

Periodic Processes

or, cron-icles of a habitual user

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Objective

- automated execution
- of arbitrary specified commands
- at arbitrary specified times

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Overview

- implemented by cron daemon
- following instructions in "cron table" files
- "crontab" file contents
 - commands to run
 - times to run them

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cron daemon

- executed at startup
- then runs continuously

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cron operation

- startup
 - reads all crontabs (cron tables)
 - stores them in memory
 - goes to sleep
- every minute
 - wakes up
 - re-stores any changed crontabs
 - executes any tasks scheduled for that minute

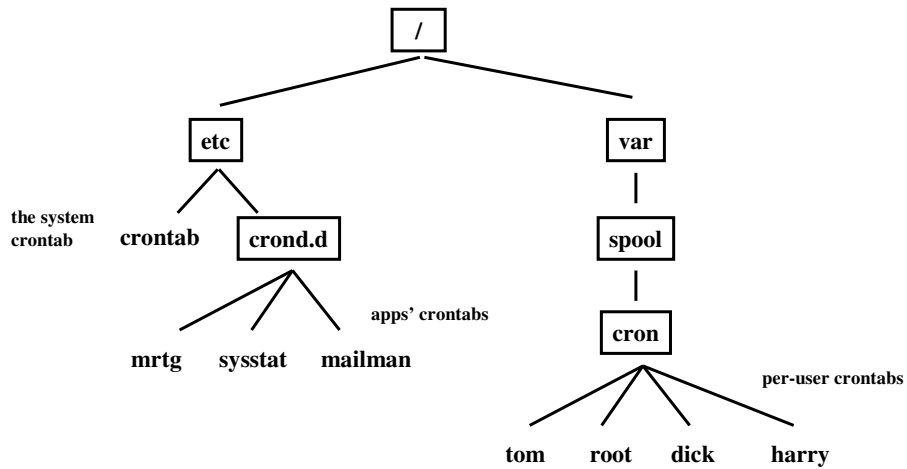
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crontab locations

- /etc/crontab
 - maintained by system administrator
- /var/spool/cron/<username>
 - per-user crontabs
 - name of crontab file is user's name
 - maintained by individual users
- /etc/cron.d directory
 - auto-installed by apps that want cron service

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cron table files



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Format of crontab instructions

<when> [<who>] <what>

Example:

```
30 1 * * * root /usr/bin/find /tmp -atime +3 -exec rm -f { } \;
```

when who what

At 1:30 each morning, as root, run the command which removes all files in the /tmp directory that have not been accessed in 3 days

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<what>

- anything executable from command line
 - standard shell commands
 - binary executable files
 - scripts (text executable files)

(tip: specify full path for executable files)

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<when>

Time fields

minute	0 to 59
hour	0 to 23
day of month	1 to 31
month	1 to 12
day of week	0 to 6 (0 = Sunday)

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Time field contents

- star - matches anything
- single integer - matches exactly
- hyphen-separated integer pair - matches the range
- comma-separated list of above - matches anything listed

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Examples

10:45am Monday through Friday
45 10 * * 1-5

every half-hour on Fridays and on the 13th
0,30 * 13 * 5

every half-hour on Mon Tues Wed and Fri
0,30 * * * 1-3,5

every 3 hours on the hour
0 0,3,6,9,12,15,18,21 * * *

every 3 hours on the hour
0 0-21/3 * * *

minute – hour – day of month – month – day of week

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as whom are commands executed?

- per-user crontabs executed as "their" user
 - /var/log/cron/root executed as root
 - /var/log/cron/tom executed as tom
- other crontabs' instructions specify user explicitly, per each command
 - <when> <who> <what>

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editing cron tables

- per-user crontabs
 - crontab command
- /etc/crontab
 - any editor
- /etc/cron.d
 - auto-installed, not maintained

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crontab command

- `crontab <filename>`
installs named file as `/var/log/cron/<username>`
- `crontab -e`
edits user's crontab
- `crontab -l`
lists content of user's crontab
- `crontab -r`
removes user's crontab

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Preinstalled script-runner crontabs

- some distributions install a system crontab
 - daily, executes scripts in `/etc/crontab.daily`
 - weekly, executes scripts in `/etc/crontab.weekly`
- affords alternate method to install periodic jobs
 - mere placement in above "path of execution" directories does the job
 - no crontab file to edit

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Fedora 4 /etc/crontab

```
# run-parts
01 * * * * root run-parts /etc/cron.hourly
02 4 * * * root run-parts /etc/cron.daily
22 4 * * 0 root run-parts /etc/cron.weekly
42 4 1 * * root run-parts /etc/cron.monthly
```

excerpt

run-parts - runs all executables found in:

- /etc/cron.hourly - 1 minute past every hour
- /etc/cron.daily - every 4:02am
- /etc/cron.weekly - every 4:22am on day 0 (Sunday)
- /etc/cron.monthly - every 4:24am on 1st-of-the-month

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Documentation

- man -a crontab

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