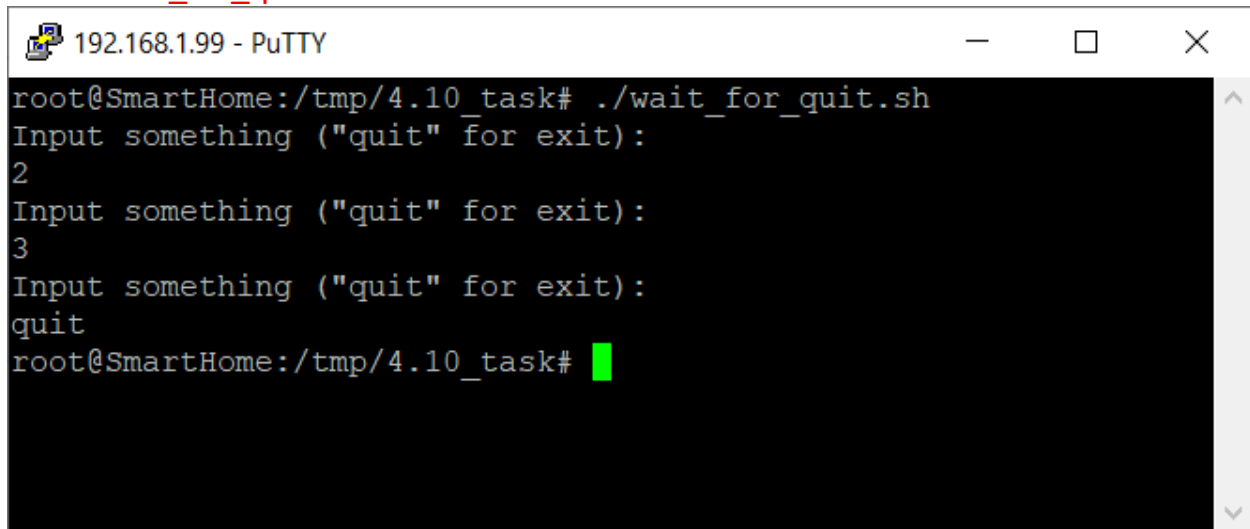


EPAM University Programs
DevOps external course
Module 4 Linux Essentials with Bash
TASK 4.9

All scripts will be available in 4.10_task dir on my git

4.10.1 Написать скрипт, который выводит приглашения для ввода данных до тех пор, пока не будет введено quit.

`wait_for_quit.sh`



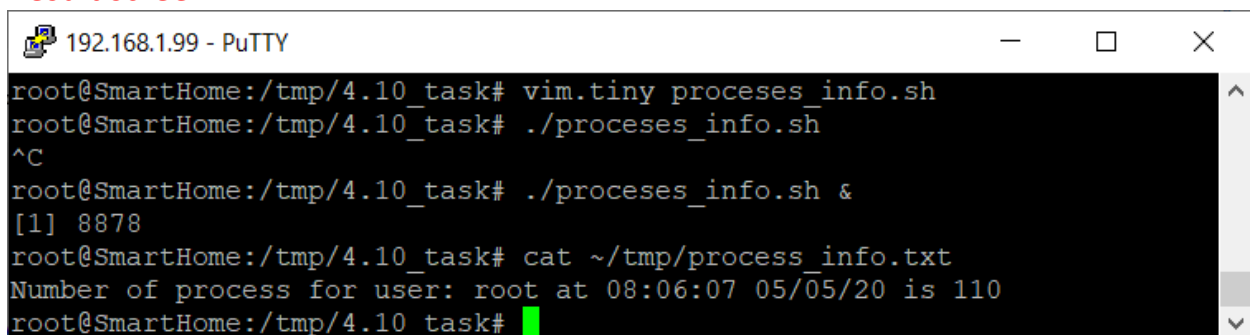
```
192.168.1.99 - PuTTY
root@SmartHome:/tmp/4.10_task# ./wait_for_quit.sh
Input something ("quit" for exit):
2
Input something ("quit" for exit):
3
Input something ("quit" for exit):
quit
root@SmartHome:/tmp/4.10_task#
```

4.10.2 Написать скрипт, который каждую минуту записывает в файл текущее время и дату и количество процессов. При этом файл должен создаваться в директории /home/user/tmp независимо от пользователя и системы. Запустить его в фоновом режиме.

`processes_info.sh`

`# ./processes_info.sh &`

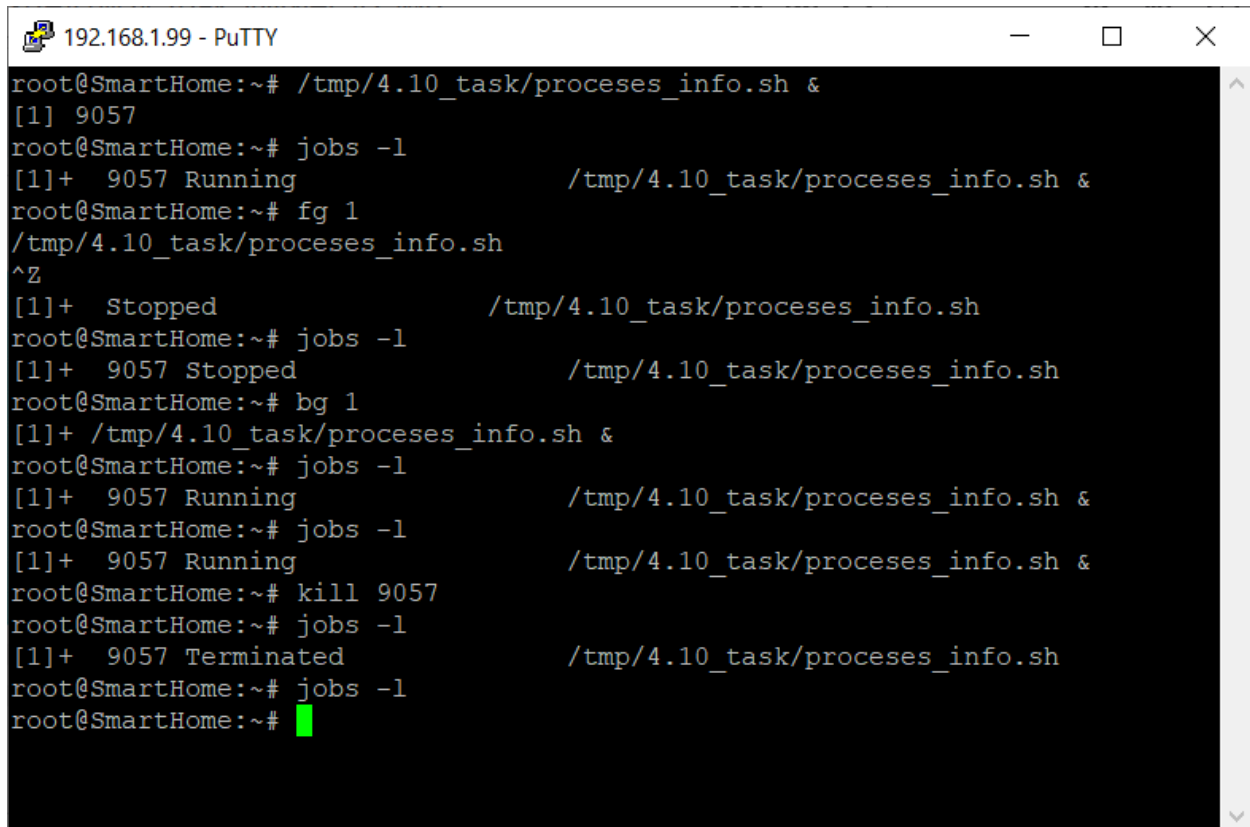
Result screen:



```
192.168.1.99 - PuTTY
root@SmartHome:/tmp/4.10_task# vim.tiny processes_info.sh
root@SmartHome:/tmp/4.10_task# ./processes_info.sh
^C
root@SmartHome:/tmp/4.10_task# ./processes_info.sh &
[1] 8878
root@SmartHome:/tmp/4.10_task# cat ~/tmp/process_info.txt
Number of process for user: root at 08:06:07 05/05/20 is 110
root@SmartHome:/tmp/4.10_task#
```

4.10.3 Перевести скрипт из п.2 из фонового режима в приоритетный, потом в фоновый с приостановкой, возобновить его работу в фоновом режиме получить сведения о процессе и завершить работу скрипта передачей соответствующего сигнала.

Screenshot of actions:



```
192.168.1.99 - PuTTY
root@SmartHome:~# /tmp/4.10_task/proceses_info.sh &
[1] 9057
root@SmartHome:~# jobs -l
[1]+  9057 Running                  /tmp/4.10_task/proceses_info.sh &
root@SmartHome:~# fg 1
/tmp/4.10_task/proceses_info.sh
^Z
[1]+  Stopped                      /tmp/4.10_task/proceses_info.sh
root@SmartHome:~# jobs -l
[1]+  9057 Stopped                  /tmp/4.10_task/proceses_info.sh
root@SmartHome:~# bg 1
[1]+  /tmp/4.10_task/proceses_info.sh &
root@SmartHome:~# jobs -l
[1]+  9057 Running                  /tmp/4.10_task/proceses_info.sh &
root@SmartHome:~# jobs -l
[1]+  9057 Running                  /tmp/4.10_task/proceses_info.sh &
root@SmartHome:~# kill 9057
root@SmartHome:~# jobs -l
[1]+  9057 Terminated             /tmp/4.10_task/proceses_info.sh
root@SmartHome:~# jobs -l
root@SmartHome:~#
```

4.10.4 Просмотреть процессы в реальном режиме времени и вывести те, что используют больше всего памяти. Понизить приоритет самого ресурсоемкого процесса на 2.

Because of “real time” I used “top” and <Shift>+<M> for sort by mem usage:

```
192.168.1.99 - PuTTY
top - 08:28:24 up 3 days, 19:20, 3 users, load average: 0.30, 0.29, 0.3
Tasks: 115 total, 1 running, 114 sleeping, 0 stopped, 0 zombie
%Cpu(s): 4.7 us, 24.1 sy, 0.0 ni, 71.2 id, 0.0 wa, 0.0 hi, 0.0 si,
MiB Mem : 480.0 total, 29.9 free, 177.6 used, 272.5 buff/cac
MiB Swap: 100.0 total, 31.3 free, 68.7 used. 226.2 avail Me

  PID USER      PR  NI  VIRT  RES  SHR S %CPU  %MEM    TIME+
3310 root        20   0 148672 53336 5112 S   1.6   10.9 215:43.17
5326 root        20   0  88164 30592 6048 S   0.0    6.2 74:50.22
 460 root        20   0 993980 25192 6776 S   0.3    5.1 44:20.27
6326 root        20   0 829392 16764 8308 S   0.3    3.4 18:35.65
 407 root        20   0 954220 11696 3584 S   0.0    2.4 14:05.21
4956 root        20   0 897920 10016 2200 S   0.0    2.0 3:20.60
 902 root        20   0 812428  8508 4380 S   0.0    1.7 7:47.05
 252 root        20   0  64156  7236 5976 S   0.0    1.5 9:04.64
7990 root        20   0  14704  7064 6084 S   0.0    1.4 0:00.51
  73 root        20   0  35692  6672 6212 S   0.0    1.4 4:53.96
8247 root        20   0  12220  6152 5360 S   0.0    1.3 0:03.40
8999 root        20   0  12220  6112 5328 S   0.0    1.2 0:00.79
7983 root        20   0  12220  6104 5320 S   0.0    1.2 0:02.81
   1 root        20   0  33812  5732 4444 S   0.0    1.2 2:24.98
 253 root        20   0  13148  4400 4140 S   0.0    0.9 0:04.18
 403 root        20   0  38704  4228 2980 S   0.0    0.9 0:01.35
8257 root        20   0   8464  3972 3004 S   0.0    0.8 0:01.20
 246 root        20   0  52592  3884 3412 S   0.0    0.8 0:01.43
```

After that, sort by CPU <Shift>+<P> and renice (pressing r) Process with id 2944 from 20 to 18.

```
192.168.1.99 - PuTTY
top - 08:32:57 up 3 days, 19:24, 3 users, load average: 0.21, 0.35, 0.3
Tasks: 115 total, 1 running, 114 sleeping, 0 stopped, 0 zombie
%Cpu(s): 3.4 us, 1.1 sy, 0.0 ni, 95.4 id, 0.0 wa, 0.0 hi, 0.0 si,
MiB Mem : 480.0 total, 29.2 free, 178.3 used, 272.6 buff/cac
MiB Swap: 100.0 total, 31.3 free, 68.7 used. 225.5 avail Me
PID to renice [default pid = 2944]

  PID USER      PR  NI  VIRT  RES  SHR S %CPU  %MEM    TIME+
2944 root        38  18 79036  1580 1116 S   2.5    0.3 126:29.48
9219 root        20   0 10292  2920 2396 R   2.2    0.6 0:06.60
3310 root        20   0 148672 53336 5112 S   1.8   10.9 215:52.16
  39 root         1 -19    0    0    0 S   0.7    0.0 48:23.38
  40 root         1 -19    0    0    0 S   0.7    0.0 19:41.60
8247 root        20   0  12220  6152 5360 S   0.7    1.3 0:03.84
 407 root        20   0 954220 11696 3584 S   0.4    2.4 14:05.86
10630 root        20   0    0    0    0 I   0.4    0.0 0:08.87
   1 root        20   0  33812  5732 4444 S   0.0    1.2 2:25.09
   2 root        20   0    0    0    0 S   0.0    0.0 0:00.31
   6 root         0 -20    0    0    0 I   0.0    0.0 0:00.00
   7 root        20   0    0    0    0 S   0.0    0.0 1:55.53
   8 root        20   0    0    0    0 S   0.0    0.0 0:00.01
   9 root         0 -20    0    0    0 I   0.0    0.0 0:00.00
  11 root        20   0    0    0    0 S   0.0    0.0 0:00.52
  12 root        20   0    0    0    0 S   0.0    0.0 0:00.00
  13 root         0 -20    0    0    0 I   0.0    0.0 0:00.00
  14 root        20   0    0    0    0 S   0.0    0.0 0:00.00
```

```
192.168.1.99 - PuTTY
top - 08:30:31 up 3 days, 19:22, 3 users, load average: 0.46, 0.40, 0.3
Tasks: 115 total, 1 running, 114 sleeping, 0 stopped, 0 zombie
%Cpu(s): 5.1 us, 2.4 sy, 0.0 ni, 92.5 id, 0.0 wa, 0.0 hi, 0.0 si,
MiB Mem : 480.0 total, 29.9 free, 177.6 used, 272.5 buff/cac
MiB Swap: 100.0 total, 31.3 free, 68.7 used. 226.2 avail Me

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM    TIME+
2944 root        38   18   79036   1580   1116 S   2.3   0.3 126:26.19
5326 root        20    0   88164  30592   6048 S   2.3   6.2  74:52.11
3310 root        20    0 148672  53336   5112 S   1.3  10.9 215:47.00
9219 root        20    0   10292   2920   2396 R   1.3   0.6   0:04.45
  39 root         1  -19      0      0      0 S   0.7   0.0  48:22.12
 460 root        20    0 993980  25192   6776 S   0.7   5.1  44:21.36
  40 root         1  -19      0      0      0 S   0.3   0.0  19:41.07
5757 root        20    0 799168   1740    764 S   0.3   0.4   1:42.66
6326 root        20    0 829392  16764   8308 S   0.3   3.4  18:36.08
   1 root        20    0 338112   5732   4444 S   0.0   1.2   2:25.04
   2 root        20    0      0      0      0 S   0.0   0.0   0:00.31
   6 root         0  -20      0      0      0 I   0.0   0.0   0:00.00
   7 root        20    0      0      0      0 S   0.0   0.0   1:55.47
   8 root        20    0      0      0      0 S   0.0   0.0   0:00.01
   9 root         0  -20      0      0      0 I   0.0   0.0   0:00.00
  11 root        20    0      0      0      0 S   0.0   0.0   0:00.52
  12 root        20    0      0      0      0 S   0.0   0.0   0:00.00
  13 root         0  -20      0      0      0 I   0.0   0.0   0:00.00
```

4.10.5 Создать скрипт, который выведет квадрат чисел, введенных в качестве аргументов (позиционные параметры), независимо от их количества.

`sum_of_square.sh`

4.10.6 Создать скрипт для решения линейного уравнения с помощью функции.

`linear_equation.sh`

4.10.7 Создать скрипт, который регулярно мониторит появление новых пользователей в /etc/passwd и записывает их логины и UID в файл.

`passwd_change_monitoring.sh`

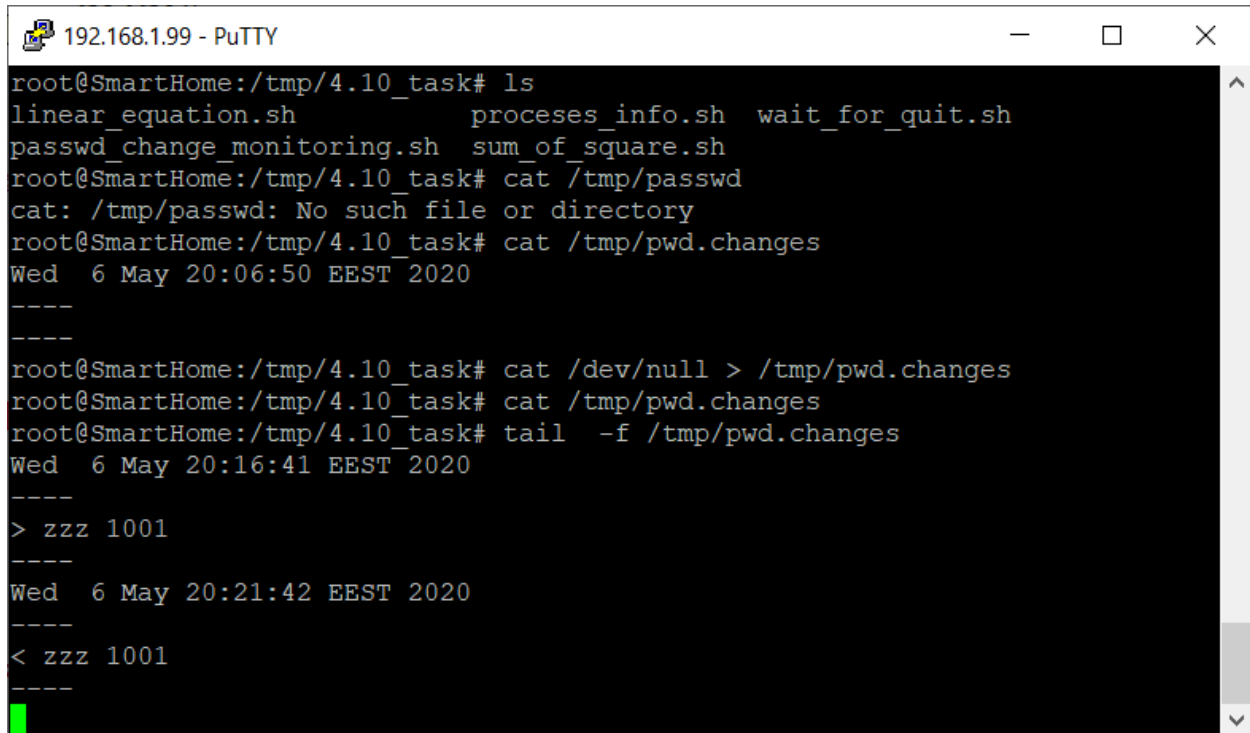
added user zzz:

```
192.168.1.99 - PuTTY
root@SmartHome:~# add
add-apt-repository  addpart          adduser
addnupghome         addr2line
addgroup            add-shell
root@SmartHome:~# adduser zzz
Adding user `zzz' ...
Adding new group `zzz' (1001) ...
^Cadduser: `/usr/sbin/groupadd -g 1001 zzz' exited from signal 2. Exiting.
root@SmartHome:~# adduser zzz
Adding user `zzz' ...
Adding new group `zzz' (1001) ...
Adding new user `zzz' (1001) with group `zzz' ...
Creating home directory `/home/zzz' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for zzz
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
```

Result in the log /tmp/pwd.changes:

```
192.168.1.99 - PuTTY
echo "Number of process for user: $USER at "`date +%T %D`" "is" $prn >>
~/tmp/process_info.txt
sleep 60
done
root@SmartHome:/tmp/4.10_task# ls
linear_equation.sh      proceses_info.sh  wait_for_quit.sh
passwd_change_monitoring.sh  sum_of_square.sh
root@SmartHome:/tmp/4.10_task# cat /tmp/passwd
cat: /tmp/passwd: No such file or directory
root@SmartHome:/tmp/4.10_task# cat /tmp/pwd.changes
Wed  6 May 20:06:50 EEST 2020
----
----
root@SmartHome:/tmp/4.10_task# cat /dev/null > /tmp/pwd.changes
root@SmartHome:/tmp/4.10_task# cat /tmp/pwd.changes
root@SmartHome:/tmp/4.10_task# tail  -f /tmp/pwd.changes
Wed  6 May 20:16:41 EEST 2020
----
> zzz 1001
----
```

Also rm user result:



```
192.168.1.99 - PuTTY
root@SmartHome:/tmp/4.10_task# ls
linear_equation.sh      proceses_info.sh  wait_for_quit.sh
passwd_change_monitoring.sh  sum_of_square.sh
root@SmartHome:/tmp/4.10_task# cat /tmp/passwd
cat: /tmp/passwd: No such file or directory
root@SmartHome:/tmp/4.10_task# cat /tmp/pwd.changes
Wed  6 May 20:06:50 EEST 2020
----
----
root@SmartHome:/tmp/4.10_task# cat /dev/null > /tmp/pwd.changes
root@SmartHome:/tmp/4.10_task# cat /tmp/pwd.changes
root@SmartHome:/tmp/4.10_task# tail  -f /tmp/pwd.changes
Wed  6 May 20:16:41 EEST 2020
----
> zzz 1001
----
Wed  6 May 20:21:42 EEST 2020
----
< zzz 1001
----
```