

More on GREP & python

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Explanation of -e, -E, -o, and -O in Linux Commands

These options are commonly used in grep, sed, and other command-line utilities.

1. -e (Expression)

- Used in **grep**, **sed**, and **awk** to specify a pattern.
- Allows multiple search patterns in grep.

Example (Multiple Patterns with grep)

```
grep -e "error" -e "warning" log.txt
```

- ◊ Finds lines containing either "error" or "warning" in log.txt.

Example (sed - Specify Expression)

```
sed -e 's/foo/bar/g' file.txt
```

- ◊ Replaces foo with bar in file.txt.

2. -E (Extended Regular Expressions)

- Used in grep to enable **extended regex**, allowing +, ?, {}, without needing backslashes (\).
- Equivalent to egrep.

Example (Without -E)

```
grep "ab\{2,4\}" file.txt # Must use \{ \} for range
```

Example (With -E)

```
grep -E "ab{2,4}" file.txt # Directly uses { } without \
```

- ◊ Finds words where "a" is followed by **2 to 4 "b"s** (e.g., "abb", "abbb", "abbbb").

3. -o (Only Matching)

- Used in grep to print **only the matching part** instead of the whole line.

Example (Extracting Emails)

```
grep -o '[a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]\{2,4\}' file.txt
```

- ◊ Extracts only email addresses from file.txt.

Example (Extracting Numbers)

```
echo "My number is 9876543210" | grep -o "[0-9]\+"
```

- ◊ Output: 9876543210

4. -O (Less Common)

- In gcc (GNU Compiler Collection), -O is used for **optimization levels**.
- **Not commonly used** in grep, sed, or awk.

Example (gcc Optimization)

```
gcc -O2 program.c -o program
```

- ◊ Compiles program.c with **level 2 optimizations**, making it faster.

Summary Table

Option	Used In	Meaning
-e	grep, sed	Specify search pattern
-E	grep	Enable extended regex (like egrep)
-o	grep	Print only matched text
-O	gcc	Compiler optimization level

```
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -Eo '[a-zA-Z0-9._%+-]+@[a-zA-Z0-9._.]+[a-zA-Z]{3,}' logfile.txt
admin@example.com
john.doe@company.org
sarah.jenkins@company.org
sarah.jenkins@company.org
michael.brown@example.net
lisa.wong@company.org
david.kim@example.com
emma.davis@company.org
carlos.rodriguez@example.org
admin@example.com
olivia.parker@company.org
james.wilson@example.net
sophia.nguyen@company.org
admin@example.com
ethan.miller@example.com
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ |
```

```
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -Eo '[a-zA-Z0-9._%+-]{3}+@[a-zA-Z0-9._.]+[a-zA-Z]{3,}' logfile.txt
min@example.com
hn.doe@company.org
arah.jenkins@company.org
arah.jenkins@company.org
ichael.brown@example.net
lisa.wong@company.org
david.kim@example.com
mma.davis@company.org
arlos.rodriguez@example.org
min@example.com
livia.parker@company.org
james.wilson@example.net
ophia.nguyen@company.org
min@example.com
ethan.miller@example.com
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -Eo '[a-zA-Z0-9._%+-]{2}+@[a-zA-Z0-9._.]+[a-zA-Z]{3,}' logfile.txt
dmin@example.com
john.doe@company.org
arah.jenkins@company.org
arah.jenkins@company.org
ichael.brown@example.net
isa.wong@company.org
avid.kim@example.com
emma.davis@company.org
carlos.rodriguez@example.org
dmin@example.com
livia.parker@company.org
james.wilson@example.net
ophia.nguyen@company.org
dmin@example.com
ethan.miller@example.com
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ |
```

```
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{2,}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{1,}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]ms" logfile.txt
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{1,}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
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2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{1,4}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
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2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{1,2}ms" logfile.txt
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [1-9][0-9]{1,3}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in {1,}ms" logfile.txt
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [0-9+]{1,}ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ |
```

```
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [A-Z+]{1,}ms" logfile.txt
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [0-9+]+ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
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2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [0-9]+ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
```

```
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [0-9]{20,}ms" logfile.txt
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -E "completed in [0-9]+ms" logfile.txt
2024-02-01 07:33:04 INFO [app-server-2] API request completed in 2781ms
2024-02-01 08:15:43 INFO [app-server-1] API request completed in 312ms
2024-02-01 09:15:24 INFO [app-server-2] API request completed in 1878ms
2024-02-01 09:38:58 INFO [app-server-1] API request completed in 2156ms
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
```

```
2024-02-01 10:35:34 INFO [app-server-2] API request completed in 7245ms
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -Eo '[a-zA-Z0-9.]+@[a-zA-Z0-9._]+[a-zA-Z]{3,}' logfile.txt
admin@example.com
john.doe@example.org
sarah.jenkins@example.org
sarah.jenkins@example.org
michael.brown@example.net
lisa.wong@example.org
david.kim@example.com
emma.davis@example.org
carlos.rodriguez@example.org
admin@example.com
olivia.parker@example.org
james.wilson@example.net
sophia.nguyen@example.org
admin@example.com
ethan.miller@example.com
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$ grep -Eo '[a-zA-Z0-9.]+@[a-zA-Z0-9._]+[a-zA-Z]{3,}' logfile.txt
admin@example.com
john.doe@example.org
sarah.jenkins@example.org
sarah.jenkins@example.org
michael.brown@example.net
lisa.wong@example.org
david.kim@example.com
emma.davis@example.org
carlos.rodriguez@example.org
admin@example.com
olivia.parker@example.org
james.wilson@example.net
sophia.nguyen@example.org
admin@example.com
ethan.miller@example.com
rootjinesh@DESKTOP-KN25Q06:/mnt/c/Users/srs33/Downloads$
```

INSTALL PYTHON AND BAZEL

```

sandy@sandy:~/Codebase$ sudo apt install -y bazel
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  unzip
Suggested packages:
  google-jdk | java8-sdk-headless | java8-jdk | java8-sdk | oracle-java8-installer zip
The following NEW packages will be installed:
  bazel unzip
0 upgraded, 2 newly installed, 0 to remove and 57 not upgraded.
Need to get 55.7 MB of archives.
After this operation, 384 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 unzip amd64 6.0-28ubuntu4.1 [174 kB]
Get:2 https://storage.googleapis.com/bazel-apt stable/jdk1.8 amd64 bazel amd64 8.1.0 [55.6 MB]
Fetched 55.7 MB in 18s (3108 kB/s)
Selecting previously unselected package unzip.
(Reading database ... 48496 files and directories currently installed.)
Preparing to unpack .../unzip_6.0-28ubuntu4.1_amd64.deb ...
Unpacking unzip (6.0-28ubuntu4.1) ...
Selecting previously unselected package bazel.
Preparing to unpack .../archives/bazel_8.1.0_amd64.deb ...
Unpacking bazel (8.1.0) ...
Setting up unzip (6.0-28ubuntu4.1) ...
Setting up bazel (8.1.0) ...
Processing triggers for man-db (2.12.0-4build2) ...
sandy@sandy:~/Codebase$ python --version
Command 'python' not found, did you mean:
  command 'python3' from deb python3
  command 'python' from deb python-is-python3
sandy@sandy:~/Codebase$ bazel --version
bazel 8.1.0
sandy@sandy:~/Codebase$ python3 --version
Python 3.12.3
sandy@sandy:~/Codebase$ sudo apt install -y nodejs npm
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done

```

```

>>> age = 25
"John Doe">>> name = "John Doe";
>>> print(age)
25
>>> print(name)
John Doe
>>> a = 5
_ab = a + b
product_ab = a * b
d>>> b = 2
>>>
>>> sum_ab = a + b
b
quotient = a />>> product_ab = a * b
b # division i>>> difference = a - b
n Python is float>>> quotient = a / b # division in Python is float
>>> sqrt = math.sqrt(a) # import math module
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'math' is not defined
>>> import math;
>>> a = 5
>>> b = 2
>>>
>>> sum_ab = a + b
>>> product_ab = a * b
>>> difference = a - b
>>> quotient = a / b # division in Python is float
rt(a) # import >>> sqrt = math.sqrt(a) # import math module
>>> print(sum_ab)

```

7

```
>>> print(quotient)
```

```
x = input("Enter your age: ")  
if x.isdigit():  
    print(f"Age must be an integer.")  
else:  
    print("Please enter an integer.")
```

Afternoon session:

Crontab

The commands listed in the image relate to Linux system administration, primarily focusing on file listing, scheduling tasks, and navigation. Here's a breakdown:

1. ls -lrt
 - o Lists files and directories in **long format (-l)**, **sorted by modification time (-t)**, and **in reverse order (-r)** (oldest first).
2. crontab -e
 - o Opens the **cron table (crontab)** for editing.
 - o Used to schedule repetitive tasks (cron jobs).
3. crontab -l
 - o Lists currently scheduled cron jobs for the user.
4. cd /home
 - o Changes the current directory to /home, where user directories are typically stored.
5. cd directoryname/
 - o Changes the directory to directoryname/, a subdirectory of the current location.
6. less log.out
 - o Opens log.out file in the less pager, allowing easy navigation without loading the entire file.
7. man crontab
 - o Displays the **manual page** for crontab, explaining its options and usage.

```
sandy@sandy:~/Codebase/bazel-python-project$ crontab -e
no crontab for sandy - 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/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: 2
crontab: installing new crontab
"/tmp/crontab.LkIj3i/crontab":0: bad minute
errors in crontab file, can't install.
Do you want to retry the same edit? (y/n) y
crontab: installing new crontab
"/tmp/crontab.LkIj3i/crontab":0: bad minute
errors in crontab file, can't install.
Do you want to retry the same edit? (y/n) n
crontab: edits left in /tmp/crontab.LkIj3i/crontab
sandy@sandy:~/Codebase/bazel-python-project$ crontab -l
no crontab for sandy
sandy@sandy:~/Codebase/bazel-python-project$ crontab -e
no crontab for sandy - using an empty one
crontab: installing new crontab
sandy@sandy:~/Codebase/bazel-python-project$ ls -lrt
total 4
drwxr-xr-x 4 sandy sandy 4096 Feb 20 05:36 src
sandy@sandy:~/Codebase/bazel-python-project$ crontab -l
* * * * * /path/to/script.sh
# 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
```

Trying grep commands

```
rahulroot@LAPTOP-A423RDD5:~$ cd /mnt/c/Users/srs33/
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ vi sample-logs.md
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ grep -Eo '[a-zA-Z0-9]+@[a-zA-Z0-9]+\.[a-zA-Z]{2,3}' sample-logs.md
admin@example.com
doe@company.org
jenkins@company.org
brown@example.net
wong@company.org
kim@example.com
davis@company.org
rodriguez@example.org
admin@example.com
parker@company.org
wilson@example.net
nguyen@company.org
admin@example.com
miller@example.com
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ grep -Eo '[a-zA-Z0-9]+@[company
+.com' sample-logs.md
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ grep -Eo '[a-zA-Z0-9]+@[company
\..com' sample-logs.md
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ grep -Eo '[a-zA-Z0-9]+@[company
\..org' sample-logs.md
doe@company.org
jenkins@company.org
jenkins@company.org
wong@company.org
davis@company.org
parker@company.org
nguyen@company.org
rahulroot@LAPTOP-A423RDD5:/mnt/c/Users/srs33$ grep -Eo '[a-zA-Z0-9]+@[company
\..org' sample-logs.md
```

```
miller@example.com
hafsa_027@Dell:/mnt/d/mthree/linux$ grep -Eo '[a-zA-Z0-9]+@[a-zA-Z]+\.{2,3}' logfile.txt
doe@company.org
jenkins@company.org
jenkins@company.org
brown@example.net
wong@company.org
kim@example.com
davis@company.org
rodriguez@example.org
admin@example.com
parker@company.org
wilson@example.net
nguyen@company.org
admin@example.com
miller@example.com
hafsa_027@Dell:/mnt/d/mthree/linux$ grep -Eo '[a-zA-Z0-9]+@[a-zA-Z]+\.{2,3}' logfile.txt
doe@company.org' logged in successfully
jenkins@company.org' logged in successfully
jenkins@company.org
brown@example.net' logged in successfully
wong@company.org' logged in successfully
kim@example.com' logged in successfully
davis@company.org' logged in successfully
rodriguez@example.org' logged in successfully
admin@example.com'
parker@company.org' logged in successfully
wilson@example.net' logged in successfully
nguyen@company.org' logged in successfully
admin@example.com' logged in successfully
miller@example.com' logged in successfully
hafsa_027@Dell:/mnt/d/mthree/linux$
```