

DT149G Administration of UNIX-like systems

Study guide:
The complete study guide for the course
Administration of UNIX-like systems

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Contents

1	Introduction	1
2	Aim of the course	2
3	Reading assignments	2
4	Examination	3
4.1	Three-week rule	5
4.2	Assignments and Labs	5
5	”What if I’m not done in time?”	5
6	Reprimands	6
7	Timetable	7

1 Introduction

This guide contain the aim of this course together with a timetable and a complete list of the reading instructions.

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2 Aim of the course

After completing this course you will have:

- A working installation of a Linux-based system.
- Knowledge of the fundamental commands used to navigate and work with the system.
- Knowledge on how to customize the kernel of your system.
- Become familiar with upstart, init and boot scripts.
- Know how to administrate user accounts.
- Knowledge how to partition and format new harddrives for your system.
- Be able to set up storage backup on your system.
- Become familiar with process handling, priorities and scheduling.
- Knowledge how logging works in a UNIX-like system.
- Know how to set up and administrate different file-sharing network services.
- Be able to correctly set up and administrate your own domain using BIND.
- Have the knowledge to set up an SMTP server process.
- Be able to set up the necessary security measures so that an email sent from your SMTP server will not be regarded as spam and cannot easily be used by spammers.
- Know how to correctly set up your DNS to handle email and related mechanisms.
- Be able to install and configure software for delivering emails using either POP3 or IMAP.
- Have the knowledge of setting up an IPTables firewall.
- Have basic understanding of DNSSEC.

3 Reading assignments

This course use Nemeth et al. [19] as its primary course literature.

Laboratory assignment 0

Before starting this assignment you should have read chapters 1, 12.1, 12.5-12.7 12.10 in Nemeth et al. [19]

Laboratory assignment 1

Before starting this assignment you should have read chapters 13.1-13.3, 13.7-13.9 in Nemeth et al. [19]

Laboratory assignment 2

Before starting this assignment you should have read chapters 3.1-3.5, 3.7, 4, 6, 7 and 10 in Nemeth et al. [19] after which you should read [1], [4], [2], [5], you can also use [3] as a reference material

Laboratory assignment 3

Before starting this assignment you should have read chapters 5, 9, 11 and 29 in Nemeth et al. [19]

Laboratory assignment 4

Before starting this assignment you should have read chapters 18, 19, 30.6, 17.1-17.10 in Nemeth et al. [19] During the lab you will also need to consult the following documents [16], [20], [9], [17], [15]

Laboratory assignment 5

Before starting this assignment you should have read chapter 20 and chapter 17 – "SPF records" and "DKIM and ADSP records", respectively, in Nemeth et al. [19]. During this laboratory assignment you should also consult the following sites and documents: [13], [11], [10], [7], [8], [12], [14], [18].

Laboratory assignment 6

Before starting this assignment you should have read chapter 22 and chapter 17.13 in Nemeth et al. [19]. You should also read the Internet System Consortiums document about DNSSEC and BIND [6].

4 Examination

This course consists of a three week rule, six mandatory laboratory assignments and one written exam.

Table 1: Examination in administration of UNIX-like systems

Ladok	Examination	Grade	Credits	Comment
L001	Laboratory exercise 0	Pass or Fail	0.0 hp	See 4.1
	Laboratory exercises and a project	Pass or Fail		
L101	Assignment L1 - Building a custom kernel	Pass or Fail		
	Assignment L2 - System Administration I	Pass or Fail	6.0 hp	Assignments for full course
	Assignment L3 - System Administration II	Pass or Fail		
	Assignment L4 - Sharing is Caring	Pass or Fail		
	Assignment L5 - Email anatomy	Pass or Fail		
	Assignment L6 - Tutis ad absurdum	Pass or Fail		
T101	Exam	A, B, C, D, E, Fx, F	1.5 hp	Written exam.

4.1 Three-week rule

To show that you are actively participating in this course you must within the first three weeks of the course submit the lab report for laboratory assignment 0 - Introduction.

4.2 Assignments and Labs

There will be scheduled tutoring time for each of the assignments given in this course, if you have any problems with an assignment, use this tutoring session to get help from the teachers, otherwise consult your classmates in the discussion forum.

Before handing in an assignment or lab, make sure the following criteria is met.

- The assignment must be submitted in a passable state. A passable state means that:
 - The assignment is complete.
 - All questions are answered and the answer is relevant to the question. An answer that is just a rewrite of the question is not an answer!
 - Proper references are given for all answers.
 - Always show your calculations. item Motivate your answers.
- The assignment must be submitted in time.
- The assignment must be handed in as a PDF document.
- Submissions will be checked against Urkund for plagiarism. See section 6 for information about the consequences of cheating.

Failure to submit an assignment following the above criteria will result in an F. Resubmissions or late submissions will be graded during the next grading period, see section 5 for more information about this.

5 "What if I'm not done in time?"

Written assignments are graded twice during the course; first, at the latest shortly after the deadline of the assignment; second, before the end of the course, or shortly thereafter. After the course you are offered one more attempt within a year. This attempt will occur during the reexam week in April.

In total you have three chances for having your assignments graded over the period of a year. After that you should come back the next time the course is given.

No tutoring is planned after the end of the course, i.e. after the last tutoring session scheduled in the course schedule. If you are not done with your assignments during the course and want to be guaranteed tutoring you have to reregister for the next time the course is given. Reregistration is a lower priority class of applicants for a course, all students applying for the course the first time have higher priority – this includes students in reserve places too.

If you by the end of the course have a majority of the assignments left undone you will have to reregister for the course the next time it is given. Whether you have completed the majority of the assignments or not is up to the teacher to decide. Talk to the teacher to see if you have to reregister or can just hand in the missing assignments.

A final note, if you feel that you will not be done with the course on time, it is better to stop the course at an early stage. If you register a break within three weeks of the course start, you will be in the higher priority class of applicants the next time you apply for the course. You can register such a break yourself in the Student Portal. Please contact the Student Office for further information regarding this early break from the course.

6 Reprimands

Any attempts of cheating during an exam, that is, using unauthorized aids during the exam, will directly be reported to the disciplinary committee where you will risk suspension from your studies for a predetermined time not exceeding 6 months.

If you talk during the exam you will be asked to abort the exam and come back the next time the exam will be given.

By handing in an assignment you ensure that all the answers are written by you only, or if it is group assignment, only are written by you together with your group members. You are also responsible to make sure that there is no plagiarism in that document.

When you make references and citations to other works, correct references must be made, and in the case of citations, the cited text must be clearly marked. If any part of the document is found to be plagiarized you will risk suspension from your studies for a predetermined time, not exceeding 6 months, due to disciplinary offence.

If it is a group assignment, all group members will risk to be held accountable for the disciplinary offence if it is not clearly marked in the

work who is responsible for the plagiarized part.

If the assignment has been done in cooperation without explicit instructions in the assignment that this is allowed, this will be regarded as a disciplinary offence with risk of suspension for a predetermined time, not exceeding 6 months.

7 Timetable

See Table 2 for a complete timetable for the course.

References

- [1] Grub2. URL <https://help.ubuntu.com/community/Grub2/>.
- [2] Ubuntu bootup howto. URL <https://help.ubuntu.com/community/UbuntuBootupHowto>.
- [3] Upstart intro, cookbook and best practises, . URL <http://upstart.ubuntu.com/cookbook/>.
- [4] Ubuntu's upstart event-based init daemon, . URL <http://archive09.linux.com/feature/125977>.
- [5] Upstart howto, . URL <https://help.ubuntu.com/community/UpstartHowto>.
- [6] DNSSEC and BIND, 2010. URL <http://www.isc.org/software/bind/dnssec>.
- [7] Dovecot, 2012. URL <https://help.ubuntu.com/community/Dovecot>.
- [8] Dovecot official documentation, 2012. URL <http://wiki2.dovecot.org/>.
- [9] Multiple ip addresses on one interface, 2012. URL http://wiki.debian.org/NetworkConfiguration#Multiple_IP_addresses_on_One_Interface.
- [10] Postfix, 2012. URL <https://help.ubuntu.com/community/Postfix>.
- [11] Postfix basic setup howto, 2012. URL <https://help.ubuntu.com/community/PostfixBasicSetupHowto>.

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- [17] Peter Koch. Recommendations for dns soa values, 1999. URL <http://www.ripe.net/ripe/docs/ripe-203>.
- [18] A. Melnikov and K. Zeilenga. Simple Authentication and Security Layer (SASL). RFC 4422 (Proposed Standard), June 2006. URL <http://www.ietf.org/rfc/rfc4422.txt>.
- [19] Evi Nemeth, Garth Snyder, Trent R. Hein, and Ben Whaley. *UNIX and Linux system administration handbook*. Prentice Hall, Upper Saddle River, NJ, 4th ed. edition, 2011. ISBN 978-0-13-148005-6 (pbk. : alk. paper).
- [20] J. Postel and J. Reynolds. File Transfer Protocol. RFC 959 (INTERNET STANDARD), October 1985. URL <http://www.ietf.org/rfc/rfc959.txt>. Updated by RFCs 2228, 2640, 2773, 3659, 5797, 7151.

Table 2: Timetable based on course given at 50%.

Week	Chapter
1	Laboratory assignment 0 and 1
2	Laboratory assignment 2
3	Laboratory assignment 3
4	Laboratory assignment 4
5	
6	Laboratory assignment 5
7	
8	Laboratory assignment 6
9	
10	Exam