Project Work

Linux operating system and development environment (DVA239)

The Project Work consists of multiple labs (A, B and C). The grade you receive for this unit of examination (PRO1) depends on the labs you complete (and pass). The table below gives detailed information on what labs you must complete for each grade:

Grade	Requirements
3	Lab A
4	Lab A and Lab B
5	Lab B and Lab C

With each solution, you must record a video where you:

1. Run your script to demonstrate that your solution fully meets the requirements specified in this document. All parts of your script must be shown.
2. In your own words explain the structure of the code (by recording your own voice).

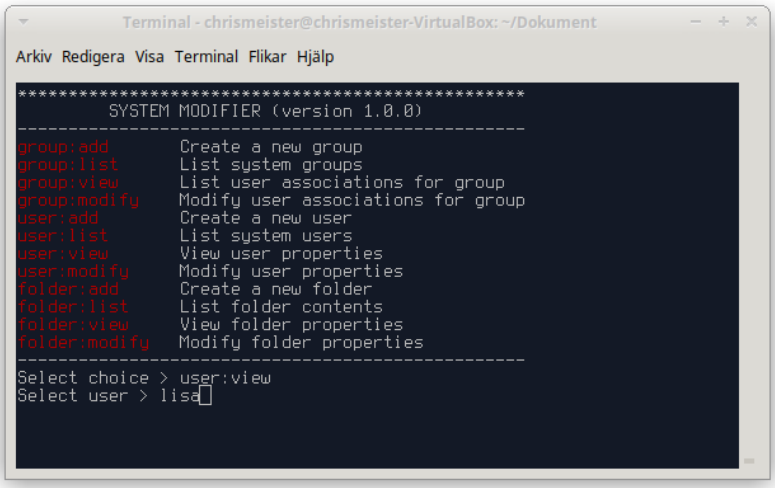
Please review the Study Guide (Laboratory Work and Final Projects) to make sure you understand what is allowed and what is not allowed during the Project Work.

Your solutions and video recordings must be submitted to Blackboard no later than the 31 of May 2019.

Lab A (System Modifier version 1)

In this lab, you will write a system management script that can interactively add, view and modify system users, groups and folders. The script must be written entirely in BASH. Your script must work on a newly installed Ubuntu machine. Therefore, make sure you are only using commands offered by the platform per default (cat, egrep, etc.).

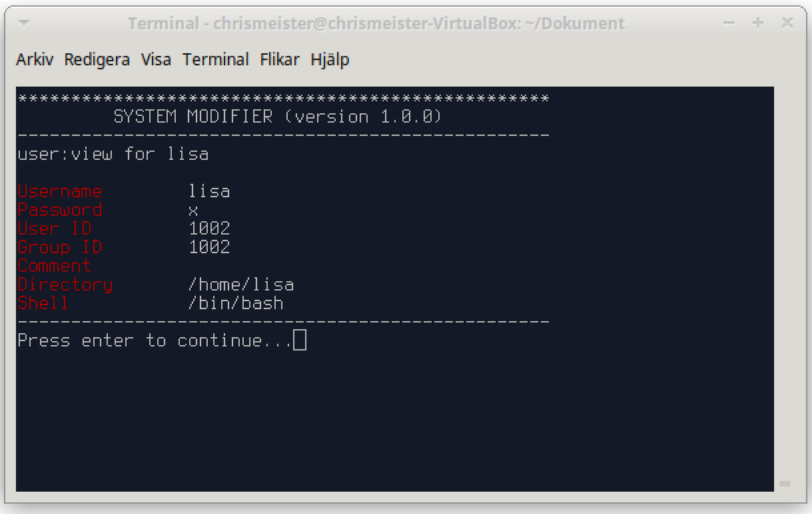
The application must include an interactive Text-Based User Interface that simplifies the use of your application. The following image is an example of this:



With the software, the user must be able to:

- Groups
  - Create new groups
  - List the current groups in the system
  - List users associations for individual groups
  - Add users to groups
  - Remove users from groups
- Users
  - Create new users
  - List current users in the system
  - View and modify attributes for individual users in the system
    - This includes all attributes you find in /etc/passwd
  - Change password for users
- Folders
  - Create new folders
  - List folder contents
  - List and modify properties and attributes for individual folders in the system
    - owner
    - permissions
    - sticky bit
    - setgid
    - last modified
- Remote access
  - Install and uninstall the package openssh-server
  - Enable and disable remote access with SSH

When you view attributes for individual users and folders, each attribute must be printed individually on single lines in a tabular fashion. The following image provides an example of this:



Lab B (Keyman)

In this lab, you write a script that simplifies management of cryptographic keys used for remote access. Your script will simplify creation and management of local keys. It will also simplify the process of copying local keys to remote hosts so that these can be used for authentication.

Your script must support the following features:

- Key management on the local machine
  - Key creation
  - Key deletion
  - Key listing
- Management of remote machines
  - Authorizing local keys on remote machines
  - Connecting to remote machines over SSH
    - Key authorization instead of password

Lab C (System Modifier version 2)

In this lab, you write a script that follows all of the requirements in Lab A with the exception that the user interface must be implemented entirely in dialog. The software should prompt the user to install dialog if the package is not already installed on the system. You install the package by running:

```
apt-get install dialog
```

You will find that dialog provides detailed documentation and examples of use through its manual pages. If you find online tutorials more convenient, try searching your favorite search engine.