Find Your Group / Table

Last name	First name	Group
Aasbø	Felix Leon Johnsen	6B
Ackerman	Maan	1A
Ådlandsvik	Jonathan Ward	6A
Alhajeed	Suha	2A
Bækken	Frida Nordnes	3A
Bang-Olsen	Andreas Isegran	8A
Berwari	Kurdin Bekes	2A
Bjørkum	Hans Skirstad	8B
Borch	Christian Uteng	5A
Bratsvedal	Adam Paalsrud	6B
Cincovic	Leon	1A
Dalbye	Karin Ingrid Marie	4A
Flatberg	Odin	9B
Gerhardsen	Trym Silsand	8B
Gulljord	Kaisa	5A
Håkonsen	Sondre Songedal	8A
Hansen	Frida Andrea	6A
Hauksson	Daniel Örn	8B
Heggem	Ingrid Grov	7A

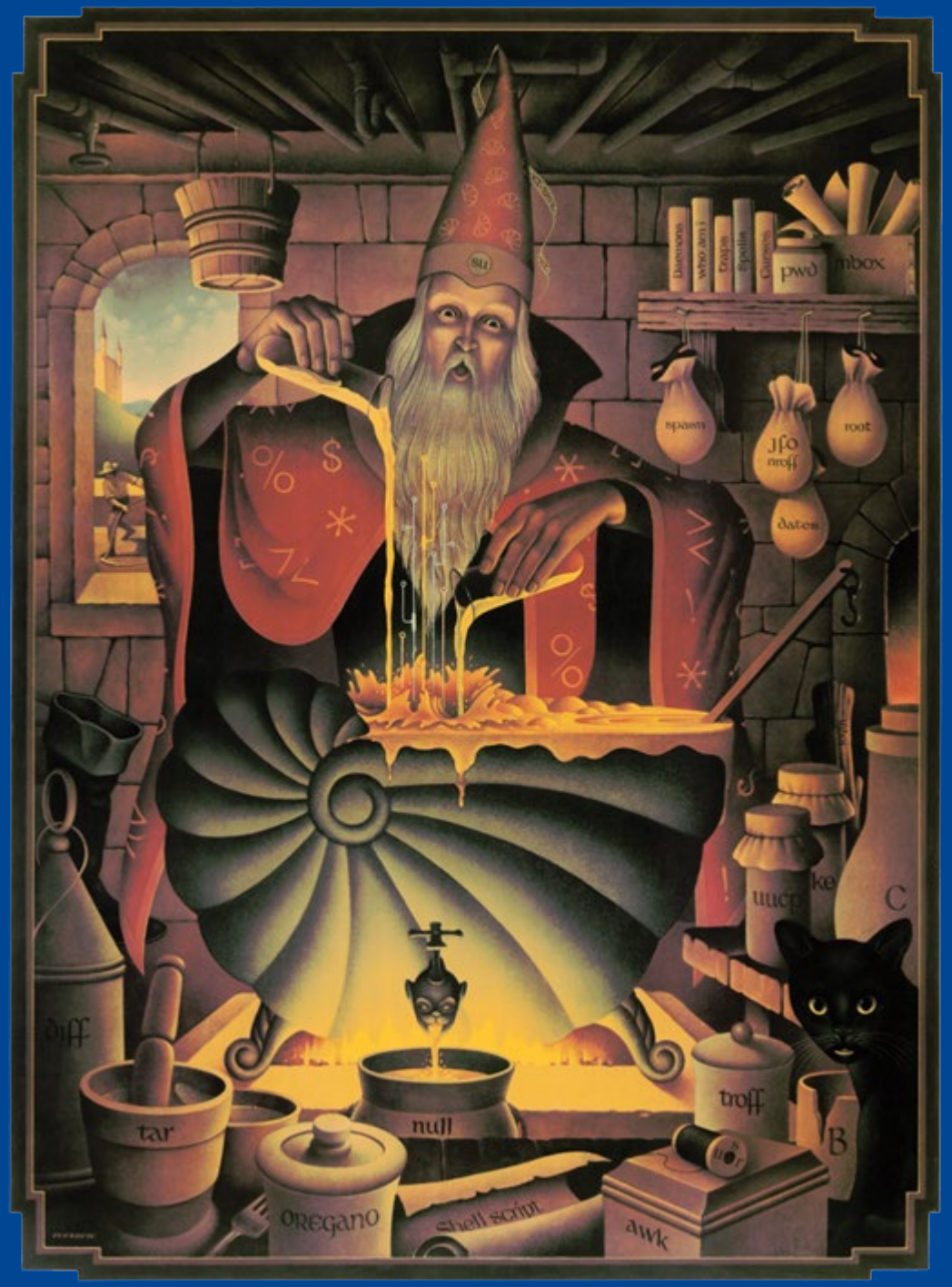
Last name	First name	Group
Hegre	Torjus Meyer	1A
Helgesen	Sander	9B
Henriksen	Daniel	2A
Iden	Erika	8A
Jægersborg-Iversen	Olav	3B
Johansen	Justine Sønsteli	9A
Korterud	Jacob Weldingh	7A
Lervik	Liv Barstad	1B
Lutnæs	Tørres	5B
Makhtari	Mohand	9A
Melsnes	Maria Olsen	2B
Migliorini	Mika Gabriel Holst	5B
Mosfjell	Jonathan	1B
Muruganandan	Anarththan Achshathan	3A
Myrland	Viktor	4B
Nguyen	Christoffer Hoang	3B
Ommundsen	Kristoffer Sørli	9A
Opdøl	Oskar	1B

Last name	First name	Group
Paheerathan	Rithaann	4B
Pettersen	Henrik	4A
Rian	Tobias	7A
Robstad	William	7B
Rosvoldaunet	Annika Olaussen	7B
Sævareid	Olav Onstad	7B
Salte	Sigrid	4B
Skjerve	Eskil Andreas Kjønstad	3A
Sonerud	Mina Kibsgård	5B
Torp	Sindre André Svendsrud	2B
Trælandshei	Jørgen	6A
Udnæs	Andrea Charlotte Ribe	6B
Valle	Ole Gustav	9B
Vikingstad	Viktor Westerberg	4A
Vist	Sigrid	3B
Walderhaug-Johnsen	Adrian	2B
Willoch	Caroline	8B
Wittner	Herman	5A

NTNU | Kunnskap for en bedre verden

TTM4175 – Week 34

Intro Linux Command Line Interface (CLI)



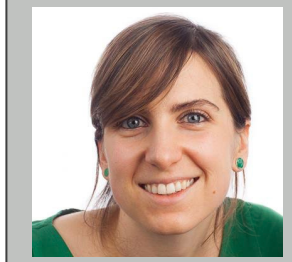
https://archive.org/details/unix-magic-poster-gary-overcare-1

Agenda

- General info [Katrien, Stas]
- Explainer about labs and reports [Stas]
- Explainer about RATs [Stas]
- RATs – individual & team-based
- Break
- Lecture until 10
- Labs in Sahara

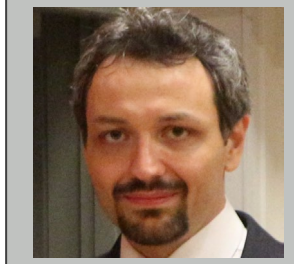
Course Team

Stanislav Lange
Lecturer (5)
room: B231
stanislav.lange@ntnu.no
subject field [ttm4175]



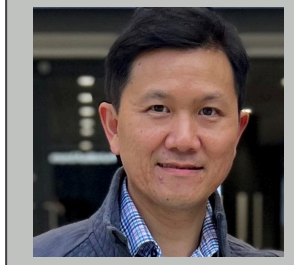
Katrien De Moor
Course responsible,
Lecturer (1)
room: A-273
katrien.demoor@ntnu.no
subject field [ttm4175]

Iwona Windekilde
Lecturer (1)
iwona.windekilde@ntnu.no
subject field [ttm4175]



Basel Katt
Lecturer (3)
(May change)

Arne Morten Midjo
Lecturer (2)
arne.midjo@ntnu.no
subject field [ttm4175]



Tu Dac Ho
Lecturer (1)
Tu.d.ho@ntnu.no
subject field [ttm4175]

Student Assistants

Julie Høgetveit, 5. klasse CybDat

August Skorgen Rakvaag, 2. klasse CybDat

Attal Ahmadjan, 2. klasse CybDat

Bendik Trosterud, 2. klasse CybDat

Emil Bragstad, 5. klasse Cybdat

Course Schedule

Uke	Tid	Tema	Faglærer
33	tir.-fre. 9:15	Teknostart	Katrien, Stanislav, Tjerand, Poul
34	Fredag 8:15-14:00	Lab 1: Linux CLI	Stanislav
35	Fredag 8:15-14:00	Lab 2: IPs, LAN	Stanislav
36	Fredag 8:15-14:00	Lab 3: Ports, Web Servers	Stanislav
37	Fredag 8:15-14:00	Lab 4: Routing, DNS	Stanislav
38	Fredag 8:15-14:00	Lab 5: Om Teamarbeid	Katrien
39	Fredag 8:15-14:00	Lab 6: Bærekraft (kun forelesning 8:15-10:00)	Iwona
40	Fredag 8:15-10:00	Lab 7: Cybersikkerhet 1: Intro and Ethical Hacking	Basel
41	Fredag 8:15-14:00	Lab 8: Cybersikkerhet 2: Information Gathering	Basel
42	Fredag 8:15-14:00	Lab 9: Cybersikkerhet 3: Exploitation	Basel
43	Fredag 8:15-14:00	Lab 10: Introduction to IoT and the Microbit	Arne
44	Fredag 8:15-14:00	Lab 11: Tilstandmaskiner	Arne
45	Fredag 8:15-14:00	Lab 12: HTTP and JSON	Stanislav
46	Fredag 8:15-14:00	Lab 13: MQTT	Tu
47	Fredag 8:15-14:00		

TTM4175 Lab Reports

Lab Report Part 1 – Communication Networks

- Delivery Deadline: Friday, 20th September

Lab Report Part 2 – Ethical Hacking

- Delivery Deadline: Friday, 25th October

Final Lab Report – Including Part 3 – IoT

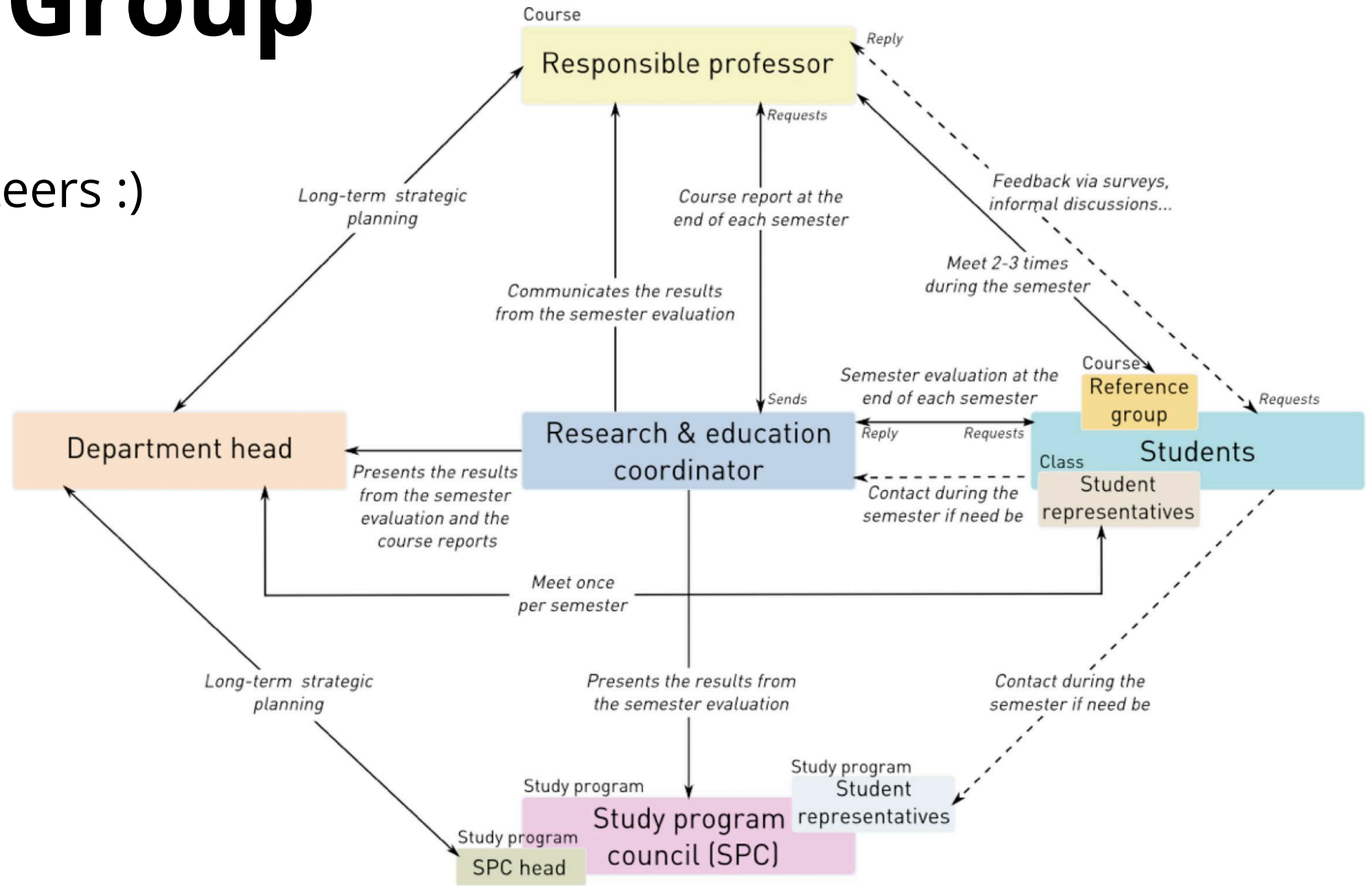
- Delivery Deadline: Friday, 22nd November

Weekly Reflections

- Every week
- Individual
- Link on the webpage

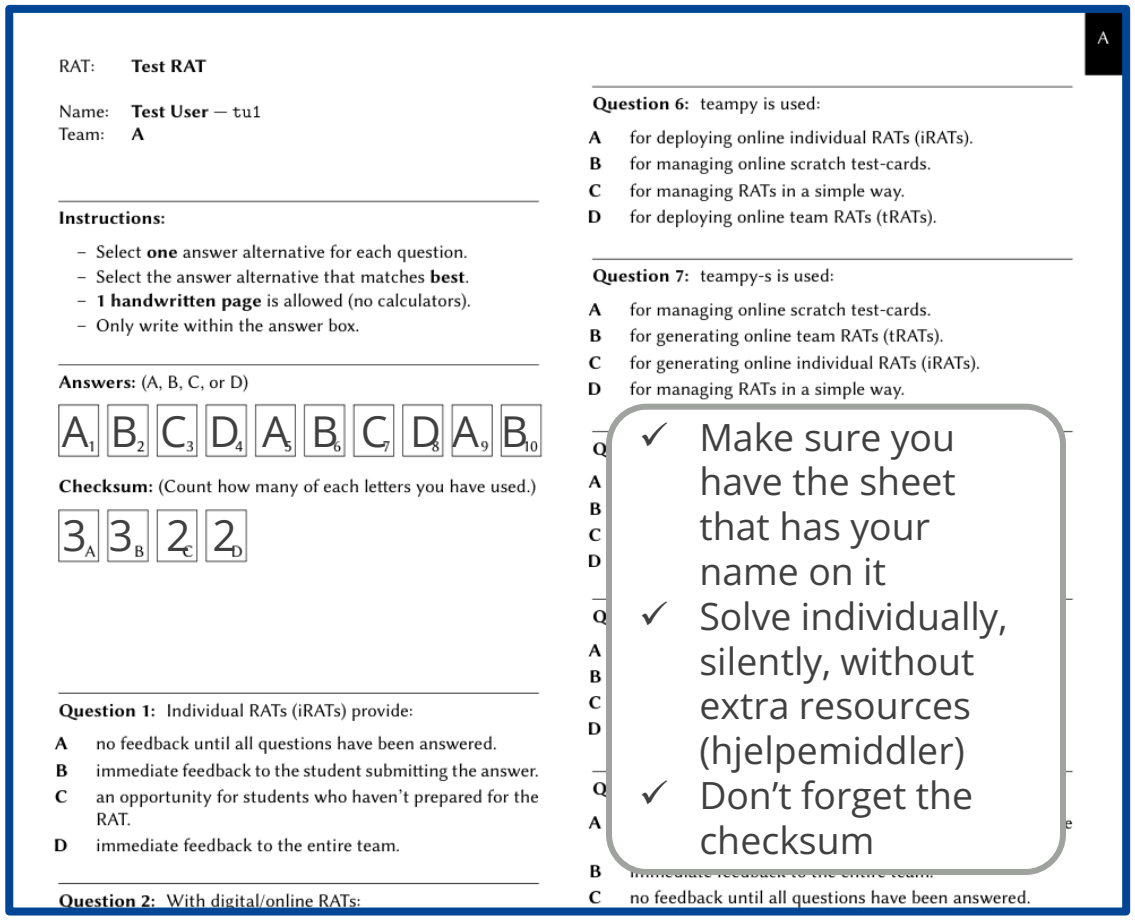
Reference Group

- We need 4-5 volunteers :)
- 3 short meetings



Readiness Assurance Tests (RATs)

- Two types: individual / team-based → iRAT / tRAT



RAT: **Test RAT**

Name: **Test User** — `tu1`
Team: **A**

Instructions:

- Select **one** answer alternative for each question.
- Select the answer alternative that matches **best**.
- **1 handwritten page** is allowed (no calculators).
- Only write within the answer box.

Answers: (A, B, C, or D)

A1	B2	C3	D4	A5	B6	C7	D8	A9	B10

Checksum: (Count how many of each letters you have used.)

3A	3B	2C	2D

Question 1: Individual RATs (iRATs) provide:

A no feedback until all questions have been answered.
B immediate feedback to the student submitting the answer.
C an opportunity for students who haven't prepared for the RAT.
D immediate feedback to the entire team.

Question 2: With digital/online RATs:

Question 6: teampy is used:

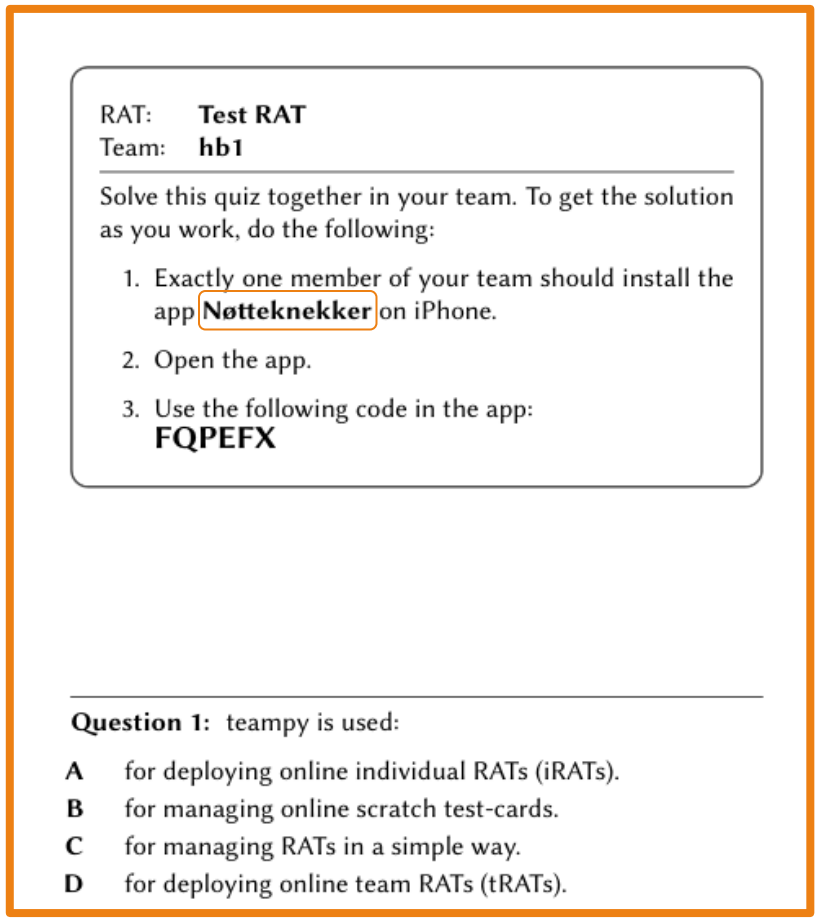
A for deploying online individual RATs (iRATs).
B for managing online scratch test-cards.
C for managing RATs in a simple way.
D for deploying online team RATs (tRATs).

Question 7: teampy-s is used:

A for managing online scratch test-cards.
B for generating online team RATs (tRATs).
C for generating online individual RATs (iRATs).
D for managing RATs in a simple way.

- ✓ Make sure you have the sheet that has your name on it
- ✓ Solve individually, silently, without extra resources (hjelpemiddler)
- ✓ Don't forget the checksum

C no feedback until all questions have been answered.



RAT: **Test RAT**
Team: **hb1**

Solve this quiz together in your team. To get the solution as you work, do the following:

1. Exactly one member of your team should install the app **Nøtteknekker** on iPhone.
2. Open the app.
3. Use the following code in the app: **FQPEFX**

Question 1: teampy is used:

A for deploying online individual RATs (iRATs).
B for managing online scratch test-cards.
C for managing RATs in a simple way.
D for deploying online team RATs (tRATs).

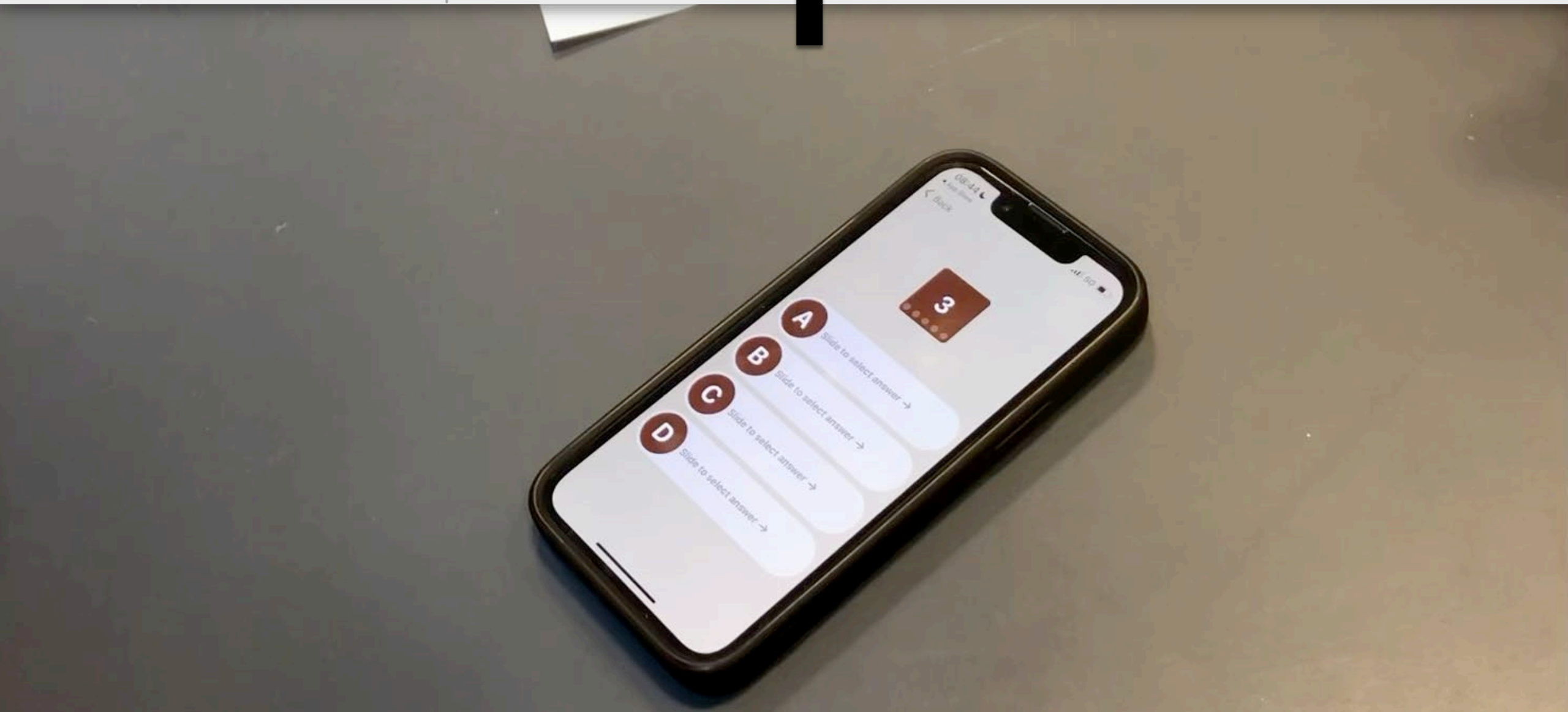
1: Forberedelse

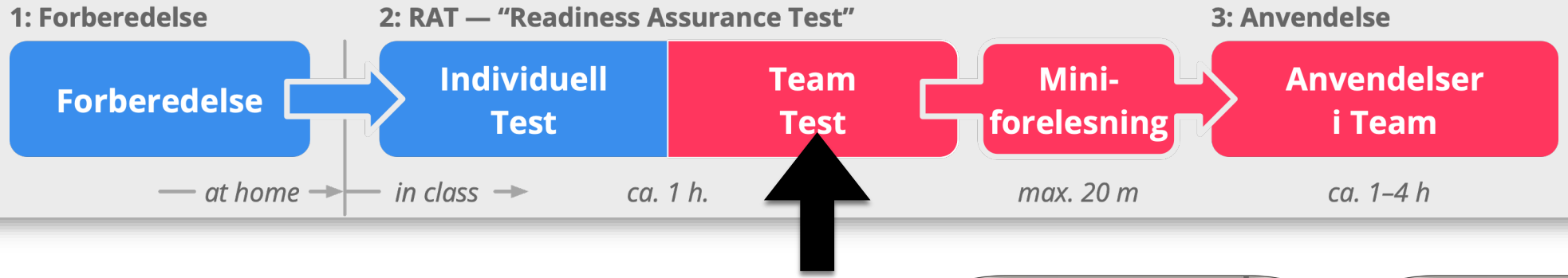
2: RAT — “Readiness Assurance Test”

3: Anvendelse

Forberedelse → Individuell Test → Team Test → Mini-forelesning → Anvendelser i Team

at home → in class → ca. 1 h. → max. 20 m → ca. 1–4 h





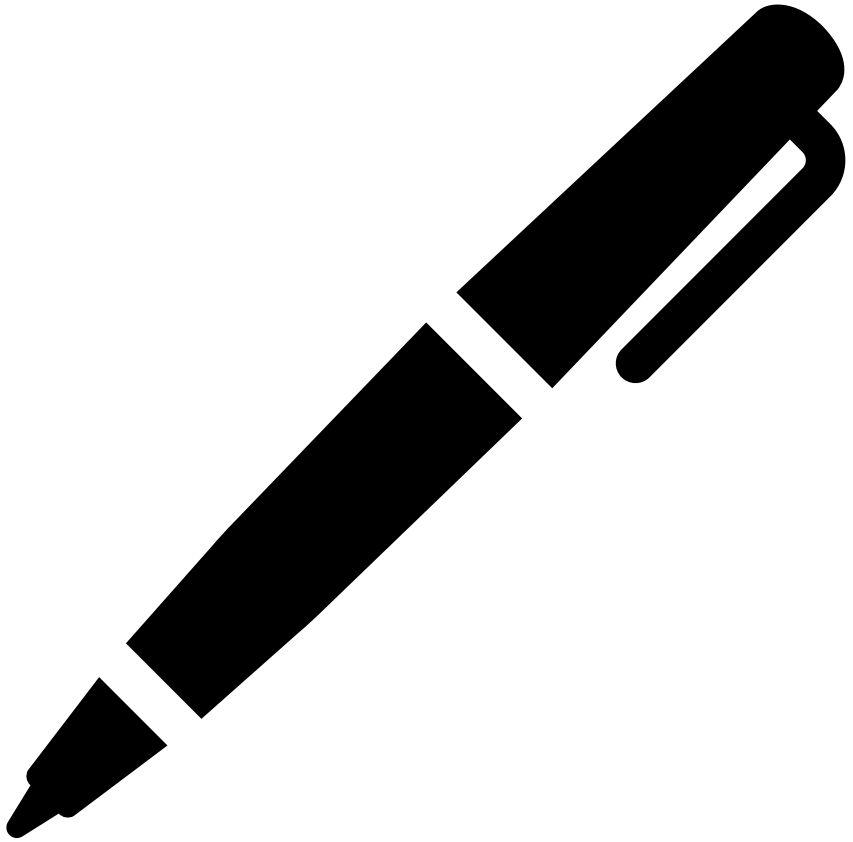
- **Nøtteknekker-App**
- Viser rett svaralternativ underveis
- Trenger kun én iPhone per team
- Enkelt å bruke og gratis
- Lagt med ♥ved NTNU

Download on the App Store

https://s.ntnu.no/nuts

iRATs

- ✓ Make sure you have the sheet that has your name on it
- ✓ Solve individually, silently, without extra resources (hjelpemiddler)
- ✓ Don’t forget the checksum
- ✓ Please place your (student) ID on the table



15:00

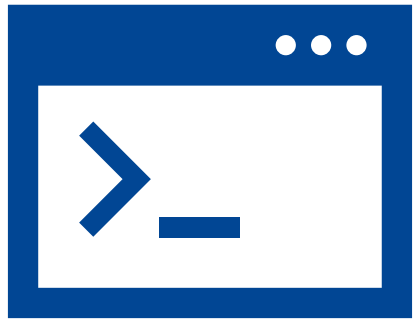
tRATs - Get the Nøtteknekker App

15:00

Break Until 08:xx

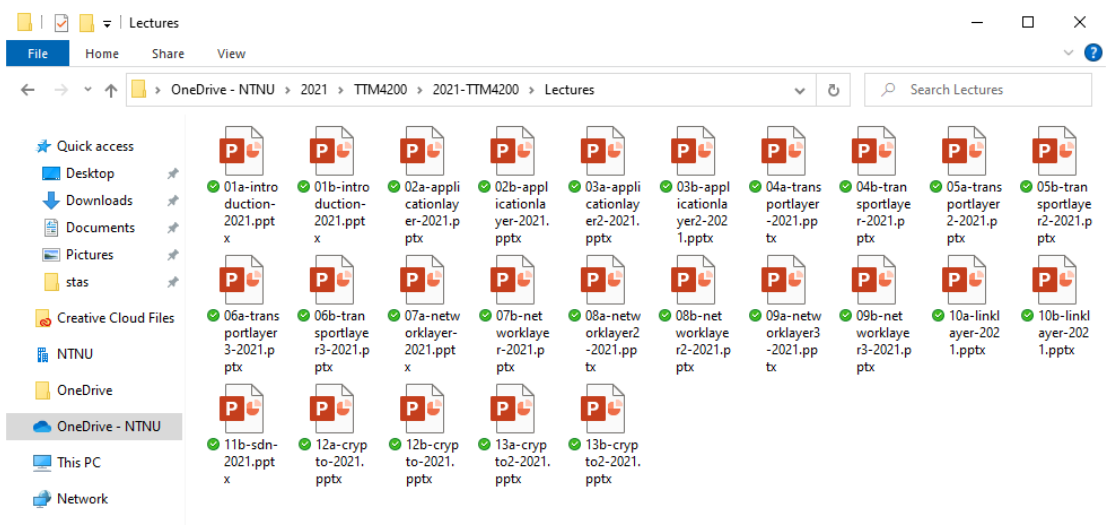
Goals

- Get to know the Linux Command Line Interface (CLI)
  - Understand its importance
  - Learn basic commands for
    - Navigation
    - Remote access
    - Networking-related tasks
  - Understand basic virtualization principles

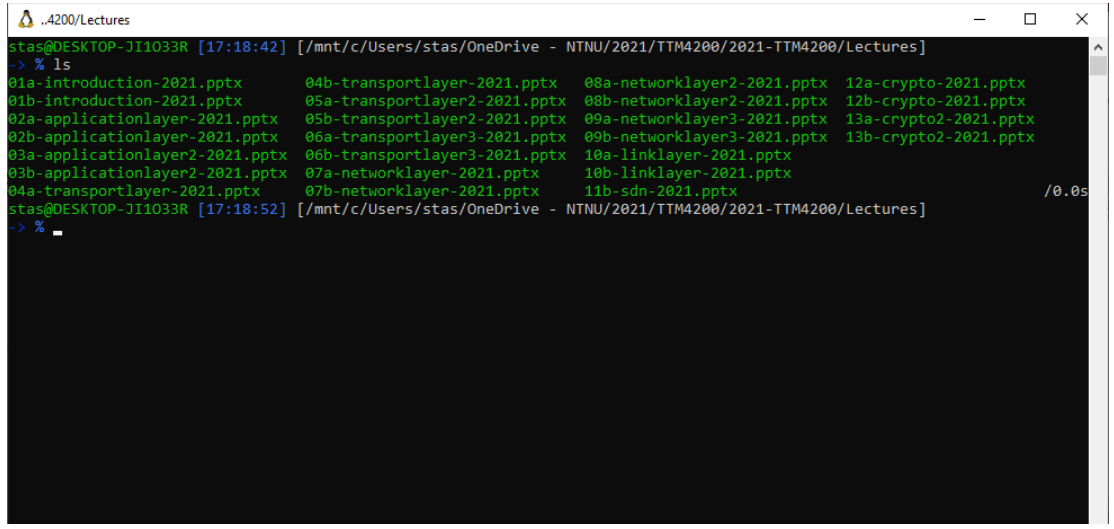


What is the Command Line?

- Text-based interface to navigate and control computers
  - Inspect, create, move, edit files
  - Execute programs



Graphical User Interface



Command Line Interface

Why use the Command Line?

- Unified set of tools & commands to navigate
  - Servers
  - Personal computers
  - Mobile and embedded devices

- Interaction with devices that don’t have a GUI (servers)
- Easier to automate than GUI interactions

Recap of Preparation Material

Practical

Local environment

VMs, SSH, VNC

Readings

What is the CLI

Getting help

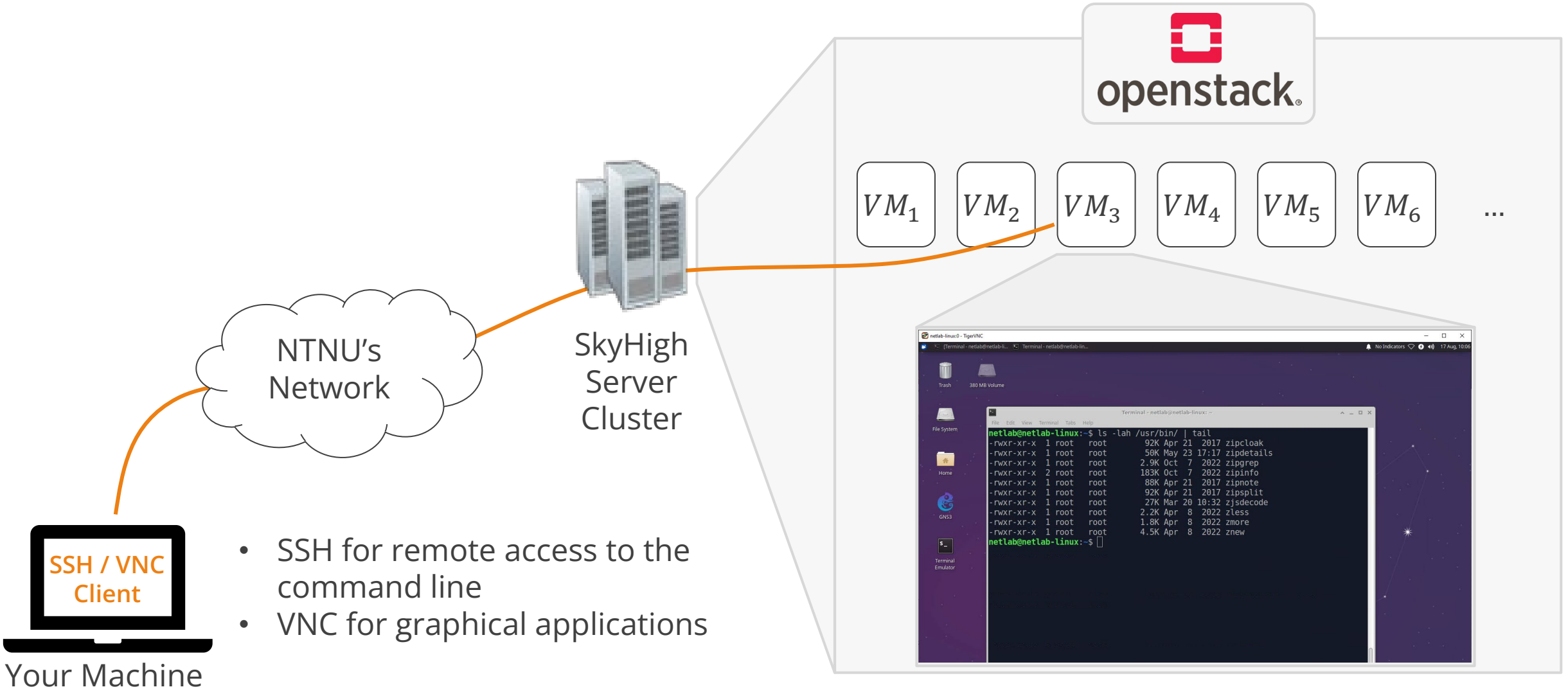
Videos

File system navigation

File system manipulation

grep, cat, man

Course Environment – OpenStack

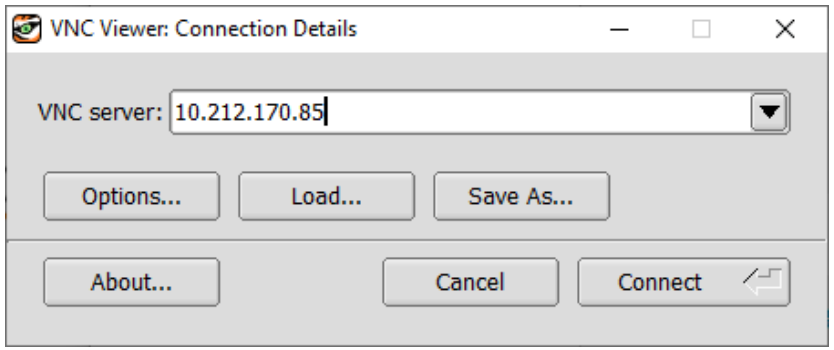


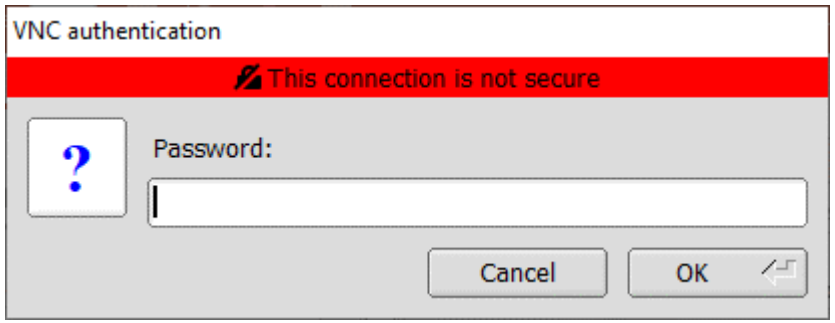
- SSH for remote access to the command line
- VNC for graphical applications

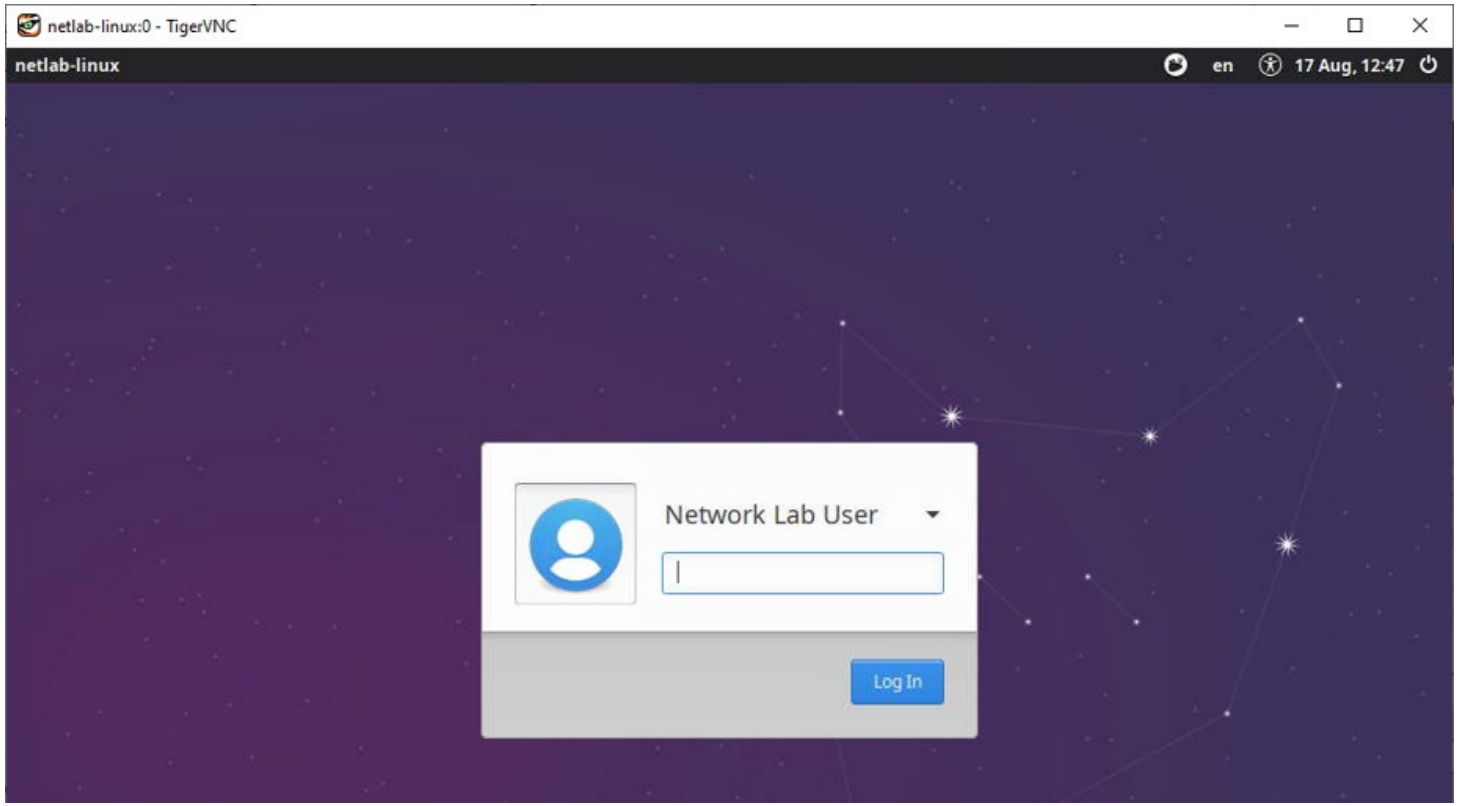
VM Credentials

- Blackboard: TTM4175 > My Groups > $yourGroup > Group Homepage > Group Description

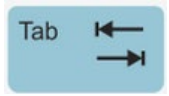
Demo: Using VNC to Connect to Your VM







Demo: Basics

- `pwd, ls, cd, cat, less`
- `mkdir, rm, rmdir, mv, cp`
- *Tab completion*: start typing a command and hit 

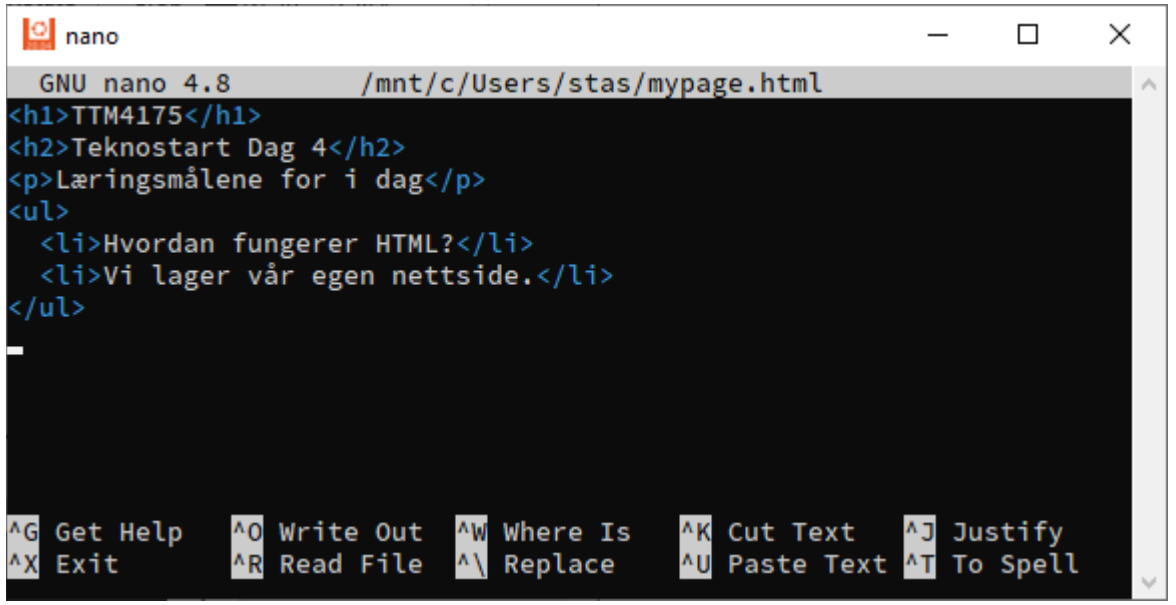
- Arrow keys up / down to browse command history
- Ctrl + ..
  - C: abort currently active program – handy if something hangs
  - R: search command history
  - L: `clear` terminal window
  - D: `exit` current session

Demo: Streams, Redirection, Pipes

- (Over-)Writing to a file with >
  - `echo "hello, world" > hello.txt`
- Appending to a file with >>
  - `echo "hei, world" >> hello2.txt`
- *Piping* output from one command to the next with |
  - `ls | head`
  - `cat *.txt | grep hei`

Demo: nano Editor

- Most basic CLI-based text editor
- Shipped with most Linux distributions
- Open a file for editing via `nano myfile.txt`
- Ctrl + ..
  - S: **s**ave
  - O: save as (**o**ffer to write)
  - X: e**x**it
  - W: search (**w**here is)
- Arrow keys to navigate



https://www.nano-editor.org/dist/latest/cheatsheet.html

Activities Today

Connect to Your VM

Suggested mode: one computer / connection per group

Solve the Tasks

Jeopardy-style Capture-the-Flag (CTF)

Command line crime mystery

Next Week: Networking Lab I

- Topics: binary, IP addresses, subnets, LAN configuration
- Goals
  - Understand and apply basic binary arithmetic
  - Understand IP addresses and their organization into subnets
  - Create and configure Local Area Networks (LANs)
  - Use basic Linux commands for managing
    - IP addresses (IPv4 and IPv6)
    - IP subnets and masks
- Preparation material & BB announcement on Monday