

# Лабораторная работа №4

Работа с программными пакетами

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## Информация

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## Цель работы

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Получить навыки работы с репозиториями и менеджерами пакетов.

## Задание

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- Изучить, как и в каких файлах подключаются репозитории для установки программного обеспечения; изучить основные возможности (поиск, установка, обновление, удаление пакета, работа с историей действий) команды `dnf`.
- Изучить и повторить процесс установки/удаления определённого пакета с использованием возможностей `dnf`.
- Изучить и повторите процесс установки/удаления определённого пакета с использованием возможностей `rpm`.

## Ход выполнения лабораторной работы

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```
[dosergeev@dosergeev ~]$ su -  
Password:  
[root@dosergeev ~]# cd /etc/yum.repos.d  
[root@dosergeev yum.repos.d]# ls  
epel-cisco-openh264.repo  epel-testing.repo  rocky-addons.repo  rocky-extras.repo  
epel.repo                 github-cli.repo    rocky-devel.repo   rocky.repo
```

Рис. 1: Репозитории в каталоге /etc/yum.repos.d

## Работа с репозиториями

```
[root@dosergeev yum.repos.d]# cat epel-cisco-openh264.repo
[epel-cisco-openh264]
name=Extra Packages for Enterprise Linux 9 openh264 (From Cisco) - $basearch
metalink=https://mirrors.fedoraproject.org/metalink?repo=epel-cisco-openh264-9&arch=$basearch
type=rpm
enabled=1
metadata_expire=14d
repo_gpgcheck=0
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-9
skip_if_unavailable=True

[epel-cisco-openh264-debuginfo]
name=Extra Packages for Enterprise Linux 9 openh264 (From Cisco) - $basearch - Debug
metalink=https://mirrors.fedoraproject.org/metalink?repo=epel-cisco-openh264-debug-9&arch=$basearch
type=rpm
enabled=0
metadata_expire=14d
repo_gpgcheck=0
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-9
skip_if_unavailable=True

[epel-cisco-openh264-source]
name=Extra Packages for Enterprise Linux 9 openh264 (From Cisco) - $basearch - Source
metalink=https://mirrors.fedoraproject.org/metalink?repo=epel-cisco-openh264-source-9&arch=$basearch
type=rpm
enabled=0
metadata_expire=14d
repo_gpgcheck=0
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-9
skip_if_unavailable=True
```

- название пакета;
- ссылка на скачивание;
- тип пакета;
- состояния  
(включен/выключен);
- срок истечения  
мета-данных;
- прочая информация о  
ключе gpg.

Рис. 2: Информация о пакетах в репозитории epel-cisco-openh264

```
[root@dosergeev yum.repos.d]# dnf repolist
repo id           repo name
appstream          Rocky Linux 9 - AppStream
baseos             Rocky Linux 9 - BaseOS
crb                Rocky Linux 9 - CRB
epel               Extra Packages for Enterprise Linux 9 - x86_64
epel-cisco-openh264 Extra Packages for Enterprise Linux 9 openh264 (From Cisco) - x86_64
extras             Rocky Linux 9 - Extras
gh-cli             packages for the GitHub CLI
```

Рис. 3: Список репозиториях команды dnf repolist

Выведем на экран список пакетов, в названии или описании которых есть слово `user`. Сделаем это командой `dnf search "шаблон"`. Она выведет 3 вида совпадений: по названию и описанию, по названию, по описанию.

```
===== Name & Summary Matched: user =====
atuin-all-users.noarch : atuin init script for all users
ghc-xdg-userdirs.x86_64 : Basic implementation of XDG user directories specification
ghc-xdg-userdirs-devel.x86_64 : Haskell xdg-userdirs library development files
ghc-xdg-userdirs-doc.noarch : Haskell xdg-userdirs library documentation
ghc-xdg-userdirs-prof.x86_64 : Haskell xdg-userdirs profiling library
gnome-user-docs.noarch : GNOME User Documentation
kuserfeedback.x86_64 : Framework for collecting user feedback for apps via telemetry and
                      : surveys
kuserfeedback-console.x86_64 : Analytics and administration tool for UserFeedback
                              : servers
kuserfeedback-devel.x86_64 : Development files for kuserfeedback
libuser.x86_64 : A user and group account administration library
libuser.i686 : A user and group account administration library
libuser-devel.i686 : Files needed for developing applications which use libuser
libuser-devel.x86_64 : Files needed for developing applications which use libuser
```

Рис. 4: Совпадения по имени и описанию

```
===== Name Matched: user =====
anaconda-user-help.noarch : Content for the Anaconda built-in help system
gnome-shell-extension-user-theme.noarch : Support for custom themes in GNOME Shell
golang-github-tklauser-numcpus.x86_64 : Package numcpus provides information about the
                                         : number of CPUs in the system
golang-github-tklauser-numcpus-devel.noarch : Package numcpus provides information about
                                              : the number of CPUs in the system
golang-github-tklauser-sysconf-devel.noarch : Sysconf for Go, without using cgo
pam_ssh_user_auth.x86_64 : PAM module to help with SSH_AUTH_INFO_0
perl-LWP-UserAgent-Determined.noarch : Virtual browser that retries errors
perl-User-Identity.noarch : Maintains info about a physical person
rust-nix+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-nix0.24+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-nix0.26+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-nix0.27+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-nix0.28+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-nix0.29+user-devel.noarch : Rust friendly bindings to *nix APIs
rust-sysinfo+user-devel.noarch : Library to get system information such as processes,
                                : CPUs, disks, components and networks
```

Рис. 5: Совпадения по имени

```
===== Summary Matched: user =====  
NetworkManager.x86_64 : Network connection manager and user applications  
PackageKit-command-not-found.x86_64 : Ask the user to install command line programs  
                                : automatically  
accountsservice.x86_64 : D-Bus interfaces for querying and manipulating user account  
                                : information  
adobe-source-sans-pro-fonts.noarch : A set of OpenType fonts designed for user  
                                : interfaces  
anaconda-gui.x86_64 : Graphical user interface for the Anaconda installer  
anaconda-tui.x86_64 : Textual user interface for the Anaconda installer  
audit.x86_64 : User space tools for kernel auditing  
authbind.x86_64 : Allow non-root users to open restricted ports  
baresip.x86_64 : Modular SIP user-agent with audio and video support  
baresip-gtk.x86_64 : GTK+ menu-based user interface module for baresip  
bluefish.x86_64 : Web development application for experienced users  
btrfs-progs.x86_64 : Userspace programs for btrfs
```

Рис. 6: Совпадения по описанию

```
[root@dosergeev yum.repos.d]# dnf search nmap
Last metadata expiration check: 0:37:23 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
===== Name Exactly Matched: nmap =====
nmap.x86_64 : Network exploration tool and security scanner
===== Name & Summary Matched: nmap =====
nmap-ncat.x86_64 : Nmap's Netcat replacement
[root@dosergeev yum.repos.d]# dnf info nmap
Last metadata expiration check: 0:37:49 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Available Packages
Name           : nmap
Epoch         : 3
Version        : 7.92
Release        : 3.el9
Architecture   : x86_64
Size           : 5.4 M
Source         : nmap-7.92-3.el9.src.rpm
Repository     : appstream
Summary        : Network exploration tool and security scanner
URL            : http://nmap.org/
License        : Nmap
Description    : Nmap is a utility for network exploration or security auditing. It
                  : supports ping scanning (determine which hosts are up), many port scanning
                  : techniques (determine what services the hosts are offering), and TCP/IP
                  : fingerprinting (remote host operating system identification). Nmap also
                  : offers flexible target and port specification, decoy scanning,
                  : determination of TCP sequence predictability characteristics,
                  : reverse-identd scanning, and more. In addition to the classic
                  : command-line nmap executable, the Nmap suite includes a flexible data
                  : transfer, redirection, and debugging tool (netcat utility ncat), a
                  : utility for comparing scan results (ndiff), and a packet generation and
                  : response analysis tool (nping).
```

Рис. 7: Поиск пакетов nmap

```
[root@dosergeev yum.repos.d]# dnf install nmap
Last metadata expiration check: 0:39:19 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
nmap                   x86_64            3:7.92-3.el9      appstream          5.4 M
Transaction Summary
=====
Install 1 Package

Total download size: 5.4 M
Installed size: 24 M
Is this ok [y/N]: y
```

Рис. 8: Установка nmap



```
[root@dosergeev yum.repos.d]# dnf install nmap\*
Last metadata expiration check: 0:39:51 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Package nmap-3:7.92-3.el9.x86_64 is already installed.
Package nmap-ncat-3:7.92-3.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@dosergeev yum.repos.d]# dnf remove nmap
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Removing:
nmap                   x86_64            3:7.92-3.el9     @appstream        24 M

Transaction Summary
=====
Remove 1 Package

Freed space: 24 M
Is this ok [y/N]: y
```

Рис. 9: Установка nmap\*, удаление nmap

```
[root@dosergeev yum.repos.d]# dnf remove nmap\*
Dependencies resolved.
=====
Package                Architecture    Version          Repository        Size
=====
Removing:
  nmap-ncat            x86_64         3:7.92-3.el9    @AppStream        469 k
Transaction Summary
=====
Remove 1 Package

Freed space: 469 k
Is this ok [y/N]: y
```

Рис. 10: Удаление nmap\*

```
[root@dosergeev yum.repos.d]# dnf groups list
Last metadata expiration check: 0:40:52 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Available Environment Groups:
  Server
  Minimal Install
  Workstation
  KDE Plasma Workspaces
  Custom Operating System
  Virtualization Host
Installed Environment Groups:
  Server with GUI
Installed Groups:
  Container Management
  Development Tools
  Headless Management
Available Groups:
  Fedora Packager
  VideoLAN Client
  Xfce
  Legacy UNIX Compatibility
  Console Internet Tools
  .NET Development
  Graphical Administration Tools
  Network Servers
  RPM Development Tools
  Scientific Support
  Security Tools
  Smart Card Support
  System Tools
```

Рис. 11: Список групп пакетов

```
[root@dosergeev yum.repos.d]# dnf groups info "RPM Development Tools"
Last metadata expiration check: 0:42:50 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Group: RPM Development Tools
Description: Tools used for building RPMs, such as rpmbuild.
Mandatory Packages:
  redhat-rpm-config
  rpm-build
Default Packages:
  rpmdevtools
Optional Packages:
  rpmlint
[root@dosergeev yum.repos.d]# dnf groupinstall "RPM Development Tools"
Last metadata expiration check: 0:43:26 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Dependencies resolved.
=====
Package                        Architecture Version           Repository        Size
=====
Installing group/module packages:
rpmdevtools                    noarch           9.5-1.el9         appstream         75 k
Installing dependencies:
python3-argcomplete            noarch           1.12.0-5.el9      appstream         61 k
Installing Groups:
RPM Development Tools

Transaction Summary
=====
Install 2 Packages

Total download size: 135 k
Installed size: 414 k
Is this ok [y/N]: y
```

Рис. 12: Установка RPM Development Tools

```
[root@dosergeev yum.repos.d]# dnf groupremove "RPM Development Tools"
Dependencies resolved.
=====
Package                Architecture  Version           Repository         Size
=====
Removing:
  rpmdevtools           noarch       9.5-1.el9         @appstream        195 k
Removing unused dependencies:
  python3-argcomplete   noarch       1.12.0-5.el9      @appstream        219 k
Removing Groups:
  RPM Development Tools

Transaction Summary
=====
Remove 2 Packages

Freed space: 414 k
Is this ok [y/N]: y
```

Рис. 13: Удаление RPM Development Tools

```
[root@dosergeev yum.repos.d]# dnf history
ID      | Command line                                | Date and time   | Action(s)      | Altered
-----|-----|-----|-----|-----
 17 | groupermove RPM Development Tools          | 2025-09-27 14:49 | Removed        | 3
 16 | groupinstall RPM Development Tool          | 2025-09-27 14:48 | Install        | 3
 15 | remove nmap*                               | 2025-09-27 14:45 | Removed        | 1
 14 | remove nmap                                | 2025-09-27 14:45 | Removed        | 1
 13 | install nmap                               | 2025-09-27 14:44 | Install        | 1
 12 |                                             | 2025-09-13 17:05 | I, U           | 19
 11 |                                             | 2025-09-13 16:50 | Install        | 1
 10 | update                                     | 2025-09-06 19:19 | I, U           | 195 EE
  9 | install texlive-*                          | 2025-09-06 19:13 | Install        | 206
  8 | install texlive-framed                     | 2025-09-06 19:12 | Install        | 1
  7 | install python3-pip                        | 2025-09-06 19:10 | Install        | 1
  6 | install libtirpc-devel R-core-dev          | 2025-09-06 18:54 | I, U           | 306
  5 | install epel-release                       | 2025-09-06 18:52 | Upgrade        | 1
  4 | install R-core                             | 2025-09-06 18:28 | Install        | 13 <
  3 | install epel-release                       | 2025-09-06 18:26 | Install        | 1 ><
  2 | -y install gh                              | 2025-09-06 18:06 | Install        | 1 ><
  1 |                                             | 2025-09-06 17:37 | Install        | 1308 >E

[root@dosergeev yum.repos.d]# dnf history undo 17
Last metadata expiration check: 0:45:12 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Dependencies resolved.
=====
Package                Architecture Version      Repository      Size
=====
Installing group/module packages:
rpmdevtools            noarch      9.5-1.el9      appstream       75 k
Installing dependencies:
python3-argcomplete     noarch      1.12.0-5.el9   appstream       61 k
Installing Groups:
  RPM Development Tools

Transaction Summary
=====
```

Рис. 14: Манипуляции с историей команд dnf

Скачаем rpm-пакет lynx.

```
[root@dosergeev yum.repos.d]# dnf list lynx
Last metadata expiration check: 0:45:53 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Available Packages
lynx.x86_64                                2.8.9-20.el9                                appstream
[root@dosergeev yum.repos.d]# dnf install -y lynx --downloadonly
Last metadata expiration check: 0:46:12 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
=====
Installing:
  lynx                  x86_64            2.8.9-20.el9      appstream         1.5 M
Transaction Summary
=====
```

Рис. 15: Установка пакета lynx

```
[root@dosergeev yum.repos.d]# find /var/cache/dnf/ -name lynx*
/var/cache/dnf/appstream-25485261a76941d3/packages/lynx-2.8.9-20.el9.x86_64.rpm
[root@dosergeev yum.repos.d]# ^C
[root@dosergeev yum.repos.d]# cd /var/cache/dnf/appstream-25485261a76941d3/packages/lynx-2.8.9-20.el9.x86_64.rpm
-bash: cd: /var/cache/dnf/appstream-25485261a76941d3/packages/lynx-2.8.9-20.el9.x86_64.rpm: Not a directory
[root@dosergeev yum.repos.d]# cd /var/cache/dnf/appstream-25485261a76941d3/packages/
[root@dosergeev packages]# rpm -Uvh lynx-2.8.9-20.el9.x86_64.rpm
Verifying...                               ##### [100%]
Preparing...                               ##### [100%]
Updating / installing...
 1:lynx-2.8.9-20.el9                        ##### [100%]
[root@dosergeev packages]# which lynx
/usr/bin/lynx
[root@dosergeev packages]#
```

Рис. 16: Ручная установка пакета через команду rpm



```
[root@dosergeev packages]# rpm -qf $(which lynx)
lynx-2.8.9-20.el9.x86_64
[root@dosergeev packages]# rpm -qi lynx
Name       : lynx
Version    : 2.8.9
Release    : 20.el9
Architecture: x86_64
Install Date: Sat 27 Sep 2025 02:52:22 PM MSK
Group      : Unspecified
Size       : 6356615
License    : GPLv2
Signature  : RSA/SHA256, Tue 16 Apr 2024 02:13:04 AM MSK, Key ID 702d426d350d275d
Source RPM : lynx-2.8.9-20.el9.src.rpm
Build Date : Tue 16 Apr 2024 02:10:31 AM MSK
Build Host : pb-abd37acc-ala8-4064-a86c-09fcc75626b8-b-x86-64
Packager   : Rocky Linux Build System (Peridot) <relog@rockylinux.org>
Vendor     : Rocky Enterprise Software Foundation
URL        : http://lynx.browser.org/
Summary    : A text-based Web browser
Description:
Lynx is a text-based Web browser. Lynx does not display any images,
but it does support frames, tables, and most other HTML tags. One
advantage Lynx has over graphical browsers is speed; Lynx starts and
exits quickly and swiftly displays web pages.
[root@dosergeev packages]# rpm -ql lynx
/etc/lynx.cfg
/etc/lynx.site.cfg
/etc/lynx.lss
/usr/bin/lynx
/usr/lib/.build-id
/usr/lib/.build-id/5a
/usr/lib/.build-id/5a/06d3c4e1a8f4e4a2a1a5305737084bab728b85
/usr/share/doc/lynx
/usr/share/doc/lynx/INSTALLATION
/usr/share/doc/lynx/README
/usr/share/doc/lynx/docs
```

Рис. 17: Поиск пакета rpm, информация о содержимом пакета

```
[root@dosergeev packages]# rpm -qd lynx | head -n 5
/usr/share/doc/lynx/INSTALLATION
/usr/share/doc/lynx/README
/usr/share/doc/lynx/docs/CHANGES2.3
/usr/share/doc/lynx/docs/CHANGES2.4
/usr/share/doc/lynx/docs/CHANGES2.5
[root@dosergeev packages]# rpm -qc lynx
/etc/lynx-site.cfg
/etc/lynx.cfg
/etc/lynx.lss
[root@dosergeev packages]#
```

Рис. 18: Файлы документации и файлы конфигов lynx

Попробуем вывести расположение и содержание скриптов, выполняемых при установке пакета. В моем случае их нет, поэтому продолжим.

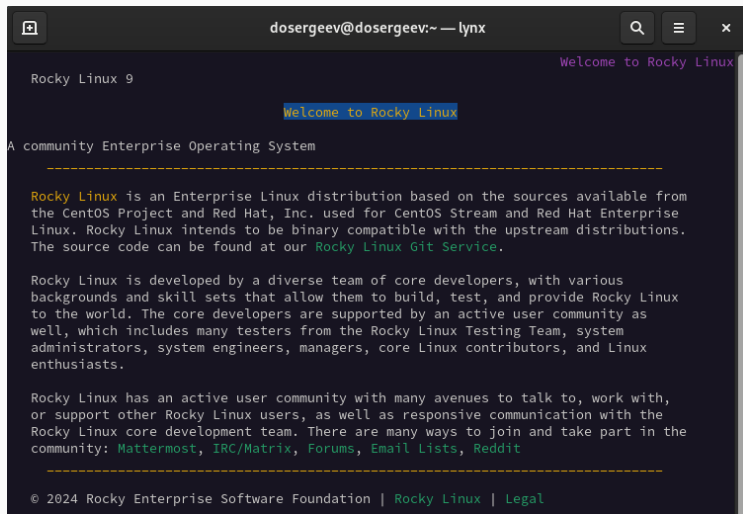


Рис. 19: Окно браузера lynx

Вернемся в root и удалим lynx.

```
[root@dosergeev packages]# rpm -q --scripts lynx
[root@dosergeev packages]#
[root@dosergeev packages]# rpm -e lynx
[root@dosergeev packages]# ls
lynx-2.8.9-20.el9.x86_64.rpm
```

Рис. 20: Удаление программы lynx

Совершим похожие действия для пакета dnsmasq.

```
[root@dosergeev packages]# dnf list dnsmasq
Last metadata expiration check: 0:55:20 ago on Sat 27 Sep 2025 02:05:07 PM MSK.
Installed Packages
dnsmasq.x86_64                2.85-16.el9_4                @AppStream
Available Packages
dnsmasq.x86_64                2.85-17.el9_6                appstream
[root@dosergeev packages]#
```

Рис. 21: Список пакетов dnsmasq

```
[root@dosergeev packages]# which dnsmasq
/usr/sbin/dnsmasq
[root@dosergeev packages]# rpm -qf $(dnsmasq)
rpm: no arguments given for query
[root@dosergeev packages]# rpm -qf $(which dnsmasq)
dnsmasq-2.85-17.el9_6.x86_64
[root@dosergeev packages]# rpm -qi dnsmasq
Name       : dnsmasq
Version    : 2.85
Release    : 17.el9_6
Architecture: x86_64
Install Date: Sat 27 Sep 2025 03:00:42 PM MSK
Group      : Unspecified
Size       : 718655
License    : GPLv2 or GPLv3
Signature  : RSA/SHA256, Tue 16 Sep 2025 07:25:38 PM MSK, Key ID 702d426d350d275d
Source RPM : dnsmasq-2.85-17.el9_6.src.rpm
Build Date : Tue 16 Sep 2025 07:24:01 PM MSK
Build Host : pb-852acc29-a7d0-4436-82a9-1e2488a61ea0-b-x86-64
Packager   : Rocky Linux Build System (Peridot) <releng@rockylinux.org>
Vendor     : Rocky Enterprise Software Foundation
URL        : http://www.thekelleys.org.uk/dnsmasq/
Summary    : A lightweight DHCP/caching DNS server
Description:
Dnsmasq is lightweight, easy to configure DNS forwarder and DHCP server.
It is designed to provide DNS and, optionally, DHCP, to a small network.
It can serve the names of local machines which are not in the global
DNS. The DHCP server integrates with the DNS server and allows machines
with DHCP-allocated addresses to appear in the DNS with names configured
either in each host or in a central configuration file. Dnsmasq supports
static and dynamic DHCP leases and BOOTP for network booting of diskless
machines.
[root@dosergeev packages]#
```

Рис. 22: Пакет файла dnsmasq и дополнительная информация

```
[root@dosergeev packages]# rpm -ql dnsmasq | head -n 5
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
/etc/dnsmasq.d
/usr/lib/.build-id
/usr/lib/.build-id/ce
[root@dosergeev packages]# rpm -qd dnsmasq
/usr/share/doc/dnsmasq/CHANGELOG
/usr/share/doc/dnsmasq/DBus-interface
/usr/share/doc/dnsmasq/FAQ
/usr/share/doc/dnsmasq/doc.html
/usr/share/doc/dnsmasq/setup.html
/usr/share/man/man8/dnsmasq.8.gz
[root@dosergeev packages]# rpm -qc dnsmasq
/etc/dbus-1/system.d/dnsmasq.conf
/etc/dnsmasq.conf
[root@dosergeev packages]#
```

Рис. 23: Файлы документации и файлы конфигов dnsmasq

## Использование rpm

```
[root@dosergeev packages]# rpm -q --scripts dnsmasq
preinstall scriptlet (using /bin/sh):
#precreate users so that rpm can install files owned by that user

# generated from dnsmasq-systemd-sysusers.conf
getent group 'dnsmasq' >/dev/null || groupadd -r 'dnsmasq' || :
getent passwd 'dnsmasq' >/dev/null || \
    useradd -r -g 'dnsmasq' -d '/var/lib/dnsmasq' -s '/usr/sbin/nologin' -c 'Dnsmasq DHCP
P and DNS server' 'dnsmasq' || :
postinstall scriptlet (using /bin/sh):

if [ $1 -eq 1 ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Initial installation
    /usr/lib/systemd/systemd-update-helper install-system-units dnsmasq.service || :
fi
preuninstall scriptlet (using /bin/sh):

if [ $1 -eq 0 ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Package removal, not upgrade
    /usr/lib/systemd/systemd-update-helper remove-system-units dnsmasq.service || :
fi
postuninstall scriptlet (using /bin/sh):

if [ $1 -ge 1 ] && [ -x "/usr/lib/systemd/systemd-update-helper" ]; then
    # Package upgrade, not uninstall
    /usr/lib/systemd/systemd-update-helper mark-restart-system-units dnsmasq.service || :
fi
[root@dosergeev packages]# rpm -e dnsmask
error: package dnsmask is not installed
[root@dosergeev packages]# rpm -e dnsmasq
[root@dosergeev packages]# ls
```

- preinstall: предварительно создает пользователей чтобы RPM мог установить файлы от лица этого пользователя;
- postinstall: осуществляет первоначальную установку;
- preuninstall: удаляет пакет rpm;
- postuninstall: обновление пакета, вместо удаления.

Рис. 24: Скрипты пакета dnsmasq



## Ответы на контрольные вопросы

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1. Какая команда позволяет вам искать пакет rpm, содержащий файл useradd?
  - Можно использовать `rpm -qf $(which useradd)`.
2. Какие команды вам нужно использовать, чтобы показать имя группы dnf, которая содержит инструменты безопасности и показывает, что находится в этой группе?
  - Можно использовать последовательность `dnf group list | grep -i security`, `dnf group info "группа, которую нашли"`
  - Или же одной командой `dnf group info "*security*"`

3. Какая команда позволяет вам установить rpm, который вы загрузили из Интернета и который не находится в репозиториях?
- `sudo rpm -i пакет.rpm` или `sudo dnf install (путь к пакету)/пакет.rpm`
4. Вы хотите убедиться, что пакет rpm, который вы загрузили, не содержит никакого опасного кода сценария. Какая команда позволяет это сделать?
- Можно использовать `rpm -qp --scripts пакет.rpm`

5. Какая команда показывает всю документацию в rpm?

- `rpm -qd имя_пакета`

6. Какая команда показывает, какому пакету rpm принадлежит файл?

- `rpm -qf $(which имя_исполняемого_файла)` или же `rpm -qf $(путь_до_исполняемого_файла)`

## Вывод

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В результате выполнения лабораторной работы я получил навыки работы с репозиториями, менеджером пакетов `dnf` и пакетами `rpm`.