jamk.fi

Linux perusteet [TTC1040]

harjoitus 9

Maarit Salo

28.10.2021

1. **At first, update package repositories. Then check the available commands for apt using command help. What commands are used to perform the following tasks with apt:**

    - **Upgrading installed packages in the system**
    - **Removing unused packages from the system**

```
user@P0033-Ubuntu:~$ sudo apt update
[sudo] password for user:
Hit:1 http://fi.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://fi.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://fi.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:4 http://fi.archive.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:5 http://fi.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [129
8 kB]
Get:6 http://fi.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages
[867 kB]
Fetched 2492 kB in 1s (2884 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
29 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

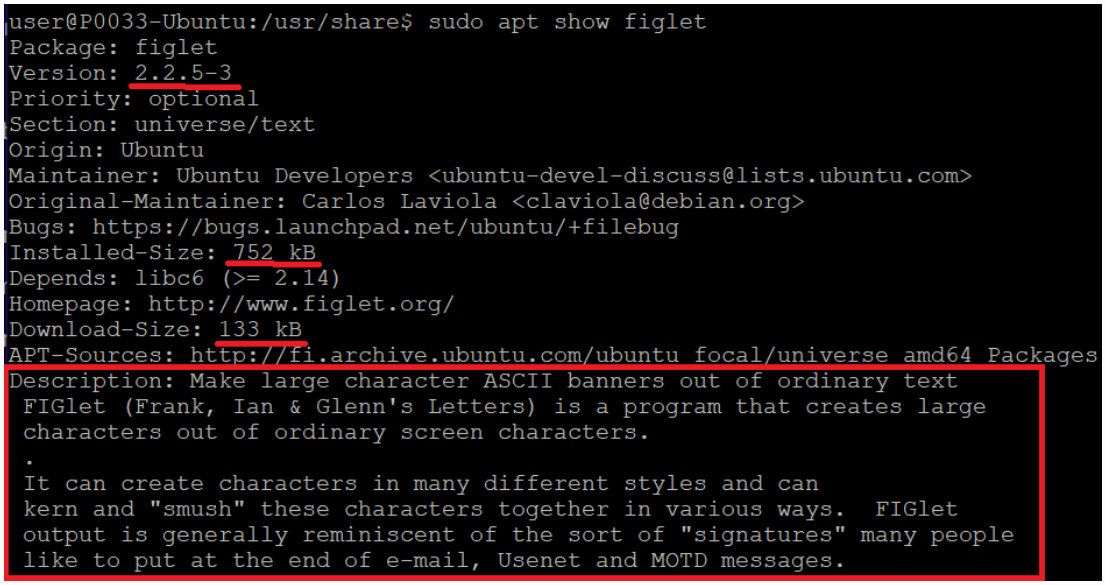
```
user@P0033-Ubuntu:~$ apt --help
apt 2.0.6 (amd64)
Usage: apt [options] command

apt is a commandline package manager and provides commands for
searching and managing as well as querying information about packages.
It provides the same functionality as the specialized APT tools,
like apt-get and apt-cache, but enables options more suitable for
interactive use by default.

Most used commands:
  list - list packages based on package names
  search - search in package descriptions
  show - show package details
  install - install packages
  reinstall - reinstall packages
  remove - remove packages
  autoremove - Remove automatically all unused packages
  update - update list of available packages
  upgrade - upgrade the system by installing/upgrading packages
  full-upgrade - upgrade the system by removing/installing/upgrading packages
  edit-sources - edit the source information file
  satisfy - satisfy dependency strings

See apt(8) for more information about the available commands.
Configuration options and syntax is detailed in apt.conf(5).
Information about how to configure sources can be found in sources.list(5).
Package and version choices can be expressed via apt_preferences(5).
Security details are available in apt-secure(8).
                                        This APT has Super Cow Powers.
```

Käyttämättömät paketit saa poistettua apt autoremove-komennolla ja päivitettyä paketit apt upgrade-komennolla. Luentomateriaalissa tosin sanotaan että apt upgrade vain kertoo

mitkä paketit voisi päivittää, mutta kokeilin komentoa ja kyllä se kovasti lähtee päivittämäänkin.

2. **Check the information for the package called figlet and answer the following questions:**

    - **What is the size of the package?**
    - **What is the newest version available for the package?**
    - **Check the package description → What does the program do?**



Paketin koko on ladattuna 133 kB ja asennettuna 752 kB. Uusin versio on 2.2.5-3. Paketti tekee tavallisista kirjaimista isoja ASCII bannereita.

3. **Install the figlet package and verify it works.**

```
user@P0033-Ubuntu:/usr/share$ sudo apt install figlet
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  figlet
0 upgraded, 1 newly installed, 0 to remove and 29 not upgraded.
Need to get 133 kB of archives.
After this operation, 752 kB of additional disk space will be used.
Get:1 http://fi.archive.ubuntu.com/ubuntu focal/universe amd64 figlet amd64 2.2.
5-3 [133 kB]
Fetched 133 kB in 0s (3039 kB/s)
Selecting previously unselected package figlet.
(Reading database ... 107873 files and directories currently installed.)
Preparing to unpack .../figlet_2.2.5-3_amd64.deb ...
Unpacking figlet (2.2.5-3) ...
Setting up figlet (2.2.5-3) ...
update-alternatives: using /usr/bin/figlet-figlet to provide /usr/bin/figlet (fi
glet) in auto mode
Processing triggers for man-db (2.9.1-1) ...
user@P0033-Ubuntu:/usr/share$
```

```
user@P0033-Ubuntu:/usr/share$ figlet
Hei ope
 _   _      _
| | | | ___(_)    ___   _ __    ___
| |_| |/ _ \ |   / _ \ | '_ \  / _ \
|  _  |  __/ |  | (_) || |_) ||  __/
|_| |_|\___|_|   \___/ | .__/  \___|
                       |_|
```

4. **Remove figlet from the system with all configuration files. Check that program cannot be run after the removal.**

```
user@P0033-Ubuntu:/usr/share$ sudo apt purge figlet
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following packages will be REMOVED:
  figlet*
0 upgraded, 0 newly installed, 1 to remove and 29 not upgraded.
After this operation, 752 kB disk space will be freed.
Do you want to continue? [Y/n] Y
(Reading database ... 107952 files and directories currently installed.)
Removing figlet (2.2.5-3) ...
Processing triggers for man-db (2.9.1-1) ...
(Reading database ... 107876 files and directories currently installed.)
Purging configuration files for figlet (2.2.5-3) ...
user@P0033-Ubuntu:/usr/share$ figlet
-bash: /usr/bin/figlet: No such file or directory
```

5. **In this task you must install Python3 by compiling it from the source code. Download the package from the url http://student.labranet.jamk.fi/~hantt/os/Python-3.7.4.tgz.**

    - **Before the compilation process, install the following packages with apt:**

- **libffi-dev**
- **zlib1g-dev**

- **Find out if you already have newer version of Python3 installed by running command python3. Check the version that is in the output and exit with Ctrl + D.**
- **If you have newer version than 3.7.4, find out where this executable is located and replace the existing symbolic link with symbolic link pointing to your Python 3.7.4 version executable.**
- **Verify the operation of Python3 by starting the shell with command python3. You should now see the version 3.7.4 at the start of your Python shell.**

```
user@P0033-Ubuntu:~$ wget http://student.labranet.jamk.fi/~hantt/os/Python-3.7.4
.tgz
--2021-10-27 10:55:55--  http://student.labranet.jamk.fi/~hantt/os/Python-3.7.4.
tgz
Resolving student.labranet.jamk.fi (student.labranet.jamk.fi)... 192.168.20.20
Connecting to student.labranet.jamk.fi (student.labranet.jamk.fi)|192.168.20.20|
:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://student.labranet.jamk.fi/~hantt/os/Python-3.7.4.tgz [following
]
--2021-10-27 10:55:55--  https://student.labranet.jamk.fi/~hantt/os/Python-3.7.4
.tgz
Connecting to student.labranet.jamk.fi (student.labranet.jamk.fi)|192.168.20.20|
:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 23017663 (22M) [application/x-gzip]
Saving to: 'Python-3.7.4.tgz'

Python-3.7.4.tgz    100%[===================>]  21.95M  --.-KB/s    in 0.07s

2021-10-27 10:55:55 (314 MB/s) - 'Python-3.7.4.tgz' saved [23017663/23017663]
```

Ladataan .tgz-tiedosto

```
user@P0033-Ubuntu:~$ sudo apt install libffi-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  libffi-dev
0 upgraded, 1 newly installed, 0 to remove and 29 not upgraded.
Need to get 57.0 kB of archives
```

```
user@P0033-Ubuntu:~$ sudo apt install zlib1g-dev
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  libc-dev-bin libc6-dev libcrypt-dev linux-libc-dev manpages-dev
Suggested packages:
  glibc-doc
The following NEW packages will be installed:
```

Asennetaan paketit

```
user@P0033-Ubuntu:~$ python3
Python 3.8.10 (default, Sep 28 2021, 16:10:42)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

Tarkistetaan pythonin versio, jep, uudempi versio on. Minulla on 3.8.10 ja paketissa 3.7.4

```
user@P0033-Ubuntu:~$ tar xvf Python-3.7.4.tgz
```

Tässä välissä puretaan paketti. Siitä tuli paljon kamaa, eikä Ubuntu antanut skrollata takaisin ylös, niin siksi tuossa tar xvf käskyn alla ei ole alkureaktiota Ubuntulta.

```
user@P0033-Ubuntu:~$ sudo apt install build-essential
[sudo] password for user:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  squashfs-tools
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu cpp cpp-9 dpkg-dev
  fakeroot g++ g++-9 gcc gcc-9 gcc-9-base libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan5 libatomic1
  libbinutils libcc1-0 libctf-nobfd0 libctf0 libdpkg-perl libfakeroot
  libfile-fcntllock-perl libgcc-9-dev libgomp1 libisl22 libitm1 liblsan0
  libmpc3 libquadmath0 libstdc++-9-dev libtsan0 libubsan1 make
```

Asennetaan gcc-compileri.

```
user@P0033-Ubuntu:~/Python-3.7.4$ sudo ./configure
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for python3.7... no
checking for python3... python3
checking for --enable-universalsdk... no
checking for --with-universal-archs... no
checking MACHDEP... checking for --without-gcc... no
checking for --with-icc... no
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
```

Mennään Python-3.7.4-kansioon, ja laitetaan paketin riippuvuudet kuntoon. Sieltä tulee pitkä lista kamaa.

```
user@P0033-Ubuntu:~/Python-3.7.4$ sudo make
gcc -pthread -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
   -std=c99 -Wextra -Wno-unused-result -Wno-unused-parameter -Wno-missing-field-
initializers -Wno-cast-function-type -Werror=implicit-function-declaration   -I.
 -I./Include    -DPy_BUILD_CORE -o Programs/python.o ./Programs/python.c
gcc -pthread -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
   -std=c99 -Wextra -Wno-unused-result -Wno-unused-parameter -Wno-missing-field-
initializers -Wno-cast-function-type -Werror=implicit-function-declaration   -I.
 -I./Include    -DPy_BUILD_CORE -o Parser/acceler.o Parser/acceler.c
gcc -pthread -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
   -std=c99 -Wextra -Wno-unused-result -Wno-unused-parameter -Wno-missing-field-
initializers -Wno-cast-function-type -Werror=implicit-function-declaration   -I.
 -I./Include    -DPy_BUILD_CORE -o Parser/grammar1.o Parser/grammar1.c
gcc -pthread -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
```

Compiloidaan ohjelman binääritiedostot.

```
user@P0033-Ubuntu:~/Python-3.7.4$ sudo make install
```

Asennetaan ohjelma (taas tuli niin paljon infoa ruudulle ettei päässyt kelaamaan alkuun, joten tässä vain käsky jota käytin).

```
user@P0033-Ubuntu:~/Python-3.7.4$ python3
Python 3.7.4 (default, Oct 28 2021, 10:37:28)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> print("toimii")
toimii
```

Tarkistetaan toimiiko ohjelma. Toimii.

Sitten käydään korjaamassa symbolinen linkki jotta muualtakin otetaan yhteyttä nimenomaan 3.7.4 versioon Pythonia.

```
lrwxrwxrwx 1 root   root          9 Mar 13  2020  python3 -> python3.8
-rwxr-xr-x 1 root   root    5490488 Sep 28 19:10  python3.8
```

/usr/bin -kansiossa näkyy tällainen symbolinen linkki, osoittaen python 3.8

```
user@P0033-Ubuntu:/usr/bin$ sudo rm python3
user@P0033-Ubuntu:/usr/bin$ ln -s /home/user/Python-3.7.4 python3
ln: failed to create symbolic link 'python3': Permission denied
user@P0033-Ubuntu:/usr/bin$ sudo ln -s /home/user/Python-3.7.4 python3
```

Tapetaan symbolinen linkki, ja tehdään uusi samanniminen symbolinen linkki, tällä kertaa osoittaen 3.7.4

```
lrwxrwxrwx 1 root   root         23 Oct 28 10:48  python3 -> /home/user/Python-3
.7.4
-rwxr-xr-x 1 root   root    5490488 Sep 28 19:10  python3.8
```

Ls -l käskyllä näkyy uusi symbolinen linkki.

```
user@P0033-Ubuntu:~$ python3
Python 3.7.4 (default, Oct 28 2021, 10:37:28)
[GCC 9.3.0] on linux
Type "help", "copyright", "credits" or "license" for more information.
>>> print("toimii!")
toimii!
```

Palataan kotihakemistoon, ja kokeillaan käyttää python3. Siellä viittaus on muuttunut viittaamaan 3.7.4-versioon. Hyvä juttu.