Using UNIX/Linux system

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1 Introduction

1. To log in to the AGH servers from home, you will need VPN.
   Check: `http://panel.agh.edu.pl/docs/openvpn/`.

2. Using `ssh` (Linux/MacOS/Windows) or Putty (Windows), log in to Unix/Linux system with the provided login and password. Change your password.

   - What is a strong password?
   - Is your password strong?
     `http://www.passwordmeter.com/`
     `https://password.kaspersky.com/`
     `https://www.youtube.com/watch?v=opRMrEfAIiI`
   - BTW, even if your password is strong, it is worth to check if your account has been compromised in a data breach:
     `https://haveibeenpwned.com/`
   - Which file is modified when changing the password?

3. Check the manual to the command for changing password. If it is in Polish, use: `export LANG=en_US.UTF-8` to change the language of the manual.

4. The files are stored in the system in particular directories. How to check the path to the program which changes password?

5. Using the following commands, check users who work in the system (where, when they are logged in, what they do, what programs they use, etc.):

   - `users`
   - `w`
   - `who`
   - `finger` (or `pinky`)

   Note: this exercise depends on the configuration of a specific server, as some commands can be blocked.
   [**HW**] What is the difference between these commands?

6. Check your own user ID and group.

7. Use `script` command to start making a typescript of everything printed on your terminal (commands typed as well). Now, try again some of the above-mentioned commands. To finish making a typescript, use the command `exit` or click `Ctrl+D`.

   - What is the default name of this file?
   - How to specify the file name in which the typescript will be saved?
   - Check if the file was created. (use: `ls`)
   - What does it contain? (use: `cat filename`).

8. Check the file using the following commands:

   - `cat`
   - `tac`
   - `more`
   - `less`

   [**HW**] What is the difference between these commands?

9. How to close a session and log out of the system?

2 Commands

1. How to check in the manual 1) the specific command (e.g. `passwd`), and 2) the file (e.g. `/etc/passwd`)?

2. Check in the manual and test the commands below with the following options:

   ls `l a F d R`
   mkdir `p m`
   rm `f R`

3. For the above options, test the possibility of using them together.

4. Some commands are shell builtin commands, so there might not be manual for them, e.g. `cd`. In such cases, we can check the type of the command using `type`. If this is a shell builtin command, we can try using `help`.

5. Using `alias` command, check if there are aliases that redefine the workflow of the previously used commands.

3 Files

1. In your home directory, create the file structure as shown below:

   ```
   unix/
   unix/lab2/
   unix/lab2/alfa/
   unix/lab2/alfa/one
   unix/lab2/beta/
   unix/lab2/beta/two
   unix/lab2/beta/prima/
   unix/lab2/beta/prima/three
   ```

2. Create sample files in different ways:

   - `echo "some string" > echo_test.txt`
   - `touch touch_test.txt`
   - To check the content of the created files you can use `cat`.
     But it may also be used to create a file from the standard input:
     `cat > cat_test.txt`
     Input some text in the terminal and to finish press Ctrl+D, (which will send END OF TRANSMISSION character, the default value for the eof [end of file] special control character parameter).
   - `nano nano_test.txt`
   - `vi vi_test.txt`

3. List the files in your home folder using different options.

4. Check the structure of your home directory with the help of **tree**.

5. How to move along your tree structure? Test the commands **cd** and **pwd** using absolute and relative paths, including special directories `.` and `..`

6. Test the meta-characters (asterisk *, question mark ?), e.g. with the command **ls** in the directory `/usr/bin`, e.g.

   - `ls /usr/bin/w*`
   - `ls /usr/bin/l?`

   Which of the listed commands can you recognise?

7. How to get to the home directory in different ways? How to go to the home directory of a given user? How to get to the previous directory?

   [**HW**] `ls -l` displays the output in a long listing format. What exactly is displayed in this format?