:Sources|Packages)(?:\.(?:x|g)z|\.(bz2)?|(?::In)?Release|Index(?:\.(bz2)?)$
#
# Perl regular expression which matches files for which checksum validation is
# not performed. NB files matched by installer_files_regex are skipped
# automatically and do not need to be added here as well.
#
#skip_checksum_files_regex = (?:^|/)(?:(?::In)?Release|Release\.gpg)$
#
# Perl regular expression which matches URLs to be permitted for Debian bugs
# # SOAP requests as made by apt-listbugs(1).
#
#soap_url_regex = ^(?:http://)?bugs.debian.org(?:\:80)?/cgi-bin/soap.cgi$
path_map = ubuntu archive.ubuntu.com/ubuntu; ubuntu-security security.ubuntu.com/ubuntu

[ Wrote 286 lines ]
[G Help          ^O Write Out      ^W Where Is      ^K Cut           ^T Execute       ^C Location     M-U Undo
[F Exit          ^R Read File      ^X Replace      ^U Paste         ^J Justify       ^G Go To Line   M-E Redo
[M-A Set Mark
```

- 1.4. Avand aceasta corespondenta alias/link sursa, vom putea ca in continuare sa accesam repository-ul de securitate ubuntu-security prin linkul <http://masina-sursa:3142/ubuntu-security>. Obs: masina sursa poate fi chiar localhost sau masina unui coleg.
- 1.5. Activarea Apt-Cacher. Setati linia AUTOSTART=0 la AUTOSTART=1 in fisierul /etc/default/apt-cacher, apoi introduceti comanda urmatoare intr-un terminal

`sudo /etc/init.d/apt-cacher restart`

```
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start apt-cacher
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl enable apt-cacher
apt-cacher.service is not a native service, redirecting to system
md-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apt-cacher
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status apt-cacher
● apt-cacher.service - LSB: apt-cacher package caching proxy da>
  Loaded: loaded (/etc/init.d/apt-cacher; generated)
  Active: active (running) since Wed 2025-11-26 16:12:49 EET>
    Docs: man:systemd-sysv-generator(8)
    Tasks: 1 (limit: 9431)
   Memory: 20.0M (peak: 24.7M)
     CPU: 377ms
   CGroup: /system.slice/apt-cacher.service
           └─3517 /usr/bin/perl /usr/sbin/apt-cacher -R 3 -d >

Nov 26 16:12:49 ubuntu-VirtualBox systemd[1]: Starting apt-cacher...
Nov 26 16:12:49 ubuntu-VirtualBox apt-cacher[3505]: Starting Ap...
Nov 26 16:12:49 ubuntu-VirtualBox systemd[1]: Started apt-cacher...
lines 1-13/13 (END)
```

- 1.6. Setarea listei surselor pentru masinile din retea clienti. Modificati intregul fisier /etc/apt/sources.list pentru masinile "clienti" dupa modelul:

```
GNU nano 7.2                               /etc/apt/sources.list
# Ubuntu sources have moved to /etc/apt/sources.list.d/ubuntu.sources

deb http://localhost:3142/ubuntu noble main restricted universe multiverse
deb http://localhost:3142/ubuntu-security noble-security main restricted universe multiverse
```

- 1.7. Apoi facem update la apt pe masina "client":

```
ubuntu@ubuntu-VirtualBox:~$ sudo apt-get update
Hit:1 http://ro.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://ro.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://ro.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:6 https://ppa.launchpadcontent.net/ondrej/php/ubuntu noble InRelease
Hit:7 https://download.sublimetext.com apt/stable/ InRelease
Get:8 http://localhost:3142/ubuntu noble InRelease [256 kB]
Get:9 http://localhost:3142/ubuntu-security noble-security InRelease [126 kB]
Get:10 http://localhost:3142/ubuntu noble/main amd64 Packages [1,401 kB]
Get:11 http://localhost:3142/ubuntu noble/main Translation-en [513 kB]
Get:12 http://localhost:3142/ubuntu noble/main amd64 Components [464 kB]
Get:13 http://localhost:3142/ubuntu noble/main Icons (48x48) [106 kB]
Get:14 http://localhost:3142/ubuntu noble/main Icons (64x64) [156 kB]
Get:15 http://localhost:3142/ubuntu noble/main Icons (64x64@2) [21.8 kB]
Get:16 http://localhost:3142/ubuntu noble/main amd64 c-n-f Metadata [30.5 kB]
Get:17 http://localhost:3142/ubuntu noble/restricted amd64 Packages [93.9 kB]
Get:18 http://localhost:3142/ubuntu noble/restricted Translation-en [18.7 kB]
Get:19 http://localhost:3142/ubuntu noble/restricted amd64 c-n-f Metadata [416 B]
Get:20 http://localhost:3142/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:21 http://localhost:3142/ubuntu noble/universe Translation-en [5,982 kB]
Get:22 http://localhost:3142/ubuntu noble/universe amd64 Components [3,871 kB]
Get:23 http://localhost:3142/ubuntu noble/universe Icons (48x48) [3,717 kB]
Get:24 http://localhost:3142/ubuntu noble/universe Icons (64x64) [7,747 kB]
Get:25 http://localhost:3142/ubuntu noble/universe Icons (64x64@2) [75.0 kB]
Get:26 http://localhost:3142/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:27 http://localhost:3142/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:28 http://localhost:3142/ubuntu noble/multiverse Translation-en [118 kB]
Get:29 http://localhost:3142/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:30 http://localhost:3142/ubuntu noble/multiverse Icons (48x48) [56.1 kB]
Get:31 http://localhost:3142/ubuntu noble/multiverse Icons (64x64) [186 kB]
```

2. Upstart e o alternativa superioara, fiind asincrona si dinamica, la demonul Init consacrat.

- 2.1. Consultati urmatorul ghid despre upstart

2.2. Creati un job care monitorizeaza reteaua folosind upstart:

```
/etc/systemd/system/network-monitor.service
[Unit]
Description=Daemon
Author=ASO Student
After=network-online.target
Wants=network-online.target
Before=shutdown.target

[Service]
Type=simple
ExecStart=/usr/bin/ping -c 10 8.8.8.8
Restart=always
RestartSec=5
StandardOutput=journal
StandardError=journal

[Install]
WantedBy=multi-user.target
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/systemd/system/network-monitor.service
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl daemon-reload
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start network-monitor
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl enable network-monitor
Created symlink /etc/systemd/system/multi-user.target.wants/network-monitor.service → /etc/systemd/system/network-monitor.service.
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status network-monitor
● network-monitor.service - Daemon
   Loaded: loaded (/etc/systemd/system/network-monitor.service)
   Active: active (running) since Wed 2025-11-26 16:48:36 EET
     Main PID: 7896 (ping)
        Tasks: 1 (limit: 9431)
       Memory: 356.0K (peak: 796.0K)
          CPU: 27ms
        CGroup: /system.slice/network-monitor.service
                  └─7896 /usr/bin/ping -c 10 8.8.8.8

Nov 26 16:48:36 ubuntu-VirtualBox ping[7896]: PING 8.8.8.8 (8.8.8.8) 64 bytes from 8.8.8.8: icmp_seq=1 ttl=64 time=0.000 ms
Nov 26 16:48:36 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=2 ttl=64 time=0.000 ms
Nov 26 16:48:37 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=3 ttl=64 time=0.000 ms
Nov 26 16:48:38 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=4 ttl=64 time=0.000 ms
Nov 26 16:48:39 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=5 ttl=64 time=0.000 ms
Nov 26 16:48:40 ubuntu-VirtualBox systemd[1]: /etc/systemd/system/network-monitor.service: Main PID changed from 7896 to 7900 (ping)
Nov 26 16:48:40 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=6 ttl=64 time=0.000 ms
Nov 26 16:48:41 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=7 ttl=64 time=0.000 ms
Nov 26 16:48:42 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=8 ttl=64 time=0.000 ms
Nov 26 16:48:43 ubuntu-VirtualBox ping[7896]: 64 bytes from 8.8.8.8: icmp_seq=9 ttl=64 time=0.000 ms
lines 1-20/20 (END)
```

```

ubuntu@ubuntu-VirtualBox:~$ sudo journalctl -u network-monitor -f
Nov 26 16:49:04 ubuntu-VirtualBox systemd[1]: network-monitor.service: Scheduled restart job, restart counter is at 2.
Nov 26 16:49:04 ubuntu-VirtualBox ping[8044]: PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
Nov 26 16:49:04 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=1 ttl=255 time=52.4 ms
Nov 26 16:49:05 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=2 ttl=255 time=47.7 ms
Nov 26 16:49:06 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=3 ttl=255 time=49.9 ms
Nov 26 16:49:07 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=4 ttl=255 time=42.4 ms
Nov 26 16:49:08 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=5 ttl=255 time=49.1 ms
Nov 26 16:49:09 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=6 ttl=255 time=42.7 ms
Nov 26 16:49:10 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=7 ttl=255 time=43.1 ms
Nov 26 16:49:11 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=8 ttl=255 time=44.8 ms
Nov 26 16:49:13 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=9 ttl=255 time=50.6 ms
Nov 26 16:49:14 ubuntu-VirtualBox ping[8044]: 64 bytes from 8.8.8.8: icmp_seq=10 ttl=255 time=46.1 ms
Nov 26 16:49:14 ubuntu-VirtualBox ping[8044]: --- 8.8.8.8 ping statistics ---
Nov 26 16:49:14 ubuntu-VirtualBox ping[8044]: 10 packets transmitted, 10 received, 0% packet loss, time 9055ms
Nov 26 16:49:14 ubuntu-VirtualBox ping[8044]: rtt min/avg/max/mdev = 42.422/46.881/52.374/3.400 ms
Nov 26 16:49:14 ubuntu-VirtualBox systemd[1]: network-monitor.service: Deactivated successfully.
Nov 26 16:49:19 ubuntu-VirtualBox systemd[1]: network-monitor.service: Scheduled restart job, restart counter is at 3.
Nov 26 16:49:19 ubuntu-VirtualBox systemd[1]: Started network-monitor.service - Daemon.
Nov 26 16:49:19 ubuntu-VirtualBox ping[8050]: PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
Nov 26 16:49:19 ubuntu-VirtualBox ping[8050]: 64 bytes from 8.8.8.8: icmp_seq=1 ttl=255 time=43.4 ms
Nov 26 16:49:20 ubuntu-VirtualBox ping[8050]: 64 bytes from 8.8.8.8: icmp_seq=2 ttl=255 time=45.2 ms
Nov 26 16:49:21 ubuntu-VirtualBox ping[8050]: 64 bytes from 8.8.8.8: icmp_seq=3 ttl=255 time=42.2 ms
|
```

- 2.3. Creati un job care da acces la consola cat mai rapid a.i. sa se poata interacționa cu sistemul chiar din timpul verificării sistemului de fișiere.

```

GNU nano 7.2 /etc/systemd/system/early-console.service
[Unit]
Description=Set Console Keymap and Font
Author=ASO Student
DefaultDependencies=no
After=systemd-tmpfiles-setup-dev.service
Before=systemd-fsck-root.service

[Service]
Type=oneshot
ExecStart=/usr/bin/loadkeys us
RemainAfterExit=yes

[Install]
WantedBy=sysinit.target

```

```

ubuntu@ubuntu-VirtualBox:~$ sudo nano /etc/systemd/system/early-console.service
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl daemon-reload
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl enable early-console
Created symlink /etc/systemd/system/sysinit.target.wants/early-console.service → /etc/systemd/system/early-console.service.
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start early-console
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status early-console
● early-console.service - Set Console Keymap and Font
   Loaded: loaded (/etc/systemd/system/early-console.service; enabled)
   Active: active (exited) since Wed 2025-11-26 16:52:49 EET; 2s ago
     Process: 8376 ExecStart=/usr/bin/loadkeys us (code=exited, status=0/SUCCESS)
    Main PID: 8376 (code=exited, status=0/SUCCESS)
      CPU: 575ms

Nov 26 16:52:48 ubuntu-VirtualBox systemd[1]: Starting early-console>
Nov 26 16:52:49 ubuntu-VirtualBox systemd[1]: Finished early-console>
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo journalctl -u early-console.service  
-n 10  
Nov 26 16:52:41 ubuntu-VirtualBox systemd[1]: /etc/systemd/system/ea>  
Nov 26 16:52:48 ubuntu-VirtualBox systemd[1]: Starting early-console>  
Nov 26 16:52:49 ubuntu-VirtualBox systemd[1]: Finished early-console>  
Lines 1-3/3 (END)
```

- 2.4. Creati doua joburi care sa se exclude mutual.

```
GNU nano 7.2      /etc/systemd/system/job-a.service  
[Unit]  
Description=Job A  
Conflicts=job-b.service  
  
[Service]  
Type=simple  
ExecStart=/bin/bash -c 'echo "Job A running" && sleep 3600'  
Restart=always  
RestartSec=5  
  
[Install]  
WantedBy=multi-user.target  
  
GNU nano 7.2      /etc/systemd/system/job-b.service  
[Unit]  
Description=Job B  
Conflicts=job-a.service  
  
[Service]  
Type=simple  
ExecStart=/bin/bash -c 'echo "Job B running" && sleep 3600'  
Restart=always  
RestartSec=5  
  
[Install]  
WantedBy=multi-user.target
```

```

ubuntu@ubuntu-VirtualBox:~$ sudo systemctl daemon-reload
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start job-a
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status job-a
● job-a.service - Job A
   Loaded: loaded (/etc/systemd/system/job-a.service; disabled; pr>
             Active: active (running) since Wed 2025-11-26 16:59:05 EET; 3s >
             Main PID: 8611 (sleep)
               Tasks: 1 (limit: 9431)
              Memory: 224.0K (peak: 628.0K)
                 CPU: 41ms
                CGroup: /system.slice/job-a.service
                           └─8611 sleep 3600

Nov 26 16:59:05 ubuntu-VirtualBox systemd[1]: Started job-a.service >
Nov 26 16:59:05 ubuntu-VirtualBox bash[8611]: Job A running

ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start job-b
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status job-a
○ job-a.service - Job A
   Loaded: loaded (/etc/systemd/system/job-a.service; disabled; pr>
             Active: inactive (dead) since Wed 2025-11-26 16:59:14 EET; 9s a>
             Duration: 8.755s
             Process: 8611 ExecStart=/bin/bash -c echo "Job A running" && sle>
             Main PID: 8611 (code=killed, signal=TERM)
               CPU: 44ms

Nov 26 16:59:05 ubuntu-VirtualBox systemd[1]: Started job-a.service >
Nov 26 16:59:05 ubuntu-VirtualBox bash[8611]: Job A running
Nov 26 16:59:14 ubuntu-VirtualBox systemd[1]: Stopping job-a.service>
Nov 26 16:59:14 ubuntu-VirtualBox systemd[1]: job-a.service: Deactiv>
Nov 26 16:59:14 ubuntu-VirtualBox systemd[1]: Stopped job-a.service >

ubuntu@ubuntu-VirtualBox:~$ sudo systemctl status job-b
● job-b.service - Job B
   Loaded: loaded (/etc/systemd/system/job-b.service; disabled; pr>
             Active: active (running) since Wed 2025-11-26 16:59:14 EET; 17s >
             Main PID: 8623 (sleep)
               Tasks: 1 (limit: 9431)
              Memory: 192.0K (peak: 588.0K)
                 CPU: 13ms
                CGroup: /system.slice/job-b.service
                           └─8623 sleep 3600

Nov 26 16:59:14 ubuntu-VirtualBox systemd[1]: Started job-b.service >
Nov 26 16:59:14 ubuntu-VirtualBox bash[8623]: Job B running
lines 1-12/12 (END)... skipping...
● job-b.service - Job B
   Loaded: loaded (/etc/systemd/system/job-b.service; disabled; pre>
set: enabled)
   Active: active (running) since Wed 2025-11-26 16:59:14 EET; 17s >
ago
   Main PID: 8623 (sleep)
     Tasks: 1 (limit: 9431)
    Memory: 192.0K (peak: 588.0K)
       CPU: 13ms
      CGroup: /system.slice/job-b.service
                           └─8623 sleep 3600

Nov 26 16:59:14 ubuntu-VirtualBox systemd[1]: Started job-b.service ->
Job B.
Nov 26 16:59:14 ubuntu-VirtualBox bash[8623]: Job B running

```

2.5. Porniti un job atunci cand un anumit director este creat.

```
GNU nano 7.2      /etc/systemd/system/watch-dir.path
[Unit]
Description=Watch for Directory Creation
After=paths.target

[Path]
PathExists=/opt/monitored
Unit=on-dir-created.service

[Install]
WantedBy=multi-user.target
```

```
[ Wrote 10 lines ]
^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^T Execute
^X Exit      ^R Read File  ^\ Replace    ^U Paste      ^J Justify

GNU nano 7.2  /etc/systemd/system/on-dir-created.service
[Unit]
Description=Run Script When Directory is Created
After=watch-dir.path

[Service]
Type=oneshot
ExecStart=/bin/bash -c 'echo "Directory /opt/monitored created at $(date)" > /tmp/on-dir-created.log'
```

```
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl daemon-reload
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl start watch-dir.path
ubuntu@ubuntu-VirtualBox:~$ sudo systemctl enable watch-dir.path
Created symlink /etc/systemd/system/multi-user.target.wants/watch-dir.
.path → /etc/systemd/system/watch-dir.path.
ubuntu@ubuntu-VirtualBox:~$ sudo mkdir -p /opt/monitored
ubuntu@ubuntu-VirtualBox:~$ cat /tmp/dir-watch.log
Directory /opt/monitored created at Wed Nov 26 05:03:00 PM EET 2025
Directory /opt/monitored created at Wed Nov 26 05:03:00 PM EET 2025
Directory /opt/monitored created at Wed Nov 26 05:03:00 PM EET 2025
Directory /opt/monitored created at Wed Nov 26 05:03:00 PM EET 2025
Directory /opt/monitored created at Wed Nov 26 05:03:00 PM EET 2025
ubuntu@ubuntu-VirtualBox:~$
```