

STUDENT

S-0006-JXL

TENTAMEN

240827 DT149G T101 Sundsvall

Kurskod	--
Bedömningsform	--
Starttid	27.08.2024 08:00
Sluttid	27.08.2024 13:00
Bedömningsfrist	--
PDF skapad	28.11.2024 10:46
Skapad av	Liselott Engelbrekts

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Instructions

Carefully read the questions before you start answering them. Note the time limit of the exam and plan your answers accordingly. Only answer the question. The questions are not sorted by difficulty. Clearly show which answer you are giving your solution to. Always motivate your answers and show your calculations.

If you want to attach something handwritten as a supplement to your answers, it is possible to write it on a special scanning paper. There is a unique seven-digit code under each question, it should be noted in the upper left corner of the pass-scan paper. Each number must also fill in the corresponding circle below the code. Use blue, black ink pen or pencil. There is scratch paper in the hall if needed.

- **Time** 5 hours.
- **Exam Aids** Dictionary, Pen and Paper
- **Maximum points** 30
- **Questions** 10

Preliminary grades

The following grading criteria applies:

$E \geq 30\%$, $D \geq 45\%$, $C \geq 60\%$, $B \geq 75\%$, $A \geq 90\%$.

Scoring will be based on level of depth shown in your answer. **To pass this exam you must have shown proficient knowledge in all the intended learning outcomes (ILO) covered in this exam.**

Each questions ILO affiliation is shown as (ILO: #). The grade limit given is preliminary per ILO. Final grade is set based on your performance on each individual ILO.

Covered ILO

This exam covers the following Intended Learning Outcomes (ILO)

- ILO: 1 – Administer and modify a UNIX-like system and its services
- ILO: 2 – Identify, implement and motivate choice of services
- ILO: 3 – Describe how the upstart process works in a UNIX-like system

Contact Information

For questions regarding the exam

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- 1 (ILO: 1) Your new server is up and running in production. You realized though that you forgot to add a vital security patch to the kernel. However you do not want to restart your server right now, since the company's web site is highly visited at the moment. You do know that at 01:00 in the night no one visits your site.

How can you make sure that the server will restart this time tonight without having to work late.

Skriv in ditt svar här

I could perhaps write a script named updatetoneight.sh to restart the server. Then put the script as a crontab job to run it at night. I would then add a line into the crontab file with the command crontab -e. The line would be on the form 0 1 27 8 * /updatetoneight.sh. Where 0 is the minute, 1 is the hour, 27 is the day in the month, 8 is the month, the star is the day in the week. However this would not be ideal since I would have to remove the line later so it wouldn't run again next year.

Ord: 103

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

9 1 9 3 1 8 7

- 2** (ILO: 1) Permissions are a very intricate part of file access in UNIX-like systems. To change the permissions on a file, you commonly use the command *chmod* followed by the desired permission.

You can set the permission using both numerals or letters. Explain how they correlate to each other.

Skriv in ditt svar här

There are three different permissions that can be given, read, write and execute. There are also three different "users" that can each get a permission level, the owner of the file, group and lastly other users.

When using the letter version the permissions are written in a set of 3 letters for the owner, 3 letters for the group and 3 letters for the other users. For example the permissions *rwxrw-r--* means that the owner has read, write and execute permissions. The group can read and write. Other users can only write.

When using the numeral version there are only 3 numbers in total, the first one representing the permissions for the owner, the second number for the group and the third number for any other user.

4 = read permission

2 = write permission

1 = execute permission

The number is created by adding together the numbers, so for example $4+2 = 6$. 6 would then mean read and write permission.

And for the whole numeral version of the permission 734 would mean that the owner has read, write and execute permission. The group has write and execute permission. Other users have read permission.

Ord: 195

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

7 7 1 7 0 7 9

- 3 (ILO: 1) Name at least six usable terminal commands. Give usage examples.

Skriv in ditt svar här

cd .. jump one step backwards in the directory structure
ls lists the files in the current directory
mkdir testdirectory creates a directory named test directory
./script.sh runs a script named script.sh in the current directory
cat file.txt prints out the content of the file file.txt on the terminal
chmod g +r /script.sh gives the group read permission to the file script.sh
chmod g -w /script.sh removes the groups write permission in the file script.sh
docker start dockername starts a docker container with the name dockername

Ord: 86

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

3 1 6 4 5 1 1

- 4 (ILO: 2) In this course, you worked with various FTP-servers, NFS and SAMBA/CIFS. Compare the three different types of file sharing services. Your explanation should also include recommended usage examples.

Skriv in ditt svar här

FTP (file transport protocol) is a protocol for sending files over a network. In its basic form the files are sent in plain text. It's useful for sending large files, and since it's been around for a long time it's compatible over different operative systems.

With NFS (network file system) the files can be accessed the same way as if they were on the computers file system. This can be useful when working on different computers or in a group and wanting to access the same files.

SAMBA allows file transfer between a Unix/Linux OS and windows. This is very useful when using both operative systems in a project.

Ord: 109

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

3 8 1 2 9 4 5

- 5 (ILO: 2) Reason about syslog. How does it work, what are some good qualities with this style of log managing, and what problems can it lead to?

Skriv in ditt svar här

Syslog is a centralized log system that receives, stores and handles logs from network devices. The logs can be sent from for example servers, routers etc. The files are normally stored in /var/logs. Some good qualities with syslog is that all logs are gathered in one place, making it possible to access them in the same way. It's also possible to get additional software that can help with monitoring the logs. A potential problem with syslog is that the logs are sent by UDP, so there is a chance that they might get lost during transfer.

Ord: 96

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

7 4 8 8 7 2 4

- 6 (ILO: 2) Give detailed explanations how SPF and DKIM works, and what their purpose are.

Skriv in ditt svar här

Both SPF and DKIM are protocols used in order to set up a mail system.

SPF lists the mail servers that are allowed to send email from a specific domain. This makes sure that only approved mail servers can claim to send email from that email.

DKIM creates encrypted headers to the email. This is used to confirm that no changes have been made to the email during transport, and verifies that it's the correct sender. Uses public key system.

Ord: 80

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

6 4 9 5 3 4 1

- 7 (ILO: 2) What is the purpose of having a stateful inspection enabled in the firewall? What are some downsides to it?

Skriv in ditt svar här

A stateful inspection continuously monitors the communication over the firewall. It can check that any incoming messages are part of a known communication or expected. This adds security to the system. However it's possible that it can make mistakes and fail to let things through that should have been.

Ord: 49

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

1 4 6 1 0 0 1

- 8 (ILO: 3) What is the purpose of the ramdisk in the boot process?

Skriv in ditt svar här

A ramdisk acts as a temporary memory storage during the boot process until the actual hard drive is up and running.

Ord: 21

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

4 6 7 6 3 8 5

- 9 (ILO: 3) What is the purpose of the commands nice and renice? Explain the difference, For each of the commands, give a scenario when using these are necessary. What limitations do these commands have?

Skriv in ditt svar här

The purpose of nice and renice is to give priority to a process, it basically establishes how "nice" a program should be in letting other programs go ahead of it. Nice is used the first time the priority is set, while renice can be used if the nice level should be changed later on. The commands might be usefull for example to let important jobs get priority over some update or other task that's not very important to complete right away.

Ord: 81

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

9 9 1 5 1 5 7

- 10** (ILO: 3) How would you go about to identify a process that is taking up too much resources, and instead of killing it, suspend it. If you later would like to start it up again, how will you achieve this?

Skriv in ditt svar här

The first step would be to identify the process id (pid) of the process that's taking up too much memory. This could be done in `top` or `htop`, which for example lists how much CPU and memory a process takes up, as well as its pid.

In order to suspend the process the command `kill -STOP <pid>` could be used.
And then `kill -CONT <pid>` to resume the process.

Ord: 69

Besvarad.

Bifoga ritning till ditt svar?

Använd följande kod:

5955802