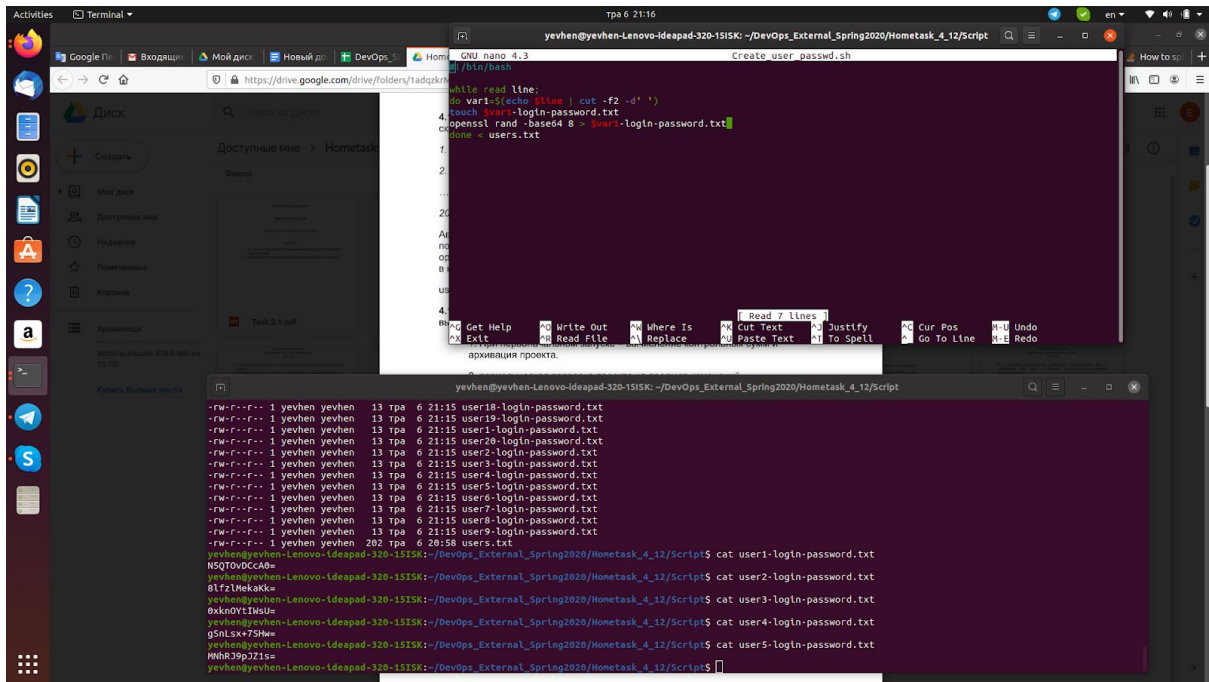


Linux Essentials with Bash

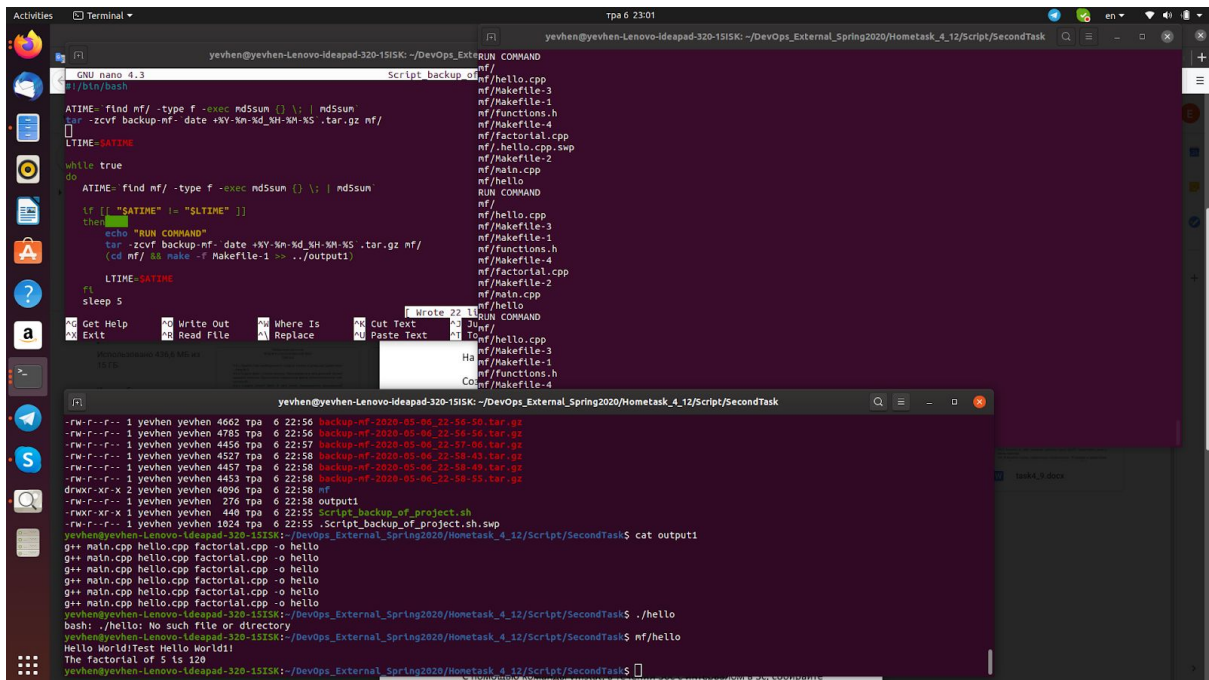
1. Create script for generate password for users into file for each user.



The screenshot shows a terminal window with a nano editor open. The script being edited is named `create_user_passwd.sh`. The script uses a `while read line` loop to read lines from a file `users.txt` and generate passwords for each user. The passwords are stored in files named `user1-login-password.txt` through `user8-login-password.txt`. The script also uses `openssl rand -base64 8` to generate random passwords.

```
#!/bin/bash
while read line
do
    var1=$(echo $line | cut -f2 -d' ')
    echo $var1 > login-password.txt
    openssl rand -base64 8 > $var1-login-password.txt
done < users.txt
```

2. Create script for count checksums and archive project. Check it for change with some period. If project have changed put it to the archive and run recompilation.



The screenshot shows a terminal window with a nano editor open. The script being edited is named `Script_backup_of_nf`. The script uses a `while true` loop to continuously check the checksums of files in the `nf` directory. If the checksums change, the script archives the files and runs a recompilation. The script also uses `md5sum` to calculate the checksums of the files.

```
#!/bin/bash
ATIME=$(find nf/ -type f -exec md5sum {} \; | md5sum)
tar -czvf backup-nf-$(date +%Y-%m-%d_%H-%M-%S).tar.gz nf/
LTIME=$ATIME
while true
do
    ATIME=$(find nf/ -type f -exec md5sum {} \; | md5sum)
    if [[ "$ATIME" != "$LTIME" ]]; then
        echo "RUN COMMAND"
        tar -czvf backup-nf-$(date +%Y-%m-%d_%H-%M-%S).tar.gz nf/
        (cd nf/ && make -f Makefile-1 >> ../output)
        LTIME=$ATIME
        sleep 5
    fi
done
```

3. Create schedule script that makes log files, run it with crontab and run script to create archive file from this log.

```
GNU nano 4.3 Script generate log.sh
echo date +%Y-%m-%d_%H-%M-%S >> /home/yevhen/memory/stat
cat /proc/meminfo | grep Mem >> /home/yevhen/memory/stat

for (( count=1; count<30; count++ ))
do
var=$((vmstat -s | grep "CPU context switches" | awk '{print $1}'))
my_array[count]=$var
let total+=var
sleep 3
done

echo date +%Y-%m-%d_%H-%M-%S >> /home/yevhen/memory/main.log
echo "CPU context switches" >> /home/yevhen/memory/main.log
echo $((total/10)) >> /home/yevhen/memory/main.log

for (( count=1; count<15; count++ ))
do
varCpu=$(top -bn1 | grep "Cpu(s)" | sed "s/.,.*([0-9.]*)% id.*/\1/" | awk '{print 100 - $1}')
let totalCpu+=varCpu
sleep 1
done

echo date +%Y-%m-%d_%H-%M-%S >> /home/yevhen/memory/main.log
echo "CPU Load %" >> /home/yevhen/memory/main.log
echo $((totalCpu/15)) >> /home/yevhen/memory/main.log

echo date +%Y-%m-%d_%H-%M-%S >> /home/yevhen/memory/main.log
cat /proc/meminfo | grep Pages >> /home/yevhen/memory/main.log

echo date +%Y-%m-%d_%H-%M-%S >> /home/yevhen/memory/main.log
echo "dskss" >> /home/yevhen/memory/main.log
vmstat -b >> /home/yevhen/memory/main.log

GNU nano 4.3 Script create archive.sh
tar -czvf backup-stat- date +%Y-%m-%d_%H-%M-%S .tar.gz --absolute-names /home/yevhen/memory/stat
tar -czvf backup-log- date +%Y-%m-%d_%H-%M-%S .tar.gz --absolute-names /home/yevhen/memory/main.log

yevhen@yevhen-Lenovo-Ideapad-320-15ISK: ~/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask$
# 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 cronstab jobs (including errors) is sent through
# email to the user the cronstab 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.tar.gz /home/
# For more information see the manual pages of cron(5) and cron(8)
# m h dom mon dow command
*/5 * * * * /home/yevhen/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask/Script_create_archive.sh && /tmp/errors
*/2 * * * * /home/yevhen/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask/Script_generate_log.sh && /tmp/errors
*/1 * * * * echo "Hello World"
```

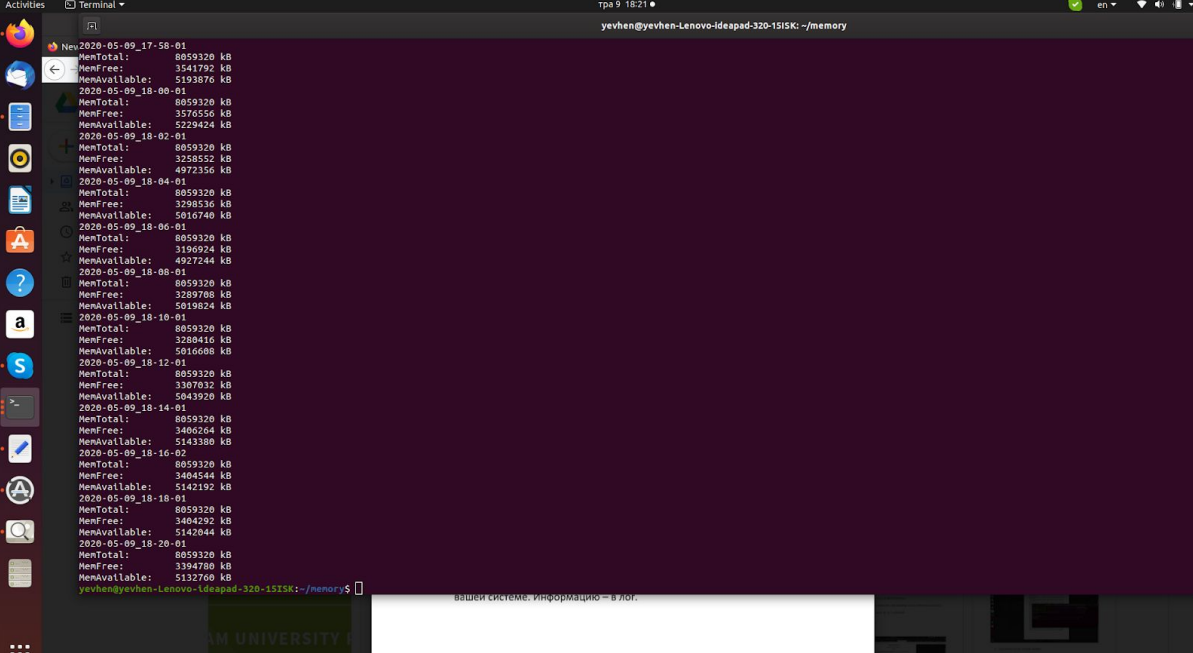
```
yevhen@yevhen-Lenovo-Ideapad-320-15ISK: ~$
-rw-rw-r-- 1 yevhen yevhen 5956 tpa 8 23:10 backup-stat-2020-05-08_23-10-01.tar.gz 0 inprogress IO
-rw-rw-r-- 1 yevhen yevhen 5982 tpa 8 23:15 backup-stat-2020-05-08_23-15-01.tar.gz 32 mlll spent IO
-rw-rw-r-- 1 yevhen yevhen 6020 tpa 8 23:20 backup-stat-2020-05-08_23-20-01.tar.gz 2020-05-09_17:59:29
-rw-rw-r-- 1 yevhen yevhen 6045 tpa 8 23:25 backup-stat-2020-05-08_23-25-01.tar.gz CPU context switches
-rw-rw-r-- 1 yevhen yevhen 6068 tpa 8 23:30 backup-stat-2020-05-08_23-30-01.tar.gz 8360994
-rw-rw-r-- 1 yevhen yevhen 6104 tpa 8 23:35 backup-stat-2020-05-08_23-35-01.tar.gz 2020-05-09_17:59:45
-rw-rw-r-- 1 yevhen yevhen 6139 tpa 8 23:40 backup-stat-2020-05-08_23-40-01.tar.gz CPU Load %
-rw-rw-r-- 1 yevhen yevhen 6161 tpa 8 23:45 backup-stat-2020-05-08_23-45-01.tar.gz 89
-rw-rw-r-- 1 yevhen yevhen 6265 tpa 8 23:50 backup-stat-2020-05-08_23-50-01.tar.gz 2020-05-09_17:59:45
-rw-rw-r-- 1 yevhen yevhen 6289 tpa 8 23:55 backup-stat-2020-05-08_23-55-01.tar.gz Pages of memory
-rw-rw-r-- 1 yevhen yevhen 6321 tpa 9 00:00 backup-stat-2020-05-09_00-00-01.tar.gz AnonPages: 1951144 kB
-rw-rw-r-- 1 yevhen yevhen 6355 tpa 9 00:05 backup-stat-2020-05-09_00-05-01.tar.gz AnonHugePages: 0 kB
-rw-rw-r-- 1 yevhen yevhen 6392 tpa 9 00:10 backup-stat-2020-05-09_00-10-01.tar.gz ShmemHugePages: 0 kB
-rw-rw-r-- 1 yevhen yevhen 6416 tpa 9 00:15 backup-stat-2020-05-09_00-15-01.tar.gz HugePages_Total: 0
-rw-rw-r-- 1 yevhen yevhen 6438 tpa 9 17:45 backup-stat-2020-05-08_17-45-01.tar.gz HugePages_Free: 0
-rw-rw-r-- 1 yevhen yevhen 6466 tpa 9 17:50 backup-stat-2020-05-09_17-50-01.tar.gz HugePages_Rsvd: 0
-rw-rw-r-- 1 yevhen yevhen 6510 tpa 9 17:55 backup-stat-2020-05-09_17-55-01.tar.gz HugePages_Surp: 0
-rw-rw-r-- 1 yevhen yevhen 6540 tpa 9 18:00 backup-stat-2020-05-09_18-00-01.tar.gz 2020-05-09_17:59:45
-rw-rw-r-- 1 yevhen yevhen 42870 tpa 8 14:37 .bash_history dlsks
-rw-rw-r-- 1 yevhen yevhen 220 kbl 3 21:16 .bash_logout 17 dlsks
-rw-rw-r-- 1 yevhen yevhen 3771 kbl 3 21:16 .bashrc 1 partitions
drwxr-x-- 25 yevhen yevhen 4096 kbl 21 23:14 .cache 40827 total reads
-rw-rw-r-- 1 yevhen yevhen 611088384 kbl 3 22:09 centos.tar 14084 merged reads
drwxr-x-- 29 yevhen yevhen 4096 kbl 8 19:51 .config 2934122 read sectors
drwxr-xr-x 2 yevhen yevhen 4096 kbl 3 21:24 Desktop 31512 mlll reading
drwxr-xr-x 1 yevhen yevhen 4096 kbl 6 20:55 DevOps_External_Spring2020 13659 writes
drwxr-xr-x 4 yevhen yevhen 4096 kbl 10 17:01 DevOps_External_Spring_2020_Hometasks 21545 merged writes
-rw-rw-r-- 1 yevhen yevhen 18 kbl 5 12:51 Dockerfile 163128 written sectors
drwxr-xr-x 2 yevhen yevhen 4096 kbl 7 21:38 Documents 20413 mlll writing
drwxr-xr-x 9 yevhen yevhen 4096 tpa 8 10:36 Downloads 0 inprogress IO
32 mlll spent IO

yevhen@yevhen-Lenovo-Ideapad-320-15ISK: ~/memory$

yevhen@yevhen-Lenovo-Ideapad-320-15ISK: ~/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask$
cron.service - Regular background program processing daemon
Loaded: loaded (/lib/systemd/system/cron.service; enabled; vendor preset: enabled)
Active: active (running) since Sat 2020-05-09 17:42:50 EEST; 17min ago
Docs: man:cron(8)
Main PID: 628 (cron)
Tasks: 3 (limit: 4915)
Memory: 4.0M
CGroup: /system.slice/cron.service
└─ 628 /usr/sbin/cron -f
    └─ 9749 /bin/bash /home/yevhen/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask/Script_generate_log.sh
        └─ 9801 sleep 3

tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9742]: pam_unix(cron:session): session opened for user yevhen by (uid=0)
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9745]: (yevhen) CMD (echo "Hello World")
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9744]: pam_unix(cron:session): session opened for user yevhen by (uid=0)
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9743]: pam_unix(cron:session): session opened for user yevhen by (uid=0)
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9746]: (yevhen) CMD (/home/yevhen/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask/Script_generate_log.sh && /tmp/
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9747]: (yevhen) CMD (/home/yevhen/DevOps_External_Spring2020/Hometask_4_12/Script/ThirdTask/Script_create_archive.sh && /tmp/
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9742]: (CRON) Info (No RTA installed, discarding output)
tpa 09 18:00:01 yevhen-Lenovo-Ideapad-320-15ISK CRON[9743]: pam_unix(cron:session): session closed for user yevhen
```

cat ~/memory/stat



The screenshot shows a Linux terminal window with a dark purple background. The terminal title bar indicates the user is 'yevhen' on a 'Lenovo-Ideapad-320-15ISK' machine, with the current directory set to '~/memory'. The terminal displays the output of the 'cat ~/memory/stat' command, which lists memory statistics for various dates and times. The statistics include 'MemTotal', 'MemFree', and 'MemAvailable' in kilobytes (kB). The data is organized into groups, each corresponding to a specific timestamp. The terminal window is part of a desktop environment, with a sidebar on the left containing icons for various applications like a web browser, file manager, and terminal. The bottom of the screen shows a taskbar with more application icons and system status indicators on the right.

```
MemTotal: 8059320 kB
MemFree: 3541792 kB
MemAvailable: 5193876 kB
2020-05-09_18-08-01
MemTotal: 8059320 kB
MemFree: 3576556 kB
MemAvailable: 5229424 kB
2020-05-09_18-02-01
MemTotal: 8059320 kB
MemFree: 3258552 kB
MemAvailable: 4972356 kB
2020-05-09_18-04-01
MemTotal: 8059320 kB
MemFree: 3298536 kB
MemAvailable: 5010740 kB
2020-05-09_18-06-01
MemTotal: 8059320 kB
MemFree: 3196924 kB
MemAvailable: 4927244 kB
2020-05-09_18-08-01
MemTotal: 8059320 kB
MemFree: 3289708 kB
MemAvailable: 5019824 kB
2020-05-09_18-10-01
MemTotal: 8059320 kB
MemFree: 3288416 kB
MemAvailable: 5016608 kB
2020-05-09_18-12-01
MemTotal: 8059320 kB
MemFree: 3307032 kB
MemAvailable: 5043920 kB
2020-05-09_18-14-01
MemTotal: 8059320 kB
MemFree: 3406264 kB
MemAvailable: 5143300 kB
2020-05-09_18-16-02
MemTotal: 8059320 kB
MemFree: 3404544 kB
MemAvailable: 5142192 kB
2020-05-09_18-18-01
MemTotal: 8059320 kB
MemFree: 3404292 kB
MemAvailable: 5142844 kB
2020-05-09_18-20-01
MemTotal: 8059320 kB
MemFree: 3394788 kB
MemAvailable: 5132760 kB
yevhen@yevhen-Lenovo-Ideapad-320-15ISK:~/memory$
```