Unix-like Operating Systems

Course notes

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Course information

- **Course materials**
  - You can find everything on the website courses.fit.cvut.cz/BIE-UOS
- **Full-time teaching**
  - Taking place in the FIT CTU classrooms according to the schedule
  - Lectures/tutorials will be streaming/recorded as support for students with Covid/in quarantine (this is not online teaching)
  - Links will be published on the course page
- **Communication with teacher**
  - Primarily via school email.
  - My email is trdlicka@fit.cvut.cz.
  - Information about teachers can be found on the page usermap.cvut.cz

Evaluation

- **The course ends with a graded assessment**
  - The student **collects the points during the semester** through **tests and tasks**.
  - At the end of the semester, the points are added up and the student gets/does not get a credit with the appropriate grade, see. courses.fit.cvut.cz/BIE-UOS.
- **Tests during the semester**
  - **Small tests**
    - They will take place at the beginning of each seminars via LearnShell.
    - The test will take about 5–10 minutes.
    - The student can a total of a maximum of **20 points**.
  - **Two big tests**
    - The student can get a total of a maximum of **2x40=80 points**.
    - The implementation of these tests will depend on COVID-19 restrictions.
  - **Tasks**
    - The student can get a total of a maximum of **3 points**.
    - Tasks will be gradually published during the semester.
- **BI-ULI – Introduction to Linux**
  - Optional e-learning course, where students can get another 2 credits for similar knowledge as in BIE-UOS.
  - Course information is on the website courses.fit.cvut.cz/BI-ULI/en

Course contents

Shell programming 1 =

Unix (20%) + shell (25%) + commands (50%) + programming (5%)

- **Course contents**
  - See courses.fit.cvut.cz/BIE-UOS

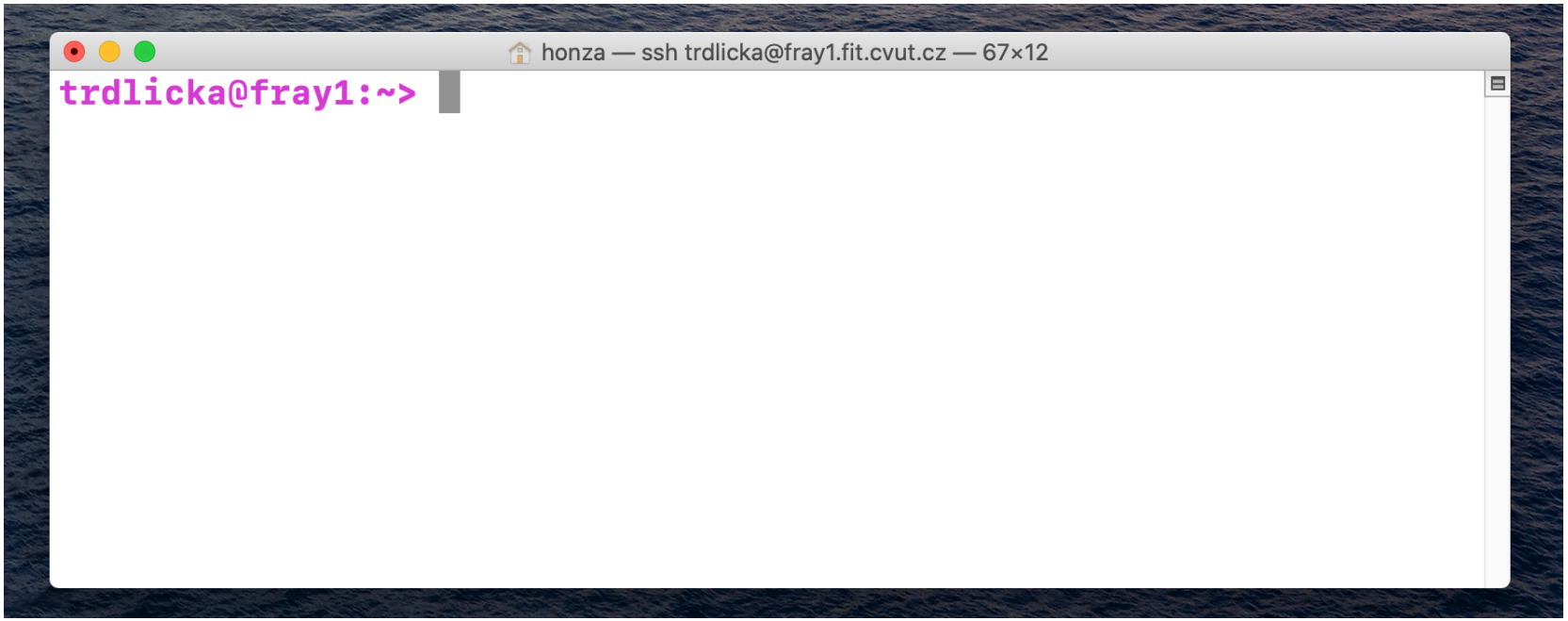
Preparation for tests

success (good knowledge) = theory (40%) + practice (60%)

- **Theory**
  - The student will understand the theoretical information from lectures and exercises.
  - Understanding $\neq$ learn by heart
    - yes, I have to remember, for example, the names of the commands and what they do
    - but I can find details, for example, using commands `help`, `man` or `info`.
- **Practice**
  - The student **will personally try out** the described examples **in the command line**.
    - verify that he has understood everything correctly,
    - can easily modify a known solution for a similar problem,
    - can solve problems efficiently and quickly.
- **Where can I find more examples for practice?**
  - On the subject page in the tab Homeworks
  - How do you use these examples?
    1. Try to solve the example yourself first.
    2. If this is not possible, try to find inspiration in the lecture/exercise materials.
    3. If that doesn't help either, then look for a solution.

Preparation for tests

- **Where can I find the command line and what is it?**
  1. I will log in to a Unix-like operating system (Linux, MacOS, Solaris,...).
  2. I start the terminal application.



University servers fray1 a fray2

- **Properties**
  - Each student has an account set up on these servers.
  - Password is set to **initial system password** which you will find on User's ICT profile.
  - After logging in, you can change the password in the terminal with the command `passwd`.
  - Computers are available 24/7 via the public names `fray1.fit.cvut.cz` and `fray2.fit.cvut.cz` using the Secure Shell protocol.
  - These servers run the Solaris operating system on Sparc processors.

- **The student can log in from any system** (MS Windows, Linux, MacOS, Android, iOS, iPadOS,...) **using ssh client** (e.g. PuTTY in MS Windows or `ssh` in MS Windows 10 and Unix-like OS,...).

Windows Subsystem for Linux (WSL)

- MS Windows 10 supports the installation of Linux directly within itself.
  - For detailed instructions, see Windows Subsystem for Linux Installation Guide for Windows 10.
- Which Linux distribution to install?
  - In FIT classrooms, there is
    - Linux Ubuntu 20.04,
    - Desktop Cinnamon (Ubuntu 20.04 Cinnamon Desktop installation).
- Properties
  - For MS Windows 10 users only.
  - Limited types of OS that can be installed.

Virtual machine

- Using vitalization software (VirtualBox, VMware Workstation Player,...) you create a virtual machine and install the appropriate OS on it.

- Properties
  - We can install "any OS" in "any OS" (MS Windows, Linux, MacOS, ...).
  - Relatively small resource requirements (e.g. 10GB of disk space, 4 GB of memory, 2 CPU cores for Linux).

Dual boot

- We have different OS installed in different partitions of the disk.
- When starting the computer, we choose which OS we want to boot.
- More difficult to install, possible problems with drivers, ...