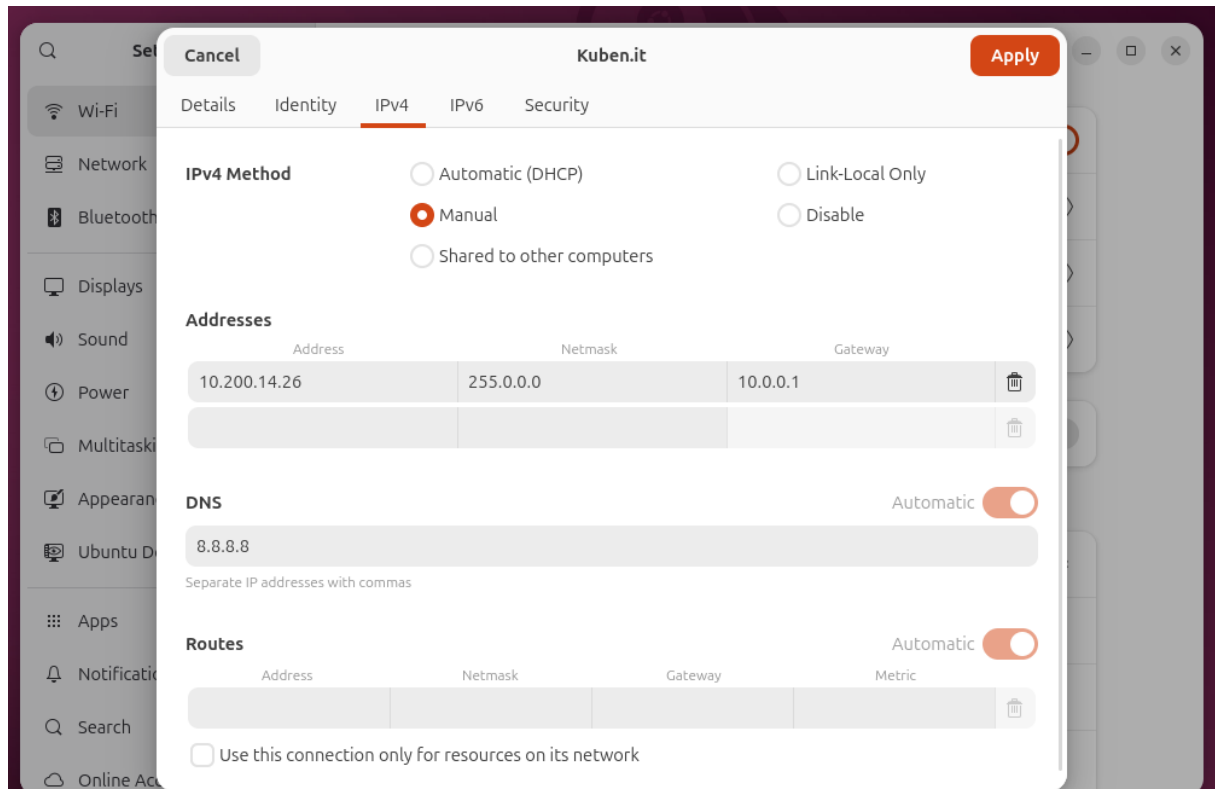


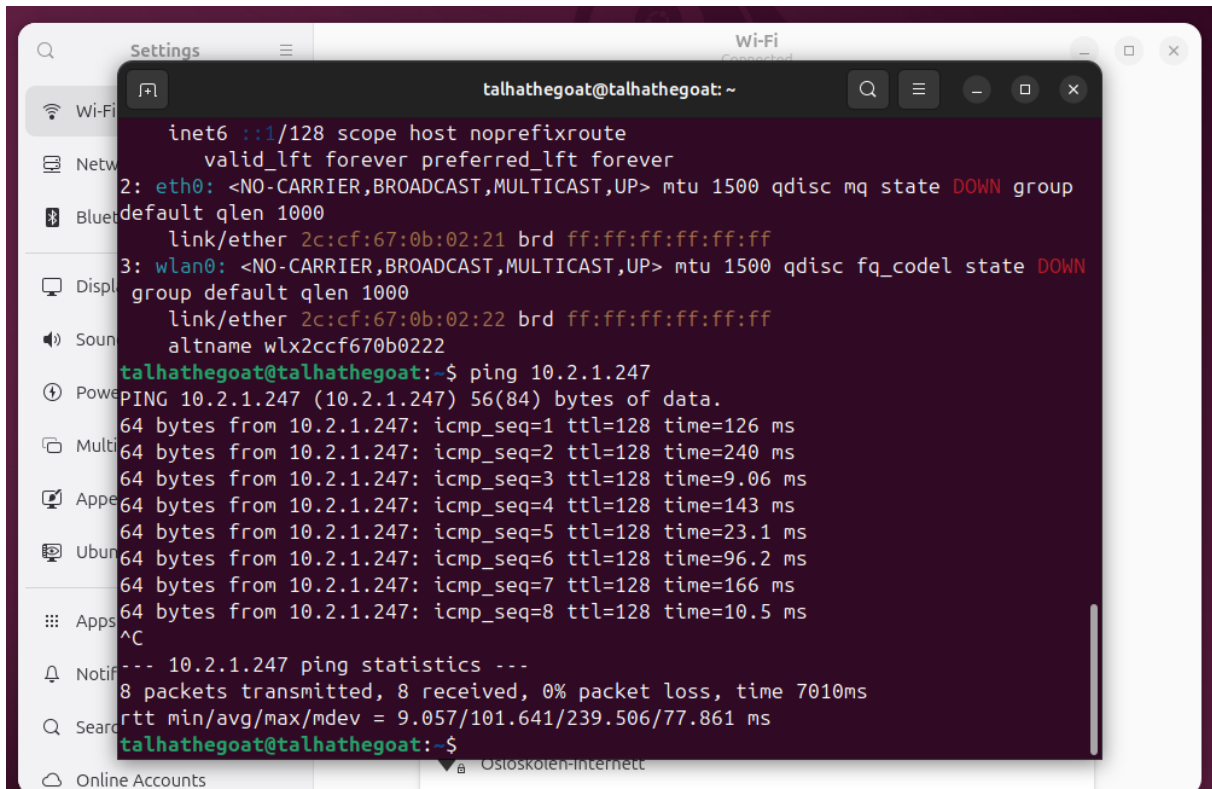
## Dokumentasjon og Fremgangsmåte

Nettverk og tilkobling:



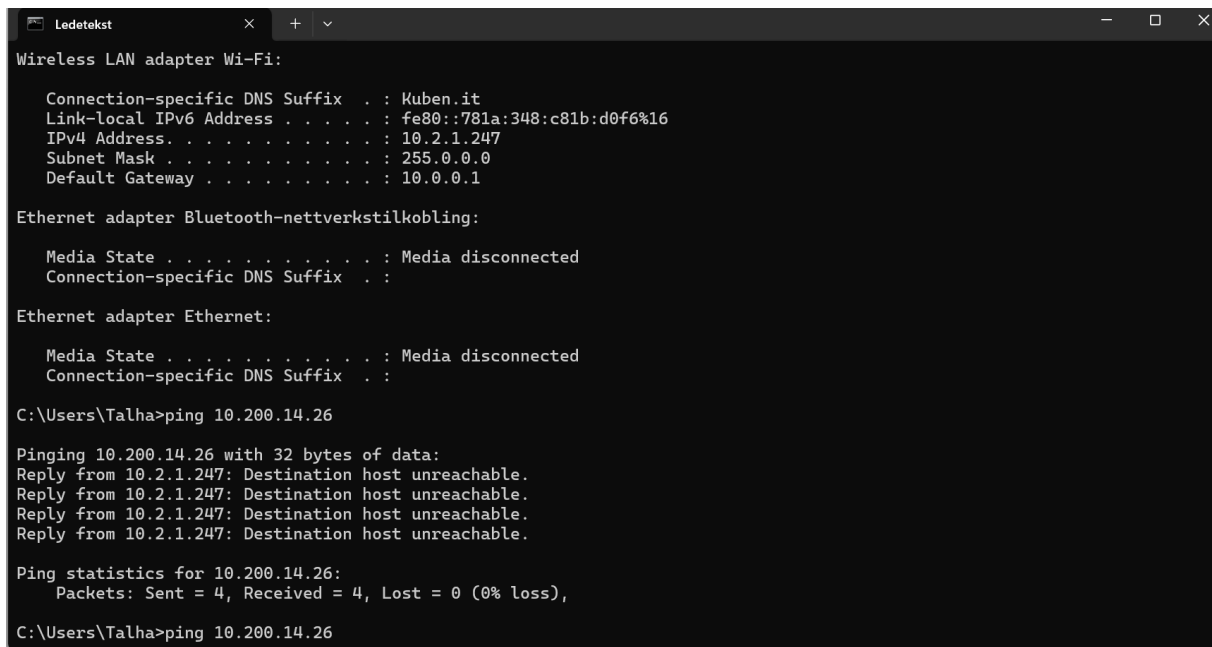
Bilde over viser hvordan man endrer IP-adresse, Netmask, gateway og DNS-en. Du trykker på wifi, innstillinger også må du endre informasjonen der. IP- Adressen vi skal bruke er 10.200.14.26. Etter å ha endret denne skal vi se om vi kan pinge laptopen fra

raspberry pi-en



```
talhathegoat@talhathegoat: ~  
inet6 ::1/128 scope host noprefixroute  
    valid_lft forever preferred_lft forever  
2: eth0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc mq state DOWN group  
default qlen 1000  
    link/ether 2c:cf:67:0b:02:21 brd ff:ff:ff:ff:ff:ff  
3: wlan0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN  
group default qlen 1000  
    link/ether 2c:cf:67:0b:02:22 brd ff:ff:ff:ff:ff:ff  
    altname wlx2ccf670b0222  
talhathegoat@talhathegoat:~$ ping 10.2.1.247  
PING 10.2.1.247 (10.2.1.247) 56(84) bytes of data:  
64 bytes from 10.2.1.247: icmp_seq=1 ttl=128 time=126 ms  
64 bytes from 10.2.1.247: icmp_seq=2 ttl=128 time=240 ms  
64 bytes from 10.2.1.247: icmp_seq=3 ttl=128 time=9.06 ms  
64 bytes from 10.2.1.247: icmp_seq=4 ttl=128 time=143 ms  
64 bytes from 10.2.1.247: icmp_seq=5 ttl=128 time=23.1 ms  
64 bytes from 10.2.1.247: icmp_seq=6 ttl=128 time=96.2 ms  
64 bytes from 10.2.1.247: icmp_seq=7 ttl=128 time=166 ms  
64 bytes from 10.2.1.247: icmp_seq=8 ttl=128 time=10.5 ms  
^C  
--- 10.2.1.247 ping statistics ---  
8 packets transmitted, 8 received, 0% packet loss, time 7010ms  
rtt min/avg/max/mdev = 9.057/101.641/239.506/77.861 ms  
talhathegoat@talhathegoat:~$
```

Som man kan se funker det å pinge laptopen fra pien, men funker det fra pien fra laptopen?

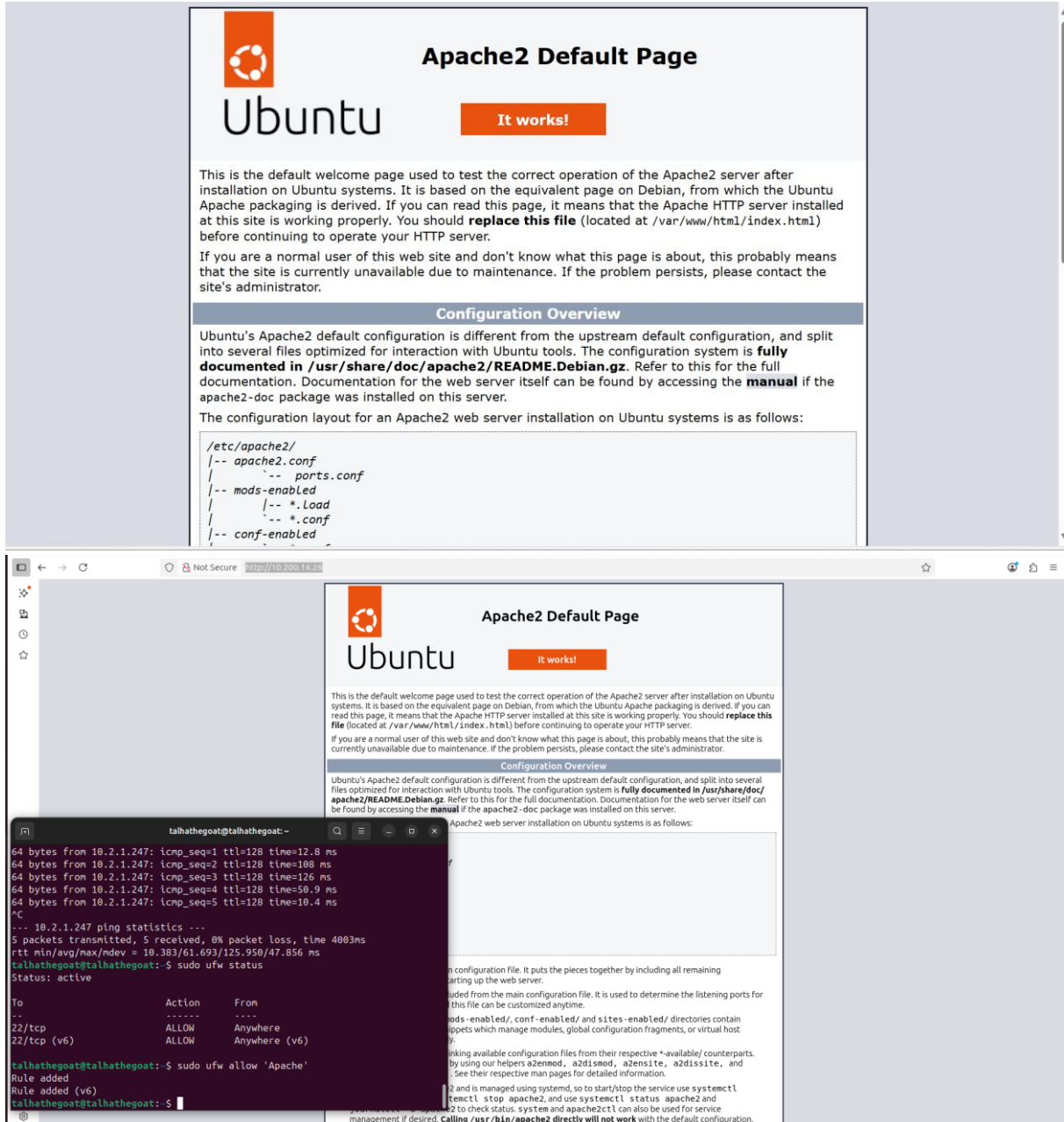


```
Ledetekst  
Wireless LAN adapter Wi-Fi:  
Connection-specific DNS Suffix . : Kuben.it  
Link-local IPv6 Address . . . . . : fe80::781a:348:c81b:d0f6%16  
IPv4 Address. . . . . : 10.2.1.247  
Subnet Mask . . . . . : 255.0.0.0  
Default Gateway . . . . . : 10.0.0.1  
  
Ethernet adapter Bluetooth-nettverkstilkobling:  
Media State . . . . . : Media disconnected  
Connection-specific DNS Suffix . :  
  
Ethernet adapter Ethernet:  
Media State . . . . . : Media disconnected  
Connection-specific DNS Suffix . :  
  
C:\Users\Talha>ping 10.200.14.26  
  
Pinging 10.200.14.26 with 32 bytes of data:  
Reply from 10.2.1.247: Destination host unreachable.  
Reply from 10.2.1.247: Destination host unreachable.  
Reply from 10.2.1.247: Destination host unreachable.  
Reply from 10.2.1.247: Destination host unreachable.  
  
Ping statistics for 10.200.14.26:  
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
  
C:\Users\Talha>ping 10.200.14.26
```

Det funka som du kan se nederst på cmd.

Server og tjenester

Oppgaven nå er å sette opp en webserver. Dette kan vi gjøre ved hjelp av apache. Man starter med å laste ned apache først. I terminalen skriver man `sudo apt install apache2`. Etter dette må du tillate apache ved å skrive `sudo ufw allow 'Apache'`. Hvis du nå skriver inn ip-adressen til pien på laptopen eller selve pien vil du få opp en apache side som du kan se på bildene nedenfor.



Neste er å dele filer mellom pien og laptopen. Dette kan vi gjøre ved hjelp av noe som heter Samba.

```

talhathegoat@talhathegoat:~$ sudo apt install samba
Installing:
  samba

Installing dependencies:
  attr          python3-samba  python3-ldb  samba-common-bin
  python3-ldb   python3-talloc  samba-common  tdb-tools

Suggested packages:
  ctdb winbind samba-vfs-ceph samba-vfs-glusterfs heindal-clients

Summary:
  Upgrading: 0, Installing: 9, Removing: 0, Not Upgrading: 9
  Download size: 5958 kB
  Space needed: 39.3 MB / 22.0 GB available

Continue? [Y/n] y
Get:1 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 samba-common all 2:4.21.4+dfsg-1ubuntu3.4 [75.2 kB]
Get:2 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 samba-common-bin arm64 2:4.21.4+dfsg-1ubuntu3.4 [1393 kB]
Get:3 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 samba arm64 2:4.21.4+dfsg-1ubuntu3.4 [1379 kB]
Get:4 http://ports.ubuntu.com/ubuntu-ports plucky/main arm64 attr arm64 1:2.5.2-3 [22.9 kB]
Get:5 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 python3-ldb arm64 2:2.10.0+samba4.21.4+dfsg-1ubuntu3.4 [42.0 kB]
Get:6 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 python3-tdb arm64 2:1.4.12+samba4.21.4+dfsg-1ubuntu3.4 [16.6 kB]
Get:7 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 python3-talloc arm64 2:2.4.2+samba4.21.4+dfsg-1ubuntu3.4 [14.1 kB]
Get:8 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 python3-samba arm64 2:4.21.4+dfsg-1ubuntu3.4 [2988 kB]
Get:9 http://ports.ubuntu.com/ubuntu-ports plucky-updates/main arm64 tdb-tools arm64 2:1.4.12+samba4.21.4+dfsg-1ubuntu3.4 [28.5 kB]
Fetched 5958 kB in 1min 57s (50.8 kB/s)
Selecting previously unselected package samba-common.
(Reading database ... 133087 files and directories currently installed.)
Preparing to unpack .../0-samba-common_2k3a4.21.4+dfsg-1ubuntu3.4_all.deb .
..
Unpacking samba-common (2:4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package samba-common-bin.
Preparing to unpack .../1-samba-common-bin_2k3a4.21.4+dfsg-1ubuntu3.4_arm64
.deb ...
Unpacking samba-common-bin (2:4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package samba.
Preparing to unpack .../2-samba_2k3a4.21.4+dfsg-1ubuntu3.4_arm64.deb ...
Unpacking samba (2:4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package attr.

```

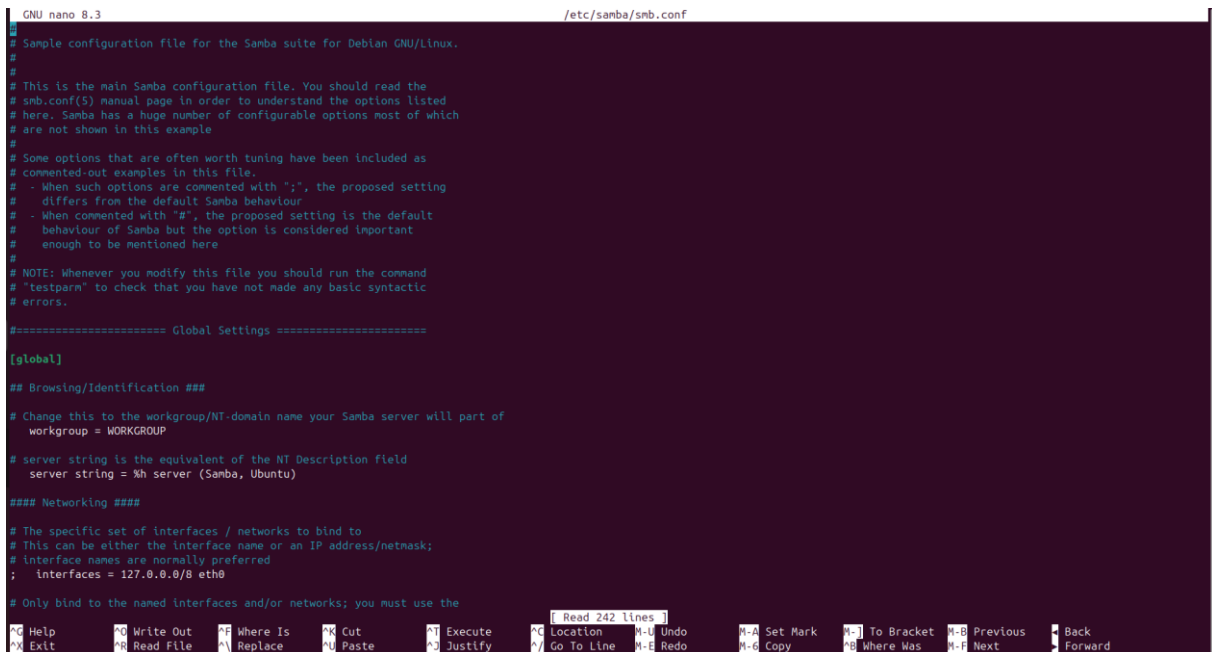
Som du kan se på bilde ovenfor så installerer man samba ved å skrive kommandoen  
**sudo apt install samba**

```

talhathegoat@talhathegoat:~$ sudo apt install samba
4_arm64.deb ...
Unpacking python3-ldb (2:2.10.0+samba4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package python3-talloc:arm64.
Preparing to unpack .../6-python3-talloc_2k3a4.21.4+dfsg-1ubuntu
3.4_arm64.deb ...
Unpacking python3-talloc:arm64 (2:2.4.2+samba4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package python3-samba.
Preparing to unpack .../7-python3-samba_2k3a4.21.4+dfsg-1ubuntu3.4_arm64.de
b ...
Unpacking python3-samba (2:4.21.4+dfsg-1ubuntu3.4) ...
Selecting previously unselected package tdb-tools.
Preparing to unpack .../8-tdb-tools_2k3a1.4.12+samba4.21.4+dfsg-1ubuntu3.4_
arm64.deb ...
Unpacking tdb-tools (2:1.4.12+samba4.21.4+dfsg-1ubuntu3.4) ...
Setting up python3-talloc:arm64 (2:2.4.2+samba4.21.4+dfsg-1ubuntu3.4) ...
Setting up attr (1:2.5.2-3) ...
Setting up samba-common (2:4.21.4+dfsg-1ubuntu3.4) ...
Creating config file /etc/samba/smb.conf with new version
Setting up python3-ldb (2:2.10.0+samba4.21.4+dfsg-1ubuntu3.4) ...
Setting up tdb-tools (2:1.4.12+samba4.21.4+dfsg-1ubuntu3.4) ...
update-alternatives: using /usr/bin/tdbbackup.tdbtools to provide /usr/bin/
tdbbackup (tdbbackup) in auto mode
Setting up python3-ldb (2:2.10.0+samba4.21.4+dfsg-1ubuntu3.4) ...
Setting up samba-common-bin (2:4.21.4+dfsg-1ubuntu3.4) ...
Setting up python3-samba (2:4.21.4+dfsg-1ubuntu3.4) ...
Setting up samba (2:4.21.4+dfsg-1ubuntu3.4) ...
Created symlink '/etc/systemd/system/smb.service' → '/usr/lib/systemd/syste
n/smbd.service'.
Created symlink '/etc/systemd/system/multi-user.target.wants/smbd.service'
→ '/usr/lib/systemd/system/smbd.service'.
Created symlink '/etc/systemd/system/nmb.service' → '/usr/lib/systemd/syste
n/nmbd.service'.
Created symlink '/etc/systemd/system/multi-user.target.wants/nmbd.service'
→ '/usr/lib/systemd/system/nmbd.service'.
Processing triggers for ufw (0.36.2-9) ...
Rules updated for profile 'Apache'
Firewall reloaded
Processing triggers for man-db (2.13.0-1) ...
Processing triggers for libc-bin (2.41-6ubuntu1.1) ...
talhathegoat@talhathegoat:~$ mkdir -p ~/sambanappe
talhathegoat@talhathegoat:~$ sudo nano /etc/samba/smb.conf
talhathegoat@talhathegoat:~$ sudo nano /etc/samba/smb.conf
talhathegoat@talhathegoat:~$

```

Ved å skrive kommandoen `sudo nano/etc/samba/smb.conf` som står ovenfor så går du inn i en ny side som er på bilde nedenfor.



```
GNU nano 8.3 /etc/samba/smb.conf
# Sample configuration file for the Samba suite for Debian GNU/Linux.
#
# This is the main Samba configuration file. You should read the
# smb.conf(5) manual page in order to understand the options listed
# here. Samba has a huge number of configurable options most of which
# are not shown in this example
#
# Some options that are often worth tuning have been included as
# commented-out examples in this file.
# - When such options are commented with ";", the proposed setting
# differs from the default Samba behaviour
# - When commented with "#", the proposed setting is the default
# behaviour of Samba but the option is considered important
# enough to be mentioned here
#
# NOTE: Whenever you modify this file you should run the command
# "testparm" to check that you have not made any basic syntactic
# errors.

##### Global Settings #####

[global]

## Browsing/Identification ##

# Change this to the workgroup/NT-domain name your Samba server will part of
workgroup = WORKGROUP

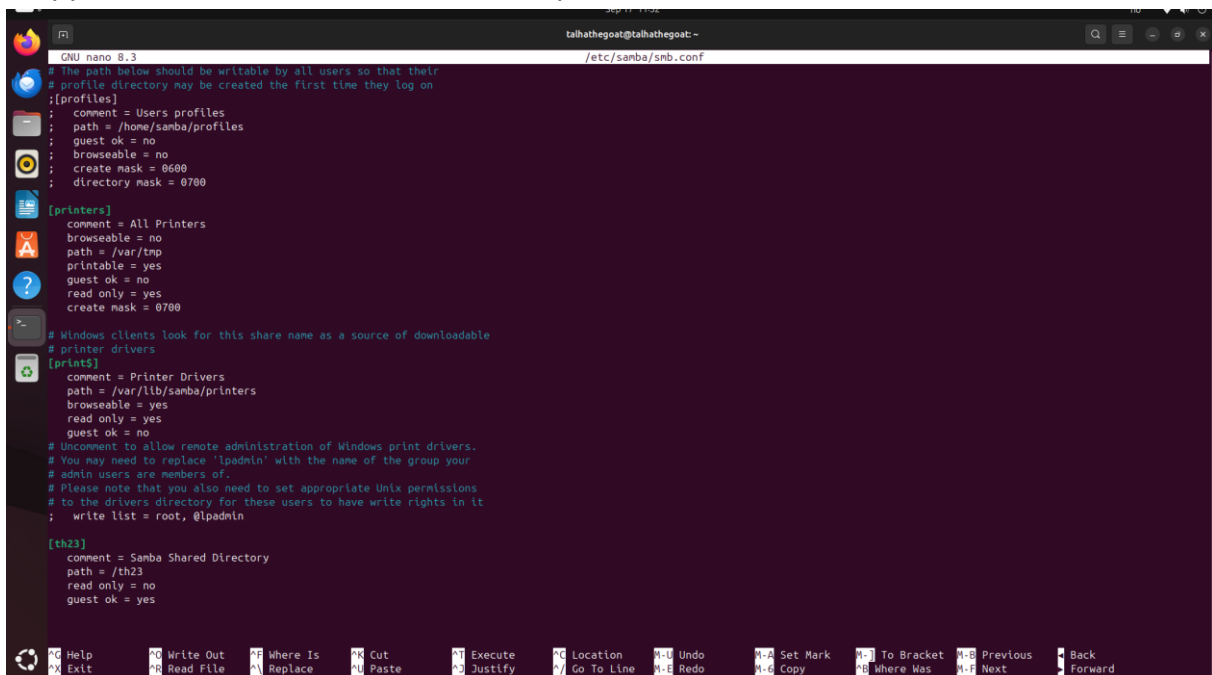
# server string is the equivalent of the NT Description field
server string = %h server (Samba, Ubuntu)

#### Networking ####

# The specific set of interfaces / networks to bind to
# This can be either the interface name or an IP address/netmask;
# interface names are normally preferred
; interfaces = 127.0.0.0/8 eth0

# Only bind to the named interfaces and/or networks; you must use the
```

Her så skal du redigere mappen slik at du kan redigere den og sjekke innholdet i mappen. Det du skal skrive står nederst på bilde nedenfor.



```
GNU nano 8.3 /etc/samba/smb.conf
# The path below should be writable by all users so that their
# profile directory may be created the first time they log on
[profiles]
; comment = Users profiles
; path = /home/samba/profiles
; guest ok = no
; browseable = no
; create mask = 0600
; directory mask = 0700

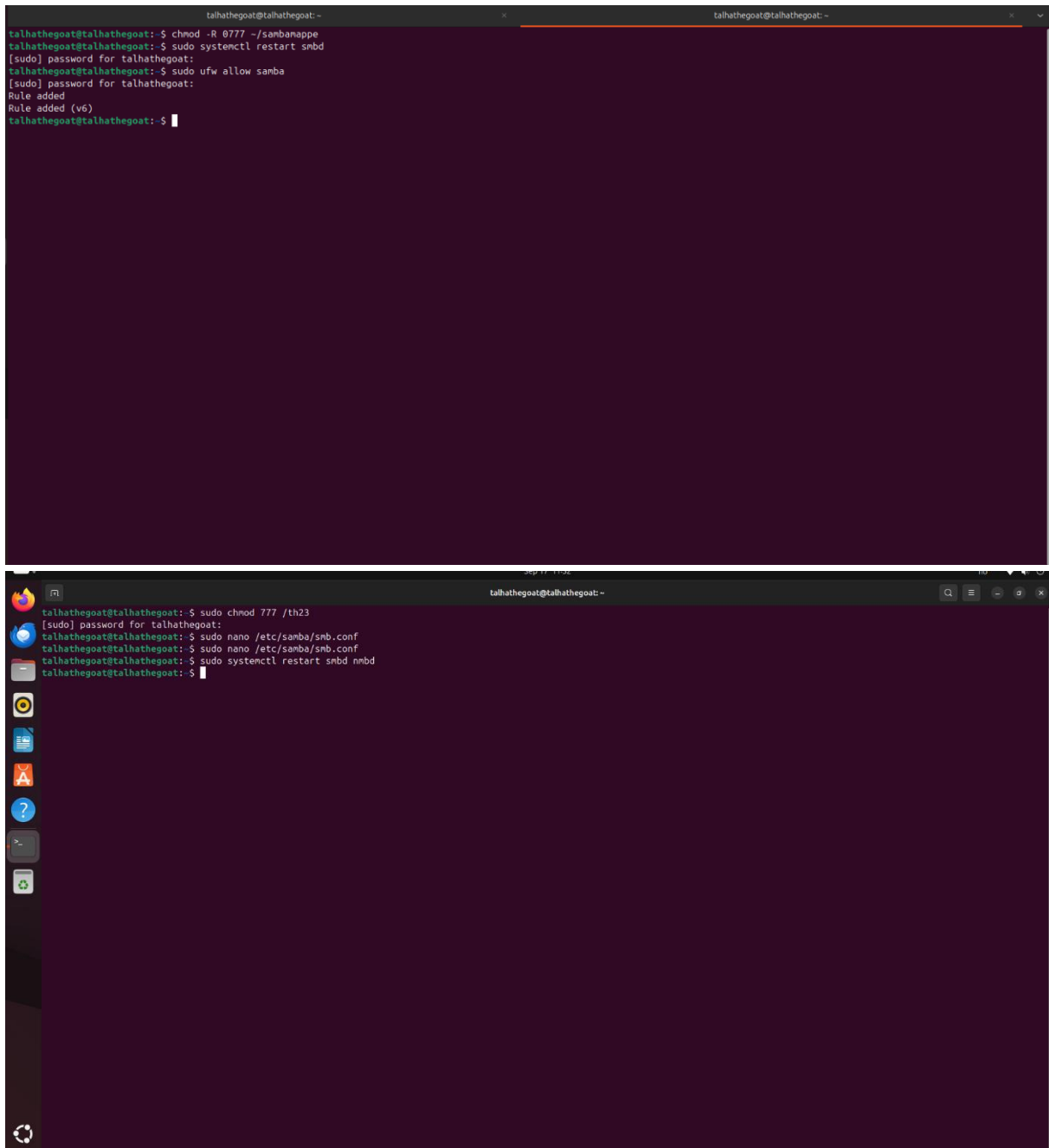
[printers]
comment = All Printers
browseable = no
path = /var/tmp
printable = yes
guest ok = no
read only = yes
create mask = 0700

# Windows clients look for this share name as a source of downloadable
# printer drivers
[printers]
comment = Printer Drivers
path = /var/lib/samba/printers
browseable = yes
read only = yes
guest ok = no

# Uncomment to allow remote administration of Windows print drivers.
# You may need to replace 'lpadmin' with the name of the group your
# admin users are members of.
# Please note that you also need to set appropriate Unix permissions
# to the drivers directory for these users to have write rights in it
; write list = root, @lpadmin

[th23]
comment = Samba Shared Directory
path = /th23
read only = no
guest ok = yes
```

Etter dette må du tillate samba



The image consists of two terminal window screenshots. The top screenshot shows the following commands and output:

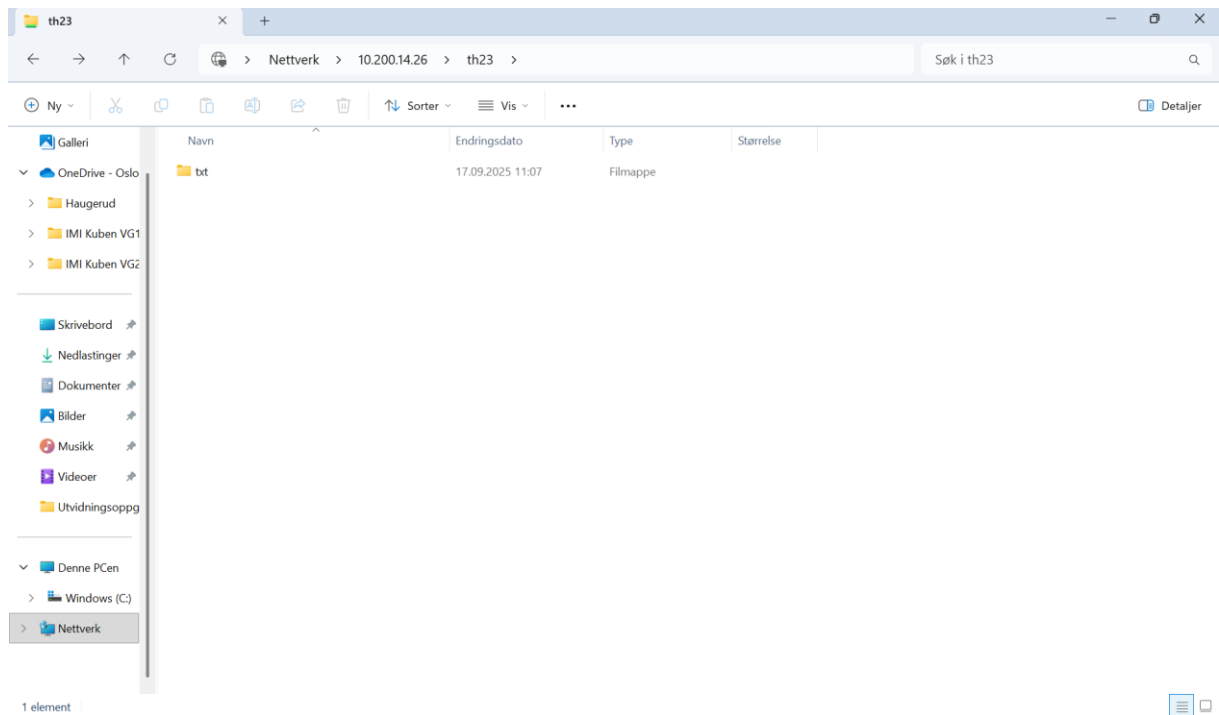
```
talhathegoat@talhathegoat:~$ sudo chmod -R 0777 ~/sambanappe
talhathegoat@talhathegoat:~$ sudo systemctl restart snbd
[sudo] password for talhathegoat:
talhathegoat@talhathegoat:~$ sudo ufw allow samba
[sudo] password for talhathegoat:
Rule added
Rule added (v6)
talhathegoat@talhathegoat:~$
```

The bottom screenshot shows the following commands and output:

```
talhathegoat@talhathegoat:~$ sudo chnod 777 /th23
[sudo] password for talhathegoat:
talhathegoat@talhathegoat:~$ sudo nano /etc/samba/smb.conf
talhathegoat@talhathegoat:~$ sudo nano /etc/samba/smb.conf
talhathegoat@talhathegoat:~$ sudo systemctl restart snbd nmbd
talhathegoat@talhathegoat:~$
```

The bottom screenshot also shows a desktop environment with a sidebar containing icons for various applications like a web browser, file manager, and terminal.

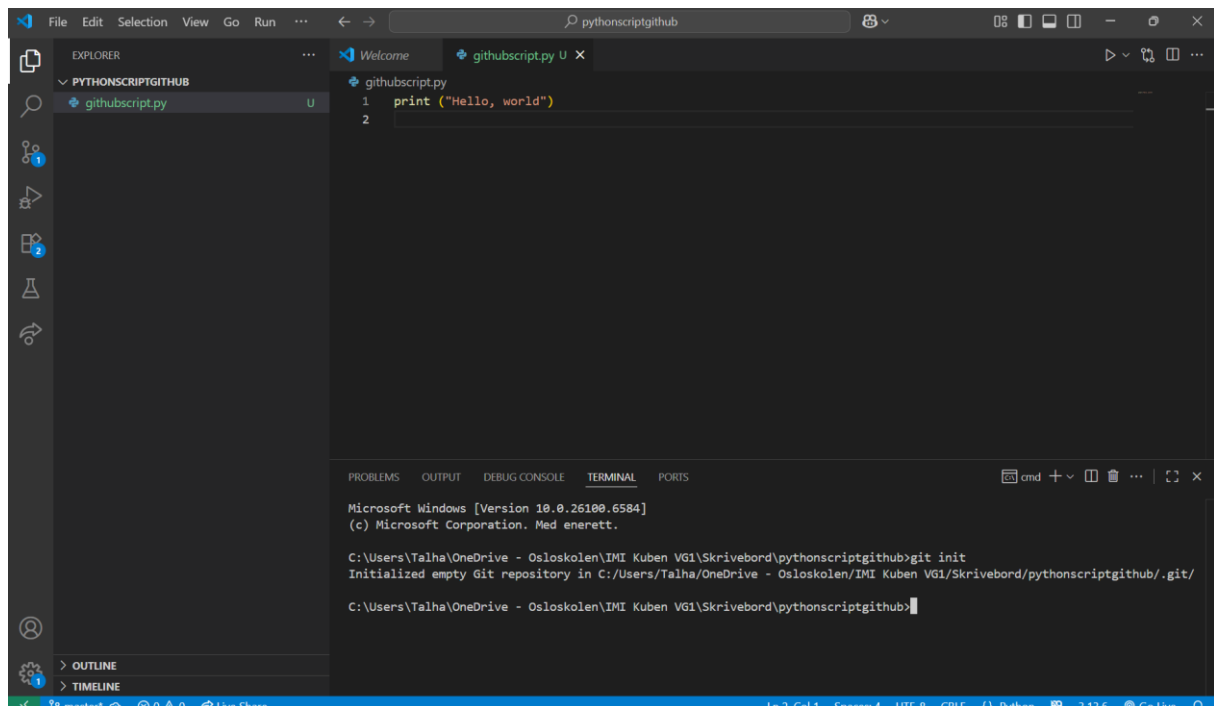
Ved å bruke kommandoene som står på bildene ovenfor.



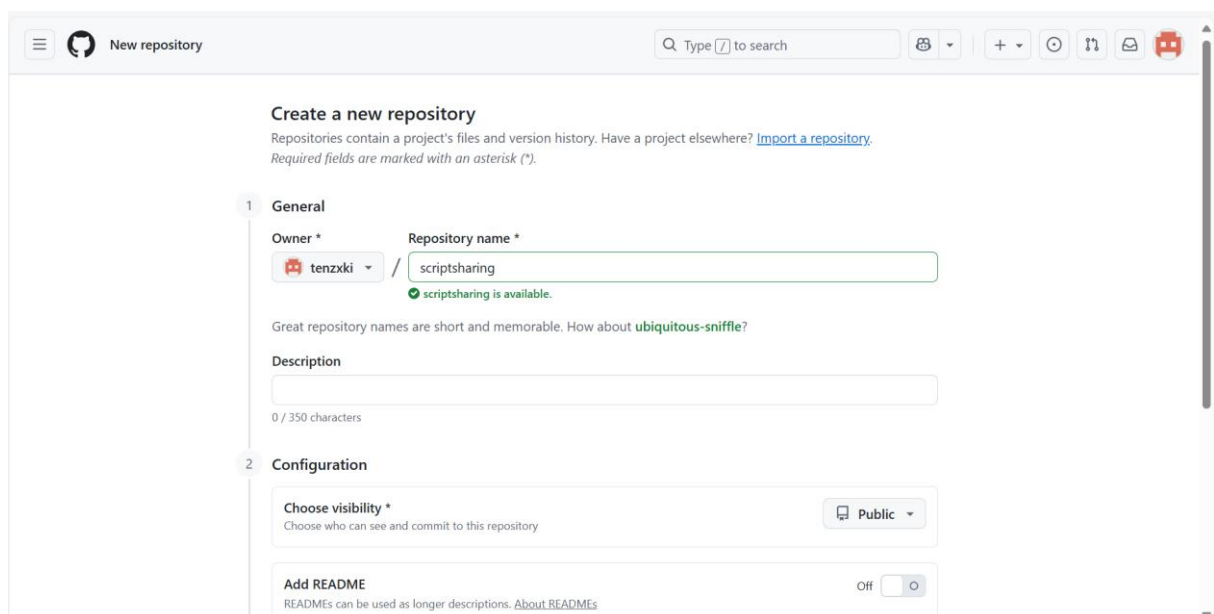
Siste steg er å gå på laptopen og skrive ip adressen til pien på søkefeltet i filutforsker. Eksempel \\10.200.14.26\th23. Som du kan se på bilde ovenfor så fungerer dette. Du kan skrive det samme på pien og den samme mappen vil komme opp. Du kan nå legge inn de filene du vil dele mellom laptopen og pien.

## Python og Github

Dette er siste oppgavesettet hvor vi skal lage et python script og legge det ut på github. Dette er litt avansert så det er viktig å følge med.

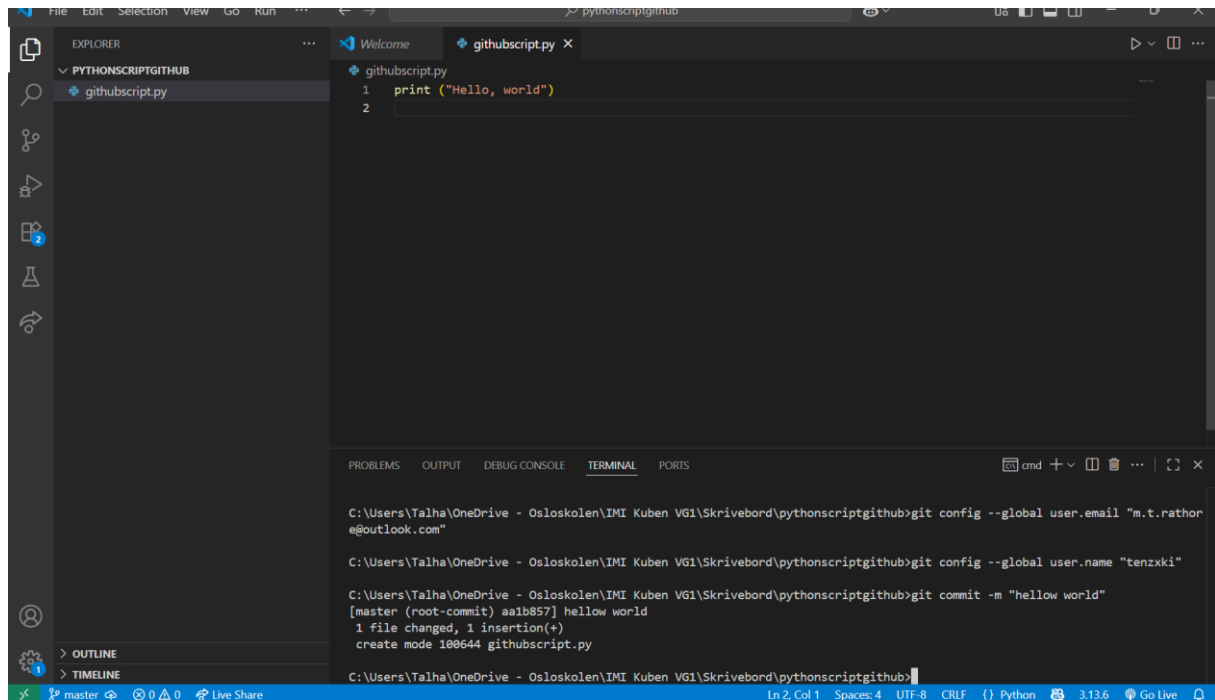


Vi starter med å opprette en mappe og en python fil. Vi kan skrive en basic script som hello world. Etter dette må du åpne en terminal og skrive git init. Slik at du initialiserer en repository som du kan legge til greiene dine i.

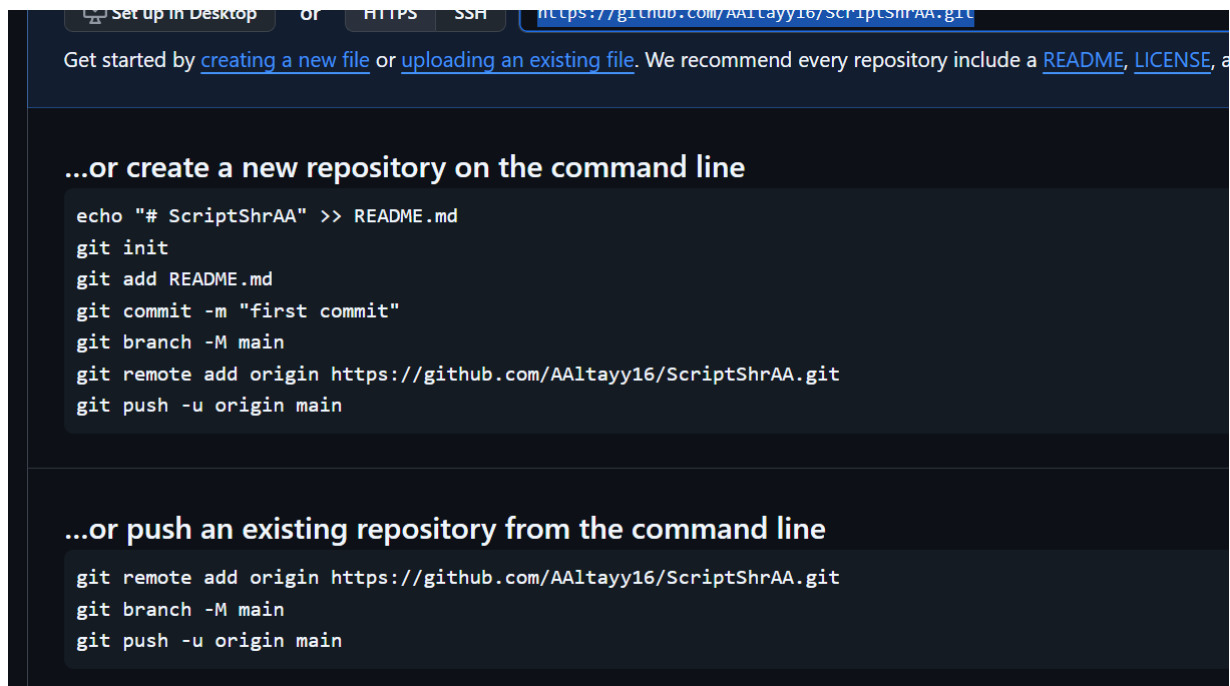


Nå går du inn i github og trykker på pluss tegnet øverst til høyre og trykker create repository. Gi den ett navn også trykker du create. Her skal filene eller mappen være i.



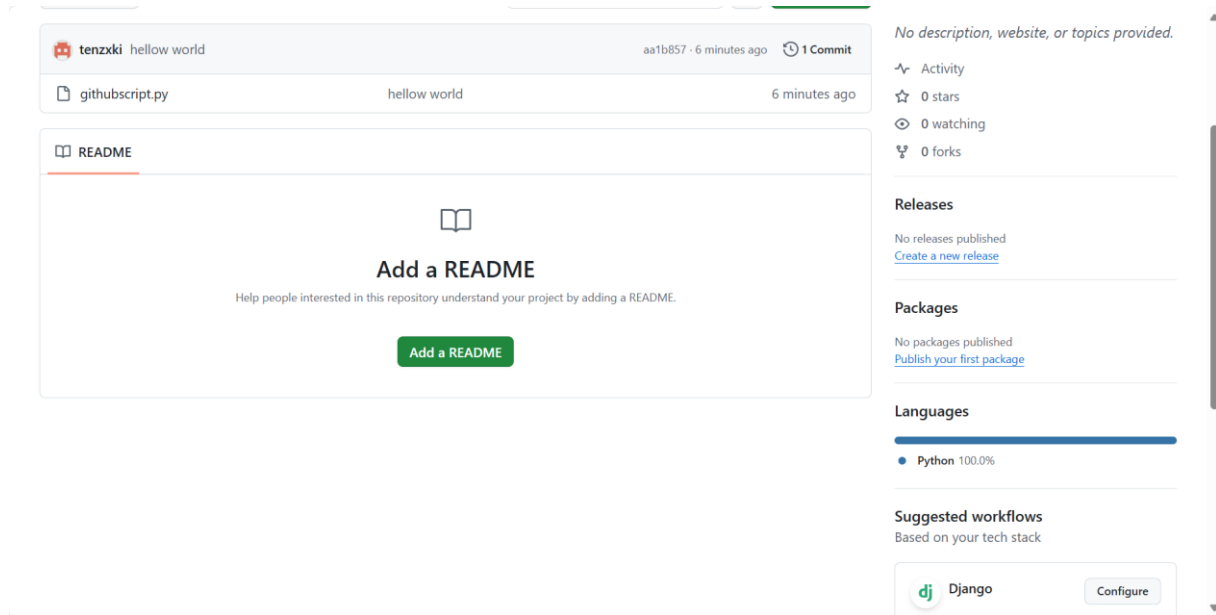


Etter dette må du skrive kommandoene som er i terminalen på bildet ovenfor. Du må deretter skrive inn email og username, og fortsette med å commite filen til github.



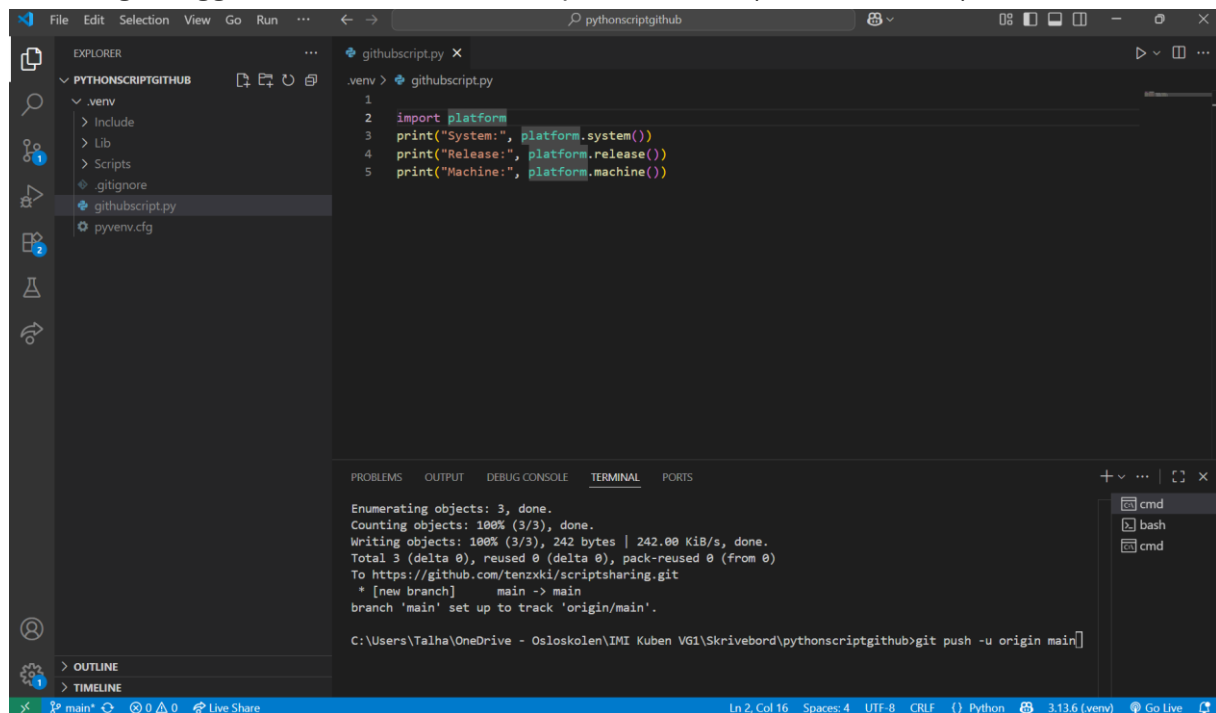
Dette er et bilde over hvordan det skal se ut når du creater en repository. Ved å følge kommandoene over så vil github hjelpe deg å sette opp respository. Etter git commit skriver du git branch, git remode add origin også lenken til repository og git push. Du vil også trenge å logge inn etter å ha skrevet det inn i terminalen. Etter innlogging kan du

åpne side og en repository vil bli klar, med mappen og filene inni.



Dette er sånn siden skal se ut etter kommandoene.

Vi kan også legge til en mer avansert script som dette. (Bilde nedenfor)



Hvis vi fjerner kommandoen hello world også skriver inn dette

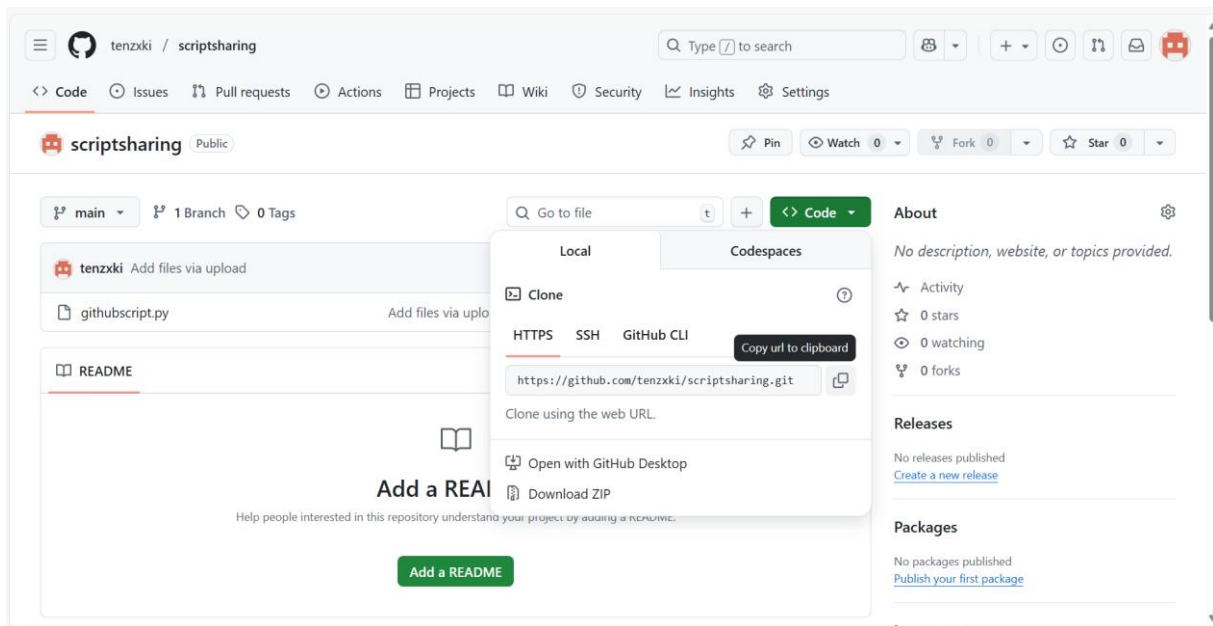
```
import platform

print("System:", platform.system())

print("Release:", platform.release())

print("Machine:", platform.machine())
```

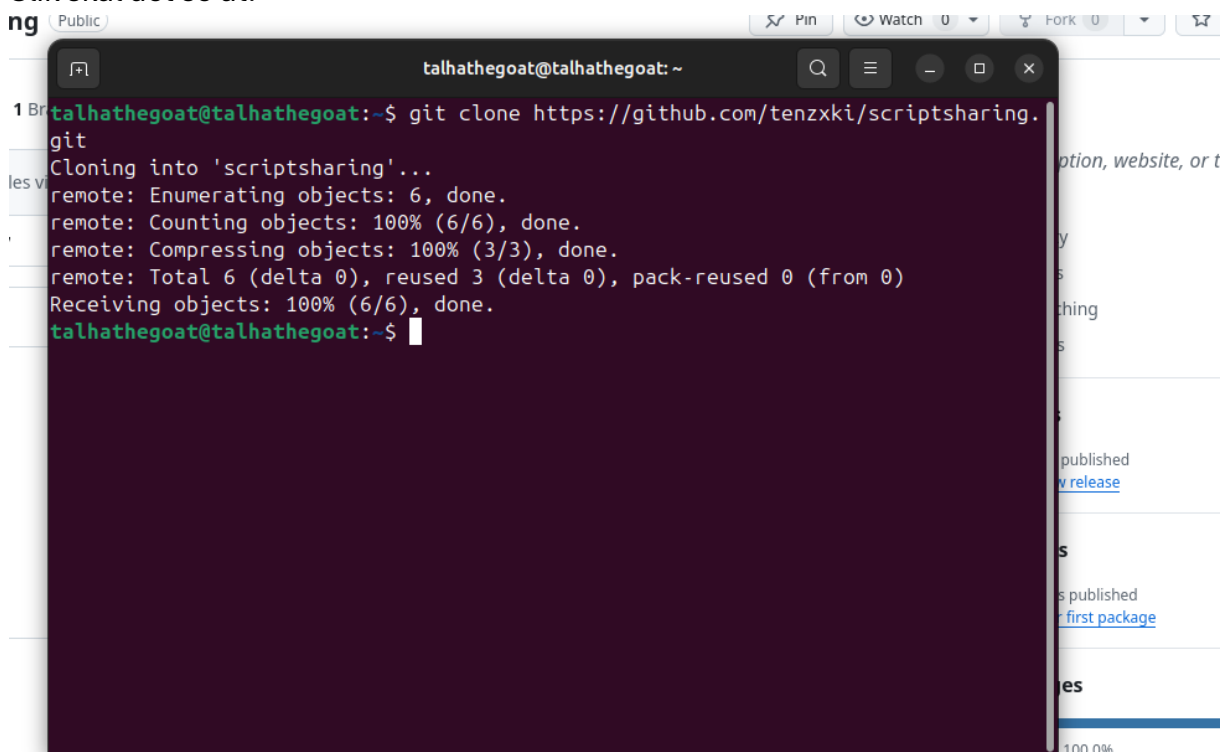
Kan vi få en script som gir oss informasjonen til pien. Men for å få system informasjonen til pien må vi klonere scriptet til pien.



Første du gjør er å åpne github på pien trykke code og kopiere lenken.

Deretter åpner du terminalen og skriver inn kommandoen som står på bilde nedenfor.

Slik skal det se ut:



Skriv git clone også lenken du kopierte. Nå har du klonet scripten. Dette var siste oppgaven vi hadde. Etter dette dokumenterer du alt du har gjort i et word dokument, gjør det til en pdf og uploader filen på github.