Operating Systems

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Grade	**12.77** out of 15.00 (**85.11**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Flag question

Označi vse, kar označuje podana crontab vrstica?
What does the given crontab line indicate?

```
1-6 * 1-5 * 1-5 echo "Zdaj" > cas.txt
```

Možnih je več odgovorov. There are several possible answers.

- a. Ukaz se bo izvedel 1., 2., 3., 4., 5. in 6. dan v mesecu.
  The command will be executed on the 1st, 2nd, 3rd, 4th, 5th and 6th of the month.
- b. Ukaz se bo izvedel 1., 2., 3., 4. in 5. dan v mesecu. ✔
  The command will be executed on the 1st, 2nd, 3rd, 4th and 5th of the month.
- c. Ukaz se bo izvedel vsako minuto prvih 6 minut v uri. ✔
  The command will be executed every minute for the first 6 minutes of the hour.
- d. Ukaz se bo izvedel v dnevih od ponedeljka do petka. ✔
  The order will be executed on the days Monday to Friday.
- e. Ukaz se bo izvedel vsako minuto prvih 5 minut v uri.
  The command will be executed every minute for the first 5 minutes of the hour.
- f. Ukaz se bo izvedel v dnevih od ponedeljka do sobote.
  The order will be executed on the days Monday to Saturday.

Vaš odgovor je pravilen.

The correct answers are:
Ukaz se bo izvedel vsako minuto prvih 6 minut v uri.

The command will be executed every minute for the first 6 minutes of the hour.,
Ukaz se bo izvedel 1., 2., 3., 4. in 5. dan v mesecu.

The command will be executed on the 1st, 2nd, 3rd, 4th and 5th of the month.,
Ukaz se bo izvedel v dnevih od ponedeljka do petka.

The order will be executed on the days Monday to Friday.

Question **2**

Partially correct

Mark 0.80 out of 1.00

Flag question

Vsak proces ustvari imenik s svojim PID v /proc/. Povežite imena datotek in podimenikov znotraj imenika vsakega procesa s pravilnimi opisi teh datotek in podimenikov.
Each process creates a directory with its PID in /proc/. Associate the names of the files and subdirectories within each process directory with the correct descriptions of those files and subdirectories.

fd	datotečni deskriptorji / file descriptors ✔
environ	okoljske spremenljivke / environmental variables ✔
cmdline	argumenti, ki so bili podani ob zagonu programa / the arguments when the programme was started ✔
task	nadzorni blok procesa / Process control block (PCB) ✘
exe	povezava na lokacijo pognanega programa / link to the location of the running application ✔

Vaš odgovor je delno pravilen.

You have correctly selected 4.
The correct answer is:
fd → datotečni deskriptorji / file descriptors,
environ → okoljske spremenljivke / environmental variables,
cmdline → argumenti, ki so bili podani ob zagonu programa / the arguments when the programme was started,
task → informacije o vsaki niti tega procesa / information on each thread of the process,
exe → povezava na lokacijo pognanega programa / link to the location of the running application

Question **3**

Partially correct

Mark 0.50 out of 1.00

Flag question

Povežite sed ukaze z opisom, kaj naredijo!
Link the sed commands to a description of what they do!

`s/[a$]/b/g`	Zamenja vse znake a in $ s črko b / Replaces all characters a and $ with b ✔
`/^student/ d`	Ne naredi nič / Do nothing ✘
`/5/ a\Nova vrstica`	Ne naredi nič / Do nothing ✘
`s/\([^:]*\):/(\1):/g`	Vse nize, ki so zaključeni z znakom dvopičje, da v oklepaje / All strings terminating in a colon puts in brackets ✔

Vaš odgovor je delno pravilen.

You have correctly selected 2.
The correct answer is:
`s/[a$]/b/g`

→ Zamenja vse znake a in $ s črko b / Replaces all characters a and $ with b,
`/^student/ d`

→ Zbriše vse vrstice, ki se začnejo z besedo student / Delete all lines starting with the word student,
`/5/ a\Nova vrstica`

→ Za vsako vrstico, ki vsebuje številko 5, vstavi novo vrstico s tekstom Nova vrstica / After each line containing the number 5, insert a new line with the text Nova vrstica,

`s/\([^:]*\):/(\1):/g`

→ Vse nize, ki so zaključeni z znakom dvopičje, da v oklepaje / All strings terminating in a colon puts in brackets

Question **4**

Incorrect

Mark -0.33 out of 1.00

Flag question

Kolikokrat se pojavi beseda "the" v pomoči ukaza man?
How many times does the word "the" appear in the help of the man command?

- a. 236
- b. 229
- c. 192
- d. 295 ✘

Vaš odgovor je nepravilen.

The correct answer is:
236

Mark 1.00 out of 1.00

Flag question

Povežite pojme na levi strani s pravilno razlago na desni strani:

Connect the concepts on the left with the correct interpretation on the right:

pkill	pošiljanje signala procesom. / sending a signal to processes.
nice	nastavitev prioritete ob zagonu ukaza / setting the priority when starting a command
ps	informacije o procesih (ne le o identifikacijskih številkah) / information on processes (not just ID numbers)
kill	pošiljanje signala procesom. / sending a signal to processes.

Vaš odgovor je pravilen.

The correct answer is:

pkill → pošiljanje signala procesom. / sending a signal to processes.,

nice → nastavitev prioritete ob zagonu ukaza / setting the priority when starting a command,

ps → informacije o procesih (ne le o identifikacijskih številkah) / information on processes (not just ID numbers),

kill → pošiljanje signala procesom. / sending a signal to processes.

Question **6**

Correct

Mark 1.00 out of 1.00

Flag question

Zapišite ukaz, s katerim bi signal za brezpogojno ukinitev (oz. ubijanje) poslali procesu, katerega PID je shranjen v spremenljivki `last_pid`.

Write the command that will send the kill signal to a process whose PID is stored in variable `last_pid`.

Answer: kill -9 $last_pid

The correct answer is: kill -9 $last_pid

Question **7**

Correct

Mark 1.00 out of 1.00

Flag question

Kako bi v skripti uporabili ukaz `trap`, da bi ob prejetju signala 12 izpisali ime trenutnega uporabnika v terminalu.

Rešitev naj deluje brez definicije dodatnih funkcij. Rešitev naj ne vsebuje števila 12.

Držite se oblike:

```
trap ukaz signal
```

We want our script to intercept signal 12 and write out the current user in the terminal, when it receives the signal. How can we accomplish this with the `trap` command?

The solution should work without definining a new function and should not contain the number 12.

Stick to the form:

```
trap command signal
```

Answer: trap "whoami" USR2

The correct answer is: trap whoami SIGUSR2

Comment:

Question **8**

Correct

Mark 1.00 out of 1.00

Flag question

Pomemben ukaz smo zapisali v datoteko `ukaz.txt`, ki se nahaja v domačem imeniku uporabnika `student`.

Ta ukaz (zapisan v datoteki) želimo pognati čez 7 ur.

Zapišite ukaz s katerim bi to dosegli. V rešitvi uporabite absolutno pot.

An important command is written in the file `ukaz.txt`, which is located in the home directory of the user `student`.

We want to execute this command in 7 hours.

Write the command that will achieve this. Your solution should use the absolute path.

Answer: at -f /home/student/ukaz.txt now + 7 hours

The correct answer is: at now + 7 hours -f /home/student/ukaz.txt

Comment:

Question **9**

Correct

Mark 1.00 out of 1.00

Flag question

Pognali smo ukaz `df -h` in prejeli izpis:

```
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           146M  1,2M  145M   1% /run
/dev/sda2        39G   12G   26G  32% /
tmpfs           730M     0  730M   0% /dev/shm
tmpfs           5,0M  4,0K  5,0M   1% /run/lock
/dev/sda1       511M  6,1M  505M   2% /boot/efi
tmpfs           146M  128K  146M   1% /run/user/1000
/dev/sdb1        15G    2G   13G  14% /home/administrator/data
```

Trenutno se nahajamo v imeniku `/home/administrator/data/vaje_11`.

Na kateri napravi se bo ustvarila datoteka `primer.txt` če poženemo ukaz `touch primer.txt`.

Given is the output of the `df -h` command:

```
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           146M  1,2M  145M   1% /run
/dev/sda2        39G   12G   26G  32% /
tmpfs           730M     0  730M   0% /dev/shm
tmpfs           5,0M  4,0K  5,0M   1% /run/lock
/dev/sda1       511M  6,1M  505M   2% /boot/efi
tmpfs           146M  128K  146M   1% /run/user/1000
/dev/sdb1        15G    2G   13G  14% /home/administrator/data
```

We are currently located in the `/home/administrator/data/vaje_11` directory.

On which device will the file `primer.txt` be created if we execute the command `touch primer.txt`.

Answer: /dev/sdb1

The correct answer is: /dev/sdb1

Question **10**

Partially correct

Mark 0.80 out of 1.00

Flag question

Napravo `/dev/sdb1` želimo priklopiti na imenik `/home/student/nova_naprava`.

Podajte ukaz, ki bo izvedel to operacijo. Predpostavite, da željeni imenik obstaja.

We want to connect the device `/dev/sdb1` to the directory `/home/student/nova_naprava`.

Write the command that will achieve this. Assume that the directory already exists.

Answer: mount /dev/sdb1 /home/student/nova_naprava

The correct answer is: sudo mount /dev/sdb1 /home/student/nova_naprava

Question **11**

Complete

Mark 5.00 out of 5.00

Flag question

Napiši bash skripto, ki:

1. V ozadju požene ukaz xeyes.
2. V konzolo izpiše število odprtih datotečnih deskriptorjev procesa, v katerem se skripta izvaja.
3. V konzolo izpiše število vseh pojavitev datumov v ISO formatu (YYYY-MM-DD) v navodilih (pomoči) nevgrajenega ukaza, ki ga prejme kot prvi argument. Če argument ni podan, naj pojavitve išče v navodilih ukaza "date". Kot primer: zapis "2004-02-14" ustreza ISO formatu, prav tako tudi "0904-03-07", sledeči zapisi pa ne: "2004/02/14", "14-02-2004", "2004-2-14", "904-3-7", "04-02-14", "22004-02-14", "2004-02-142". Da bo naloga lepše rešljiva, lahko kot veljavne dneve in mesece upoštevaš 00-99, kot veljavna leta pa 0000-9999. Pozoren bodi na to, da je lahko v posamezni vrstici več datumov - v tem primeru šteješ vsakega posebej.
4. V neskončni zanki spi po 1 sekundo naenkrat.
5. V primeru, da skripta kadarkoli med izvajanjem prejme signal SIGUSR1 ali SIGUSR2, naj v konzolo izpiše "Ubil si me", pošlje procesu xeyes, ki ga je skripta pognala, signal SIGKILL in se zaključi z izhodnim statusom 0. Pri tem upoštevaj, da na sistemu lahko tečejo še kakšni drugi procesi xeyes (katerim signala SIGKILL ne pošiljaj).

Pri tem bodi pozoren na sledeče:

- skripta naj bo napisana v taki obliki, da jo je možno pognati (torej naj ne vsebuje sintaktičnih nepravilnosti ali ukazov namenjenih izvajanju izven skripte);
- rešitve posameznih podnalog so lahko sestavljene iz več ukazov, ne nujno le enega;
- vrstni red izpisov in izvajanja rešitev posameznih podnalog naj sledi vrstnemu redu navodil, razen kjer je potrebno vrstni red zamenjati za pravilno delovanje;
- skripta naj nima stranskih učinkov: to pomeni, naj skripta (razen, kjer je to potrebno za rešitev naloge) ne spreminja pravic, ne piše in briše po disku, ne izpisuje stvari v konzolo, ne izvaja ukazov kot superuporabnik (angl. superuser, root), ipd.;
- če skripta uporablja ukaze, ki jih na vajah nismo uporabljali (npr. awk), se pričakuje, da boste njihovo uporabo znali po potrebi razložiti in prirediti novim primerom uporabe;
- če skripto kopiraš iz virtualke, jo skopiraj pravi čas (ne zadnjih 15 sekund kviza) in pazi, da res skopiraš celotno zadevo (predvsem pazi, da se predolge vrstice ne porežejo).

Write a bash script that:

1. Runs xeyes in the background.
2. Prints the number of file descriptors opened in the process, in which the script is running.
3. Prints the number of all ISO-format-compliant (YYYY-MM-DD) dates in the help/manual of the external (i.e. not built-in) command passed as the first argument. If the argument is not passed, it should search in the instructions of the "date" command. E.g.: "2004-02-14" is ISO-compliant, as is "0904-03-07", while the following are not: "2004/02/14", "14-02-2004", "2004-2-14", "904-3-7", "04-02-14", "22004-02-14", "2004-02-142". For the sake of simplicity, you can treat 00-99 as valid days and months, and 0000-9999 as valid years. Keep in mind that there can be multiple dates in a single line, in which case you should count each of them separately.
4. Sleeps in 1-second intervals in an infinite loop.
5. If the script receives the SIGUSR1 or SIGUSR2 signal at any point during execution, it should print "Ubil si me", send the signal SIGKILL to the xeyes process started by this script, and terminate with the exit status 0. Note that there may be other xeyes processes present on the system (which shouldn't be sent the SIGKILL signal).

Keep in mind the following:

- the script should be written in a way that it can be executed as such (i.e. it should be syntactically correct and should not contain commands to be executed outside the script);
- the solutions of each subproblem can be comprised of several commands, not necessarily just one;
- the order of the printouts and execution of the subproblem solutions should be the same as the order in the instructions, except where the order needs to be changed for the solutions to work correctly;
- the script should not have side-effects, in particular this means that, unless necessary, the script should not: change file permissions, write to disk or delete files, print to console, execute commands as superuser (root user), etc.;
- if the script uses commands we didn't mention in our lab sessions (such as awk), you will be expected to be able to explain their use, and adapt them to new use cases;
- if you're copying the script from the virtual machine, make sure to copy it on time (not with 15 seconds of quiz time remaining) and make sure you copy the entire script (take special care that lines that are too long don't get cut off).

```
#!/bin/bash
xeyes&
peyes=$!
echo -n "Število odprtih datotečnih deskriptorjev: "
ls -l /proc/$$/fd | wc -l

if [ -z $1 ]; then
    echo "ni bil podan, uporabi date"
    vb=date
else
    echo "$1 je bil podan"
    vb=$1
fi
echo -n "Število datumov v man $vb: "
man $vb | grep -Eo "[0-9]{4}-[0-9]{2}-[0-9]{2}" | wc -l
prever(){
    echo "ubil si me"
    kill -9 $peyes
    exit 0
}

trap prever USR1 USR2
while true; do
    sleep 1
done
```


Odgovor oddan.

Comment:

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