

# Лабораторная работа №8

Планировщики событий

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Турсунов Мухамметназар

10 октября 2025

Российский университет дружбы народов, Москва, Россия

## Цель работы

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Получение навыков работы с планировщиками заданий **cron** и **at** в операционной системе Linux.

## Ход выполнения работы

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# Проверка службы crond

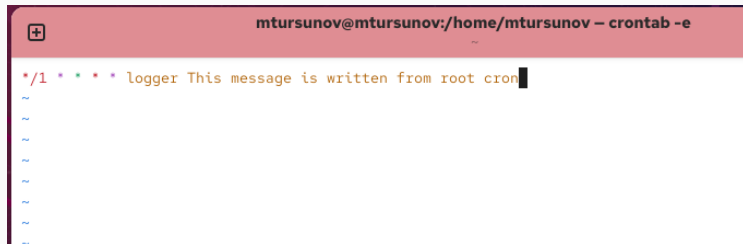
```
mtursunov@mtursunov:~$ su
Password:
root@mtursunov:/home/mtursunov#
root@mtursunov:/home/mtursunov# systemctl status crond -l
Unit crond.service could not be found.
root@mtursunov:/home/mtursunov# systemctl status crond -l
● crond.service - Command Scheduler
   Loaded: loaded (/usr/lib/systemd/system/crond.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-10-10 12:25:38 MSK; 11min ago
 Invocation: 011a8ac973764055a4da601f37fde86d
    Main PID: 1213 (crond)
      Tasks: 1 (limit: 23136)
     Memory: 1M (peak: 1.1M)
        CPU: 6ms
    CGroup: /system.slice/crond.service
            └─1213 /usr/sbin/crond -n

Oct 10 12:25:38 mtursunov.localdomain systemd[1]: Started crond.service - Command Scheduler.
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) STARTUP (1.7.0)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (Syslog will be used instead of sendmail)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (RANDOM_DELAY will be scaled with factor)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (running with inotify support)
root@mtursunov:/home/mtursunov#
```

Рис. 1: Проверка статуса службы crond

```
root@mtursunov:/home/mtursunov#  
root@mtursunov:/home/mtursunov# cat /etc/crontab  
SHELL=/bin/bash  
PATH=/sbin:/bin:/usr/sbin:/usr/bin  
MAILTO=root  
  
# For details see man 4 crontabs  
  
# 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  
  
root@mtursunov:/home/mtursunov#
```

Рис. 2: Содержимое файла /etc/crontab



```
mtursunov@mtursunov:/home/mtursunov - crontab -e
*/1 * * * * logger This message is written from root cron
```

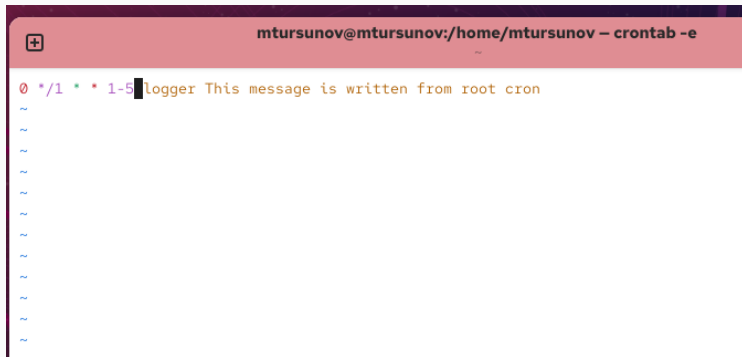
Рис. 3: Вывод команды `crontab -l` (пустое расписание)

```
root@mtursunov:/home/mtursunov#  
root@mtursunov:/home/mtursunov# crontab -l  
no crontab for root  
root@mtursunov:/home/mtursunov# crontab -e  
no crontab for root - using an empty one  
crontab: installing new crontab  
root@mtursunov:/home/mtursunov# crontab -l  
*/1 * * * * logger This message is written from root cron  
root@mtursunov:/home/mtursunov# grep written /var/log/messages  
Oct 10 12:40:01 mtursunov root[4485]: This message is written from root cron  
Oct 10 12:41:01 mtursunov root[4612]: This message is written from root cron  
root@mtursunov:/home/mtursunov# █
```

Рис. 4: Создание задания cron через crontab -e



## Проверка выполнения cron-заданий

A terminal window with a pink header bar. The header bar contains a plus icon on the left and the text 'mtursunov@mtursunov:/home/mtursunov - crontab -e' on the right. The terminal content shows a cron job entry: '0 \*/1 \* \* 1-5 logger This message is written from root cron'. Below this entry, there are several tilde (~) characters, indicating the user's home directory.

```
mtursunov@mtursunov:/home/mtursunov - crontab -e
0 */1 * * 1-5 logger This message is written from root cron
~
~
~
~
~
~
~
~
~
~
~
```

Рис. 5: Проверка работы задания cron



```
mtursunov@mtursunov:/etc/cron.hourly - nano eachhour
GNU nano 8.1                                     eachhour
#!/bin/sh
logger This messahe is written at $(date)
```

Рис. 6: Изменённая запись crontab



The screenshot shows a terminal window with the title bar "mtursunov@mtursunov:/etc/cron.d – nano eachhour". The window contains the GNU nano 8.1 editor interface. The first line of the file is a cron job entry: "11 \* \* \* \* root logger This message is written from /etc/cron.d". The cursor is positioned at the end of this line. The editor's status bar at the bottom indicates the file name "eachhour".

```
mtursunov@mtursunov:/etc/cron.d – nano eachhour
/etc/cron.d

GNU nano 8.1                                     eachhour
11 * * * * root logger This message is written from /etc/cron.d
```

Рис. 7: Создание сценария eachhour

```
root@mtursunov:/etc/cron.d#  
root@mtursunov:/etc/cron.d# systemctl status atd  
● atd.service - Deferred execution scheduler  
   Loaded: loaded (/usr/lib/systemd/system/atd.service; enabled; preset: enabled)  
   Active: active (running) since Fri 2025-10-10 12:25:38 MSK; 20min ago  
  Invocation: 116f60af2a4c41df9b11bfff1cfa91cc9  
     Docs: man:atd(8)  
   Main PID: 1212 (atd)  
      Tasks: 1 (limit: 23136)  
     Memory: 316K (peak: 1.1M)  
        CPU: 4ms  
   CGroup: /system.slice/atd.service  
           └─1212 /usr/sbin/atd -f  
  
Oct 10 12:25:38 mtursunov.localdomain systemd[1]: Started atd.service - Deferred execution scheduler.  
Oct 10 12:25:38 mtursunov.localdomain (atd)[1212]: atd.service: Referenced but unset environment variable  
root@mtursunov:/etc/cron.d# at 12:48  
warning: commands will be executed using /bin/sh  
at Fri Oct 10 12:48:00 2025  
at> logger message from at  
at> <EOT>  
job 1 at Fri Oct 10 12:48:00 2025  
root@mtursunov:/etc/cron.d# atq  
1      Fri Oct 10 12:48:00 2025 a root  
root@mtursunov:/etc/cron.d# grep 'from at' /var/log/messages  
root@mtursunov:/etc/cron.d# grep 'from at' /var/log/messages  
Oct 10 12:48:00 mtursunov root[5823]: message from at  
root@mtursunov:/etc/cron.d#
```

Рис. 8: Создание расписания в /etc/cron.d

## Планирование с помощью at

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## Проверка службы atd

```
mtursunov@mtursunov:~$ su
Password:
root@mtursunov:/home/mtursunov#
root@mtursunov:/home/mtursunov# systemctl status crond -l
Unit crond.service could not be found.
root@mtursunov:/home/mtursunov# systemctl status crond -l
● crond.service - Command Scheduler
   Loaded: loaded (/usr/lib/systemd/system/crond.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-10-10 12:25:38 MSK; 11min ago
 Invocation: 011a8ac973764055a4da601f37fde86d
    Main PID: 1213 (crond)
      Tasks: 1 (limit: 23136)
     Memory: 1M (peak: 1.1M)
        CPU: 6ms
    CGroup: /system.slice/crond.service
            └─1213 /usr/sbin/crond -n

Oct 10 12:25:38 mtursunov.localdomain systemd[1]: Started crond.service - Command Scheduler.
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) STARTUP (1.7.0)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (Syslog will be used instead of sendmail)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (RANDOM_DELAY will be scaled with factor)
Oct 10 12:25:38 mtursunov.localdomain crond[1213]: (CRON) INFO (running with inotify support)
root@mtursunov:/home/mtursunov#
```

Рис. 9: Проверка работы службы atd

## Создание однократного задания

```
root@mtursunov:/etc/cron.d#  
root@mtursunov:/etc/cron.d# systemctl status atd  
● atd.service - Deferred execution scheduler  
   Loaded: loaded (/usr/lib/systemd/system/atd.service; enabled; preset: enabled)  
   Active: active (running) since Fri 2025-10-10 12:25:38 MSK; 20min ago  
  Invocation: 116f60af2a4c41df9b11bfff1cfa91cc9  
     Docs: man:atd(8)  
   Main PID: 1212 (atd)  
      Tasks: 1 (limit: 23136)  
     Memory: 316K (peak: 1.1M)  
        CPU: 4ms  
     CGroup: /system.slice/atd.service  
             └─1212 /usr/sbin/atd -f  
  
Oct 10 12:25:38 mtursunov.localdomain systemd[1]: Started atd.service - Deferred execution scheduler.  
Oct 10 12:25:38 mtursunov.localdomain (atd)[1212]: atd.service: Referenced but unset environment variable  
root@mtursunov:/etc/cron.d# at 12:48  
warning: commands will be executed using /bin/sh  
at Fri Oct 10 12:48:00 2025  
at> logger message from at  
at> <EOT>  
job 1 at Fri Oct 10 12:48:00 2025  
root@mtursunov:/etc/cron.d# atq  
1          Fri Oct 10 12:48:00 2025 a root  
root@mtursunov:/etc/cron.d# grep 'from at' /var/log/messages  
root@mtursunov:/etc/cron.d# grep 'from at' /var/log/messages  
Oct 10 12:48:00 mtursunov root[5823]: message from at  
root@mtursunov:/etc/cron.d#
```

Рис. 10: Планирование и выполнение задачи с помощью at

## Итоги работы

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В ходе лабораторной работы были изучены средства планирования задач в Linux: **cron** для периодических и **at** для однократных запусков.

Были освоены команды для редактирования расписаний, проверки их выполнения и управления службами **crond** и **atd**.

Полученные навыки позволяют автоматизировать системные операции и повысить эффективность администрирования Linux.