

```
student2
  1001(student2) groups=1001(stu
      group labusers
student2
ls -ld labdata
'labdata': No such file or directory
ls -ld .labdata
'.labdata': No such file or directory
ls -ld /labdata
labusers 4096 Aug 30 13:35 /labdata
su -student2
      failure
su student2

/home/admin123$ cd labdata
: Permission denied
/home/admin123$ cd /labdata
: No such file or directory
/home/admin123$ cd /labdata
labdata$ 
labdata$ touch test.txt
+a$ sudo chmod 750 /labdata
student2:
      doers file.
      /labdata
      h test2.txt
      /labdata
      Aug 30 13:40
```



Republic of the  
Philippines  
**Bicol University**  
**POLANGUI CAMPUS**

# WEEK 3

# LAB

# REPORT

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# IT 123 – WEEK 3 LABORATORY

## Lab Objectives

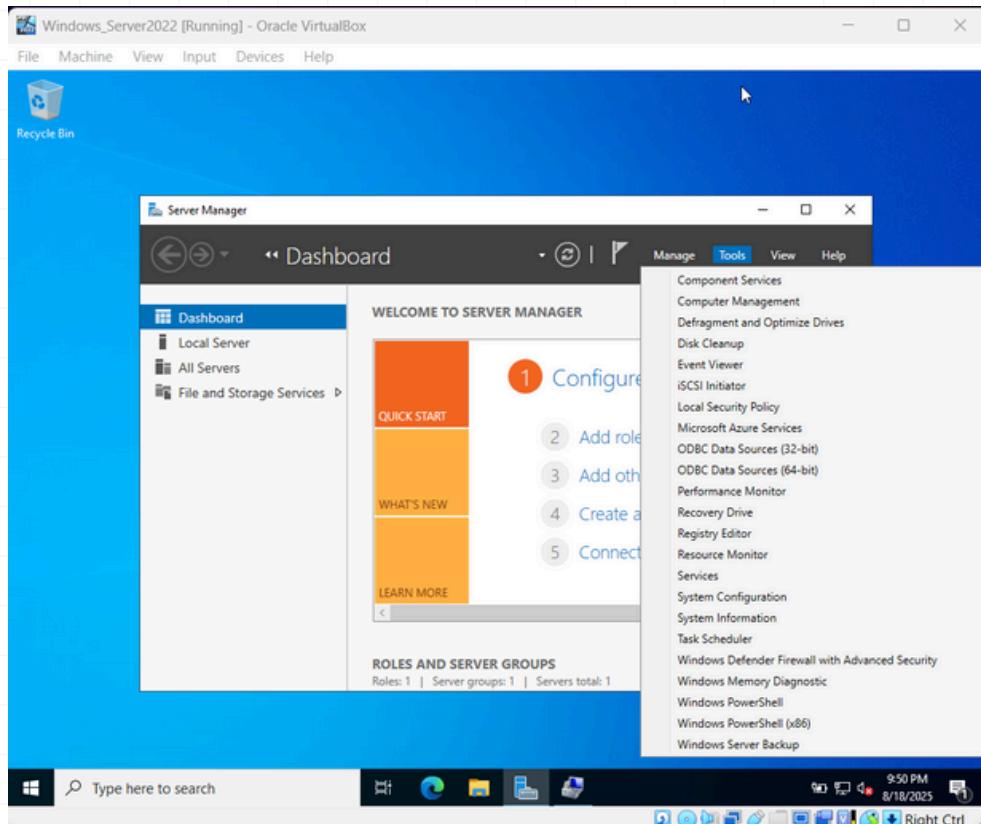
By the end of this lab, students will be able to:

1. Create, modify, and delete user accounts on Windows and Linux.
2. Configure groups and assign users to groups.
3. Apply and test permissions on files and directories.
4. Troubleshoot common user-related issues.

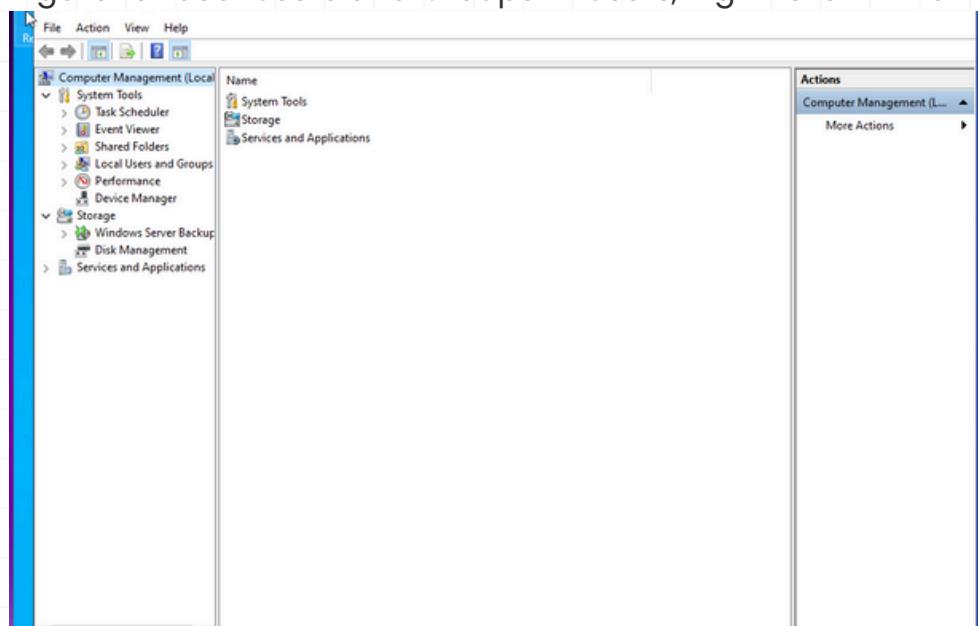
## Part 1 – User & Group Management in Windows Server

### 1. Create a New User

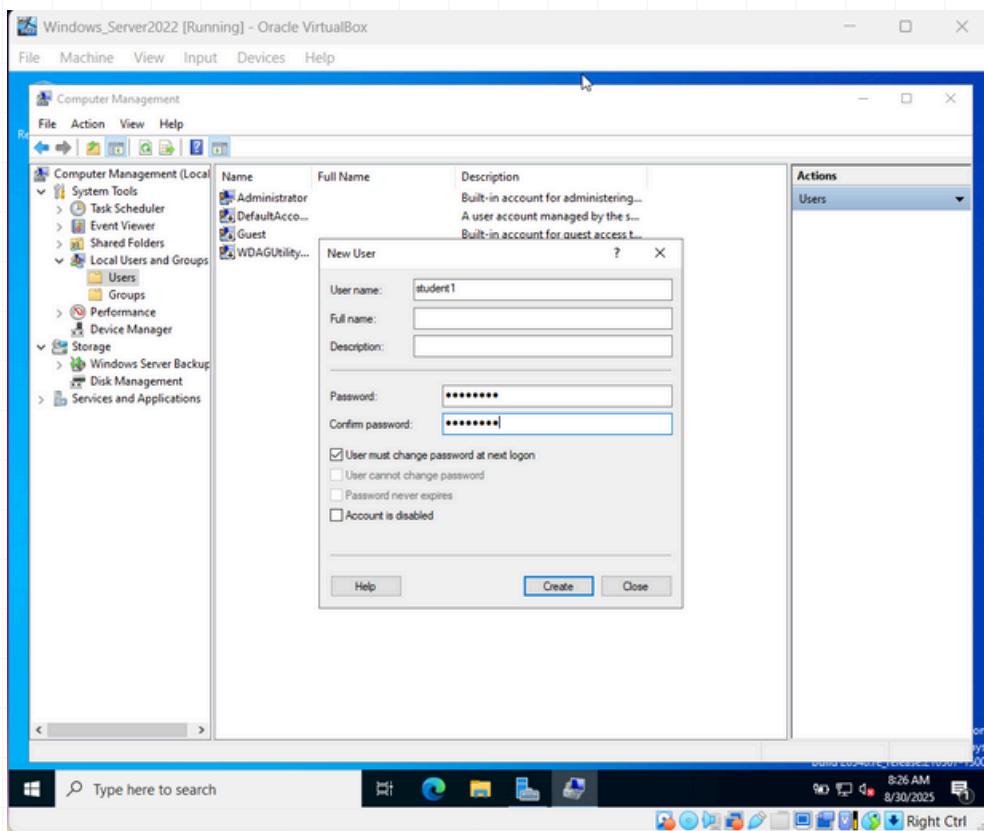
Open Server Manager → Tools → Computer Management



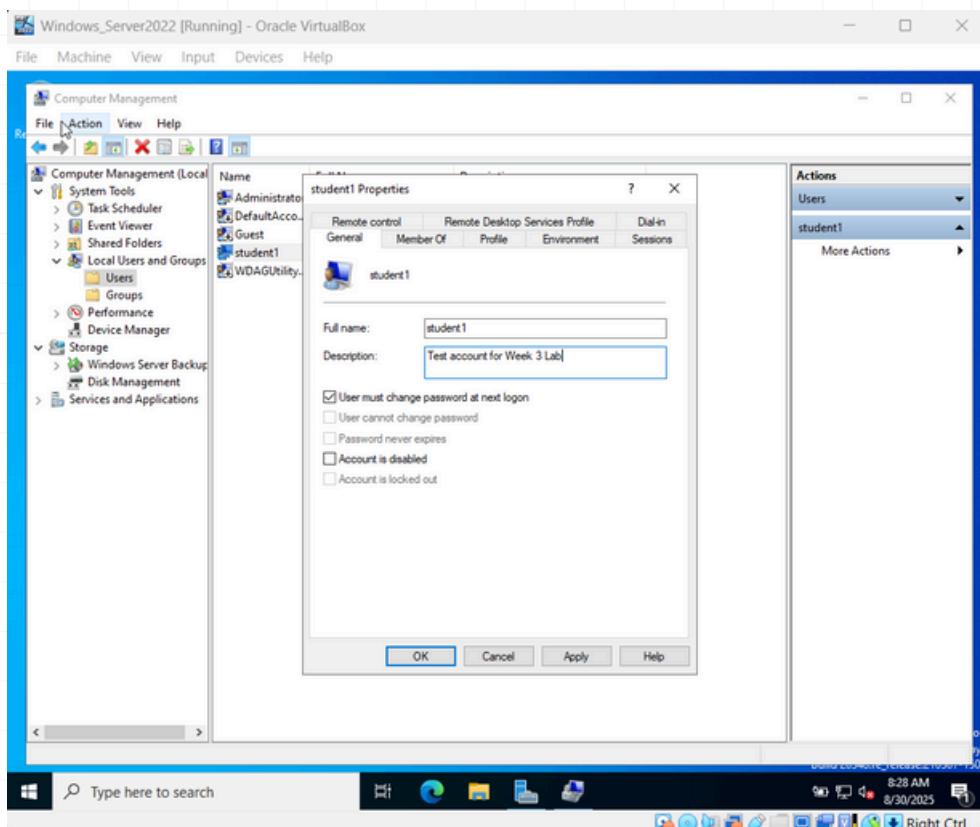
Navigate to Local Users and Groups → Users, Right-click → New User...



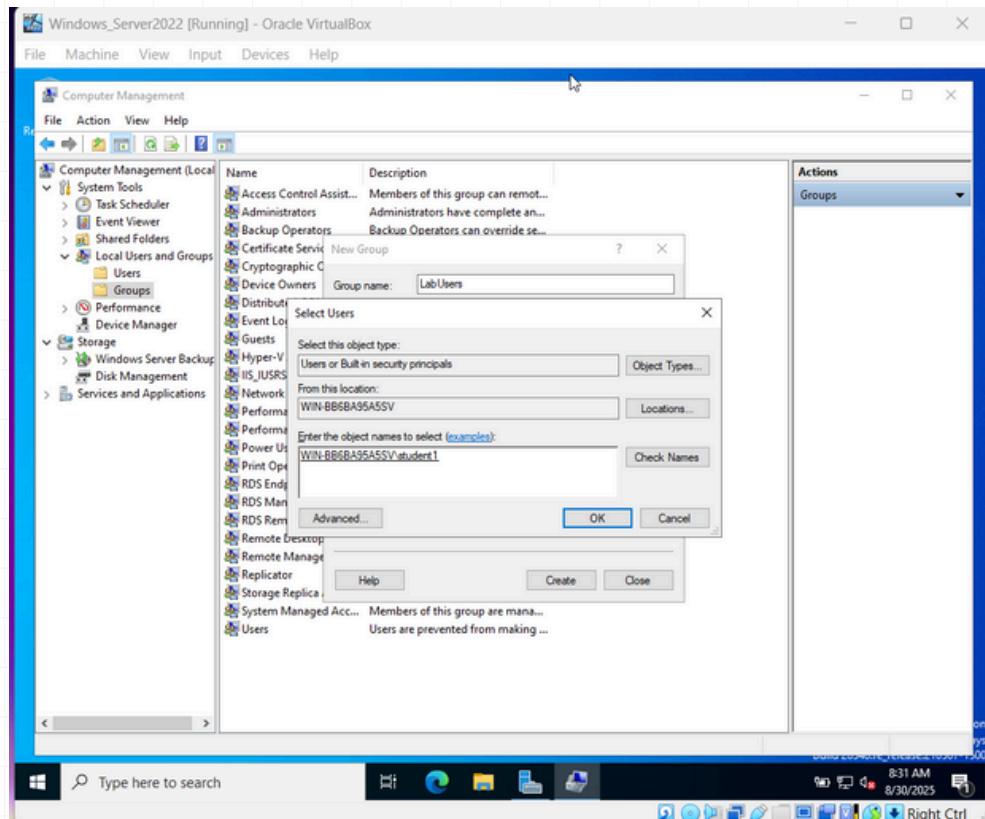
Username: student1, Password: User@123



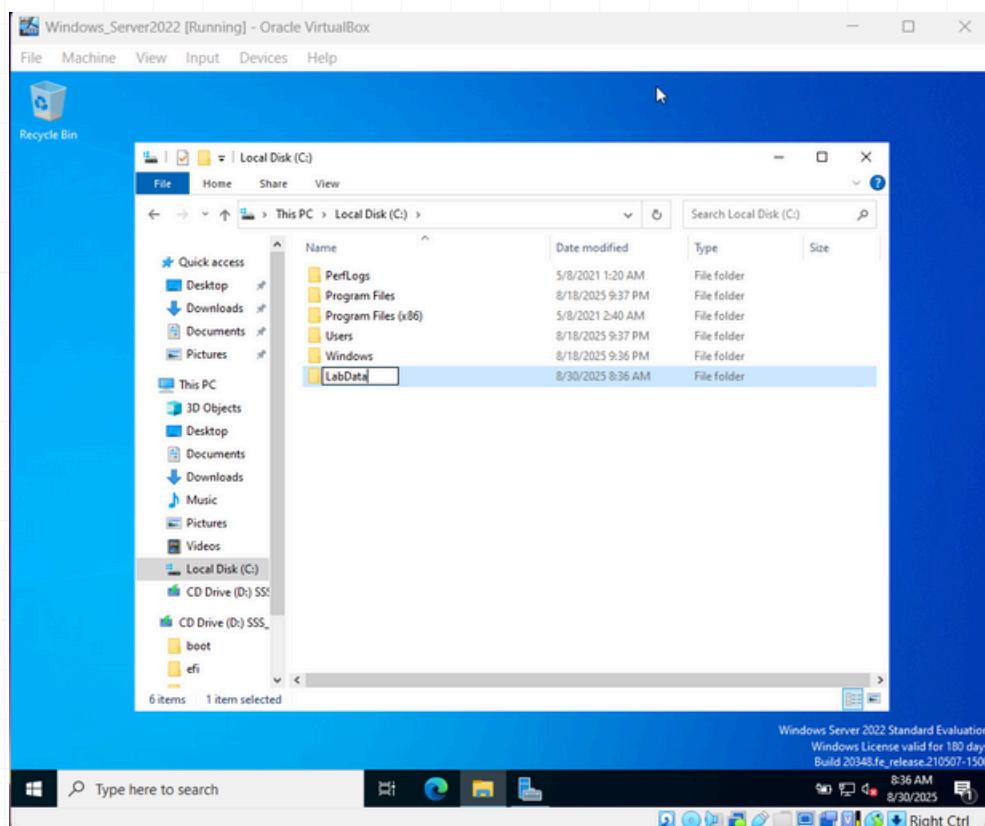
2. Right-click student1 → Properties and add description "Test account for Week 3 Lab". Require password change at next login.



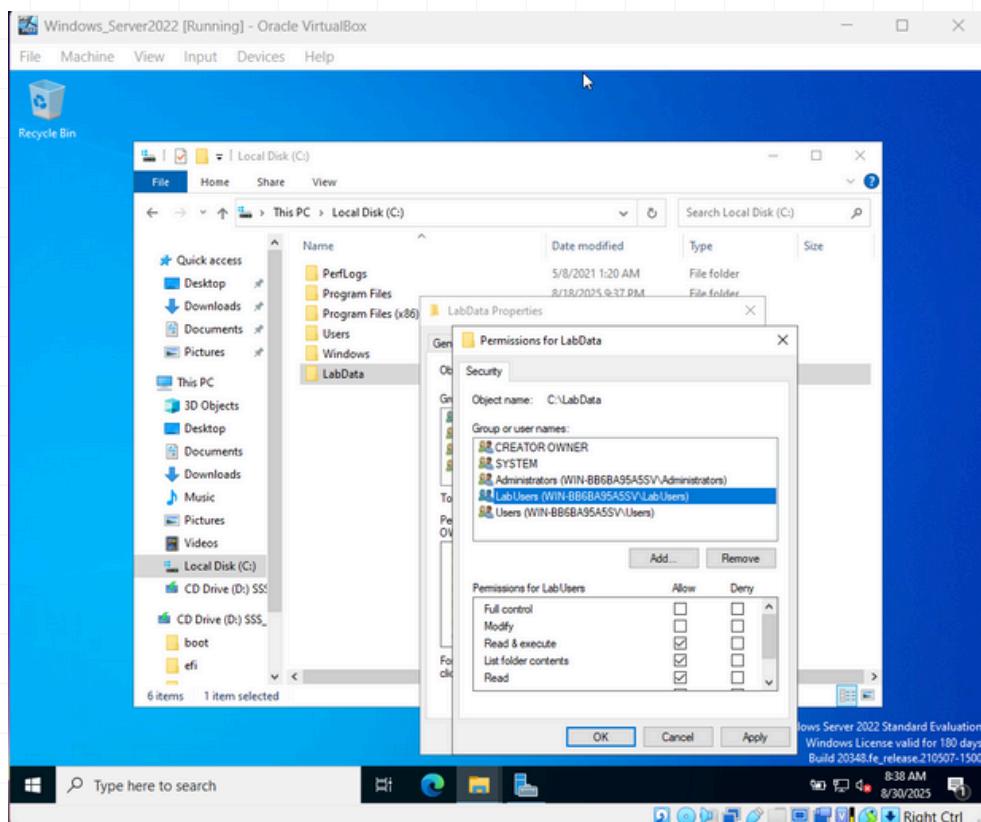
3. Create a group called LabUsers in Windows, go to "Computer Management," then "Local Users and Groups," and click on "Groups." Right-click and select "New Group," name it LabUsers, and click "Create." To add student1, right-click LabUsers, select "Add to Group," type student1, and click "OK."



4. Apply Permissions and create a folder: C:\LabData



Right-click folder → Properties → Security → Add LabUsers → Grant Read & Execute only.



## Part 2 – User & Group Management in Ubuntu Server

1. Create a new user on the system, enter “sudo adduser student2”. This command requires administrative privileges, which is why “sudo” is included. During the process, set a password for the new account, which is User@123. After entering the password, the system will ask for additional details, such as the user's full name and other optional information; users can press Enter to accept the default values for these fields. This straightforward process helps ensure proper user management and access control within the system.

```
Ubuntu_server (Clean Install - Ubuntu Server) [Running] - Oracle VirtualBox
File Machine View Input Device Help
Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

admin123@admin:~$ sudo adduser student2
[sudo] password for admin123:
Sorry, try again.
[sudo] password for admin123:
Sorry, try again.
[sudo] password for admin123:
info: adding user 'student2' ...
info: selecting UID/GID from range 1000 to 59999 ...
info: adding new group 'student2' (1001) ...
info: adding new user 'student2' (1001) with group 'student2' (1001) ...
info: creating home directory '/home/student2' ...
info: copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for student2
Enter the new value, or press ENTER for the default
  Full Name []: Jenny Losantos
  Room Number []: 123
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
info: adding new user 'student2' to supplemental / extra groups 'users' ...
info: adding user 'student2' to group 'users' ...
admin123@admin:~$
```

2. To modify a user account, enter the command sudo usermod -c "Test account for Week 3 Lab" student2. This command updates the user information for student2 by adding a comment that describes the account, in this case, "Test account for Week 3 Lab."

```
Ubuntu_server (Clean Install - Ubuntu Server) [Running] - Oracle VirtualBox
File Machine View Input Device Help
admin123@admin:~$ sudo adduser student2
[sudo] password for admin123:
Sorry, try again.
[sudo] password for admin123:
Sorry, try again.
[sudo] password for admin123:
info: adding user 'student2' ...
info: selecting UID/GID from range 1000 to 59999 ...
info: adding new group 'student2' (1001) ...
info: adding new user 'student2' (1001) with group 'student2' (1001) ...
info: creating home directory '/home/student2' ...
info: copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for student2
Enter the new value, or press ENTER for the default
  Full Name []: Jenny Losantos
  Room Number []: 123
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
info: adding new user 'student2' to supplemental / extra groups 'users' ...
info: adding user 'student2' to group 'users' ...
admin123@admin:~$ sudo usermod -c "Test account for Week 3 Lab" student2
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-1ubuntu1)
  command 'sudo' from deb sudo-ldap (1:9.14p2-1ubuntu1)
Try: sudo apt install 
admin123@admin:~$ sudo usermod -c "Test account for Week 3 Lab" student2
admin123@admin:~$ sudo groupadd labusers
admin123@admin:~$ sudo usermod -aG labusers student2
admin123@admin:~$
```

3. To create a new group, use the command sudo groupadd labusers. This command creates a group named labusers, requiring administrative privileges, which is why "sudo" is included. After creating the group, the next step is to add the user student2 to this group by executing sudo usermod -aG labusers student2. The -aG option appends the user to the specified group without removing them from any other groups they may belong to. This process helps in organizing users and managing permissions effectively within the system.

```
Ubuntu_server (Clean Install - Ubuntu Server) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Sorry, try again.
[sudo] password for admin123:
Sorry, try again.
[sudo] password for admin123:
info: adding user 'student2' ...
info: selecting UID/GID from range 1000 to 59999 ...
info: adding new group 'student2' (1001) ...
info: adding new user 'student2' (1001) with group 'student2' (1001) ...
info: creating directory '/home/student2' ...
info: copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for student2
Enter the new value, or press ENTER for the default
  Full Name []: Jenny Losantas
  Room Number []: 123
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
info: adding new user 'student2' to supplemental / extra groups 'users' ...
info: adding user 'student2' to group 'users' ...
admin123@admin:~$ sudo usermod -c "Test account for Week 3 Lab" student2
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo-lsb (1.9.14p2-ubuntu1)
  command 'sudo' from deb sudo-lsb (1.9.14p2-ubuntu1)
Try: sudo apt install 
admin123@admin:~$ sudo usermod -aG labusers student2
admin123@admin:~$ sudo usermod -aG labusers student2
admin123@admin:~$ sudo chown root:labusers /labdata
admin123@admin:~$ sudo chmod 770 /labdata
admin123@admin:~$
```

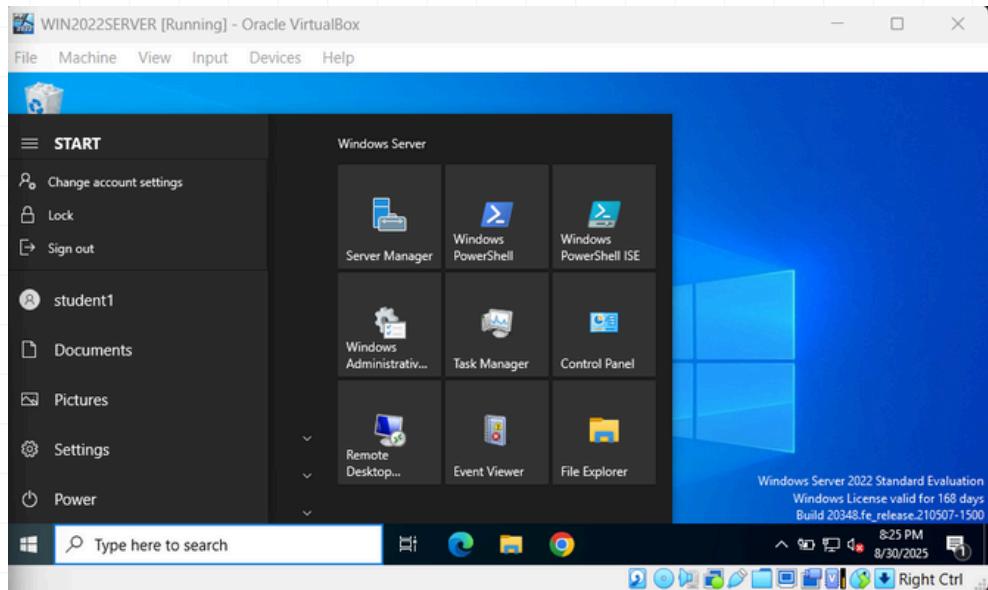
4. To apply permissions for a new directory, first create it with sudo mkdir /labdata. Then, change the ownership to the root user and labusers group using sudo chown root:labusers /labdata. Finally, set the permissions with sudo chmod 770 /labdata, granting read, write, and execute access to the owner and group while denying access to others. This setup ensures secure collaboration among group members.

```
Ubuntu_server (Clean Install - Ubuntu Server) [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Changing the user information for student2
Enter the new value, or press ENTER for the default
  Full Name []: Jenny Losantas
  Room Number []: 123
  Work Phone []:
  Home Phone []:
  Other []:
Is the information correct? [Y/n] y
info: adding new user 'student2' to supplemental / extra groups 'users' ...
info: adding user 'student2' to group 'users' ...
admin123@admin:~$ sudo usermod -c "Test account for Week 3 Lab" student2
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1.9.14p2-ubuntu1)
  command 'sudo' from deb sudo-lsb (1.9.14p2-ubuntu1)
Try: sudo apt install 
admin123@admin:~$ sudo usermod -aG labusers student2
admin123@admin:~$ sudo usermod -aG labusers student2
admin123@admin:~$ sudo chown root:labusers /labdata
admin123@admin:~$ sudo chmod 770 /labdata
admin123@admin:~$ su - student2
Password:
su: Authentication failure
admin123@admin:~$ id student2
uid=1002(student2) gid=1001(student2) groups=1001(student2),100(users),1002(labusers)
admin123@admin:~$ id -g student2
labusers:x:1002:student2
admin123@admin:~$ ls -ld labdata
ls: cannot access 'labdata': No such file or directory
admin123@admin:~$ ls -ld ./labdata
ls: cannot access './labdata': No such file or directory
admin123@admin:~$ ls -ld /labdata
drwxrwx--- 2 root labusers 4096 Aug 30 13:35 /labdata
admin123@admin:~$
```

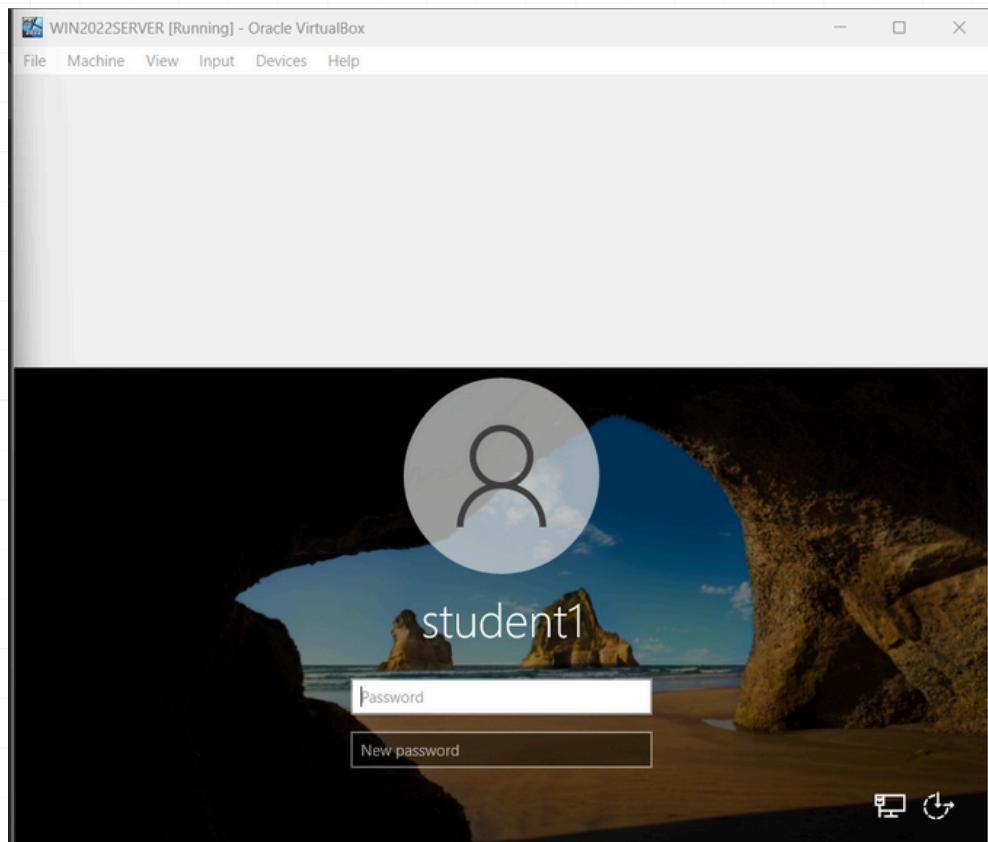
## Part 3 – Verification & Troubleshooting

### 1. Windows

Log out and log in as student1.



Require password change at next login.



## 2. Linux

- To switch to the user student2, use the command su - student2, which provides access to that user's environment. Once switched, you can access the directory /labdata and create a file with touch testfile.txt, which should succeed since student2 is part of the labusers group. After that, remove write permission from the directory using sudo chmod 750 /labdata. Attempting to create the file again will result in a permission denied error, confirming that write access has been restricted.

```
Ubuntu_server [Clean Install - Ubuntu Server] [Running] - Oracle VirtualBox
File Machine View Input Devices Help
admin123@ubuntu:~$ sudo usermod -c "Test account for Week 3 Lab" student2
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-1ubuntu1)
  command 'sudo' from deb sudo-ldap (1:9.14p2-1ubuntu1)
Try: sudo apt install <deb name>
admin123@ubuntu:~$ sudo usermod -c "Test account for Week 3 Lab" student2
admin123@ubuntu:~$ sudo groupadd labusers
admin123@ubuntu:~$ sudo usermod -gG labusers student2
admin123@ubuntu:~$ sudo mkdir /labdata
admin123@ubuntu:~$ sudo chown root:labusers /labdata
admin123@ubuntu:~$ sudo chmod 770 /labdata
admin123@ubuntu:~$ su -student2
Password:
su: Authentication failure
admin123@ubuntu:~$ id student2
uid=1001(student2) gid=1001(student2) groups=1001(student2),100(users),1002(labusers)
labusers:x:1002:student2
admin123@ubuntu:~$ ls -ld labdata
ls: cannot access 'labdata': No such file or directory
admin123@ubuntu:~$ ls -ld .labdata
ls: cannot access '.labdata': No such file or directory
drwxrwx--- 2 root labusers 4096 Aug 30 13:35 /labdata
admin123@ubuntu:~$ su -student2
Password:
su: Authentication failure
admin123@ubuntu:~$ su student2
Password:
student2@ubuntu:~$ cd /labdata
student2@ubuntu:~/labdata$ Permission denied
student2@ubuntu:~/labdata$ bash: cd: /labdata: No such file or directory
student2@ubuntu:~/labdata$ cd /labdata
student2@ubuntu:~/labdata$ <
```

```
Ubuntu_server [Clean Install - Ubuntu Server] [Running] - Oracle VirtualBox
File Machine View Input Devices Help
admin123@ubuntu:~$ sudo usermod -gG labusers student2
admin123@ubuntu:~$ sudo mkdir /labdata
admin123@ubuntu:~$ sudo chown root:labusers /labdata
admin123@ubuntu:~$ sudo chmod 770 /labdata
admin123@ubuntu:~$ su -student2
Password:
su: Authentication failure
admin123@ubuntu:~$ id student2
uid=1001(student2) gid=1001(student2) groups=1001(student2),100(users),1002(labusers)
labusers:x:1002:student2
admin123@ubuntu:~$ ls -ld labdata
ls: cannot access 'labdata': No such file or directory
admin123@ubuntu:~$ ls -ld .labdata
ls: cannot access '.labdata': No such file or directory
drwxrwx--- 2 root labusers 4096 Aug 30 13:35 /labdata
admin123@ubuntu:~$ su -student2
Password:
student2@ubuntu:~$ touch test.txt
student2@ubuntu:~$ sudo chmod 750 /labdata
student2@ubuntu:~$ (sudo password for student2:
student2 is not in the sudoers file.
student2 must use sudo to run this command)
student2@ubuntu:~$ cd /labdata
student2@ubuntu:~/labdata$ touch test2.txt
student2@ubuntu:~/labdata$ <
```

```

Ubuntu_server [Clean Install - Ubuntu Server] [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
admin123@admin:~$ sudo chown root:labusers /labdata
admin123@admin:~$ sudo chmod 770 /labdata
admin123@admin:~$ su -student2
Password:
su: Authentication failure
admin123@admin:~$ ls -l labdata
ls: cannot access 'labdata': No such file or directory
admin123@admin:~$ is -l .labdata
ls: cannot access '.labdata': No such file or directory
admin123@admin:~$ ls -l /labdata
drwxrwx--- 2 root labusers 4096 Aug 30 13:35 /labdata
admin123@admin:~$ su -student2
Password:
su: Authentication failure
admin123@admin:~$ su student2
Password:
student2@admin:/home/admin123$ cd labdata
bash: cd: labdata: Permission denied
student2@admin:/home/admin123$ cd /labdata
bash: cd: /labdata: No such file or directory
student2@admin:/home/admin123$ cd /labdata
student2@admin:~/labdata$ touch test.txt
student2@admin:~/labdata$ sudo chmod 750 /labdata
(sudo) password for student2:
student2 is not in the sudoers file.
student2@admin:~/labdata$ cd /labdata
student2@admin:~/labdata$ touch test2.txt
student2@admin:~/labdata$ ls -l /labdata
drwxrwx--- 2 root labusers 4096 Aug 30 13:49 /labdata
student2@admin:~/labdata$ 

```

## Part 4 – Exercise for Students

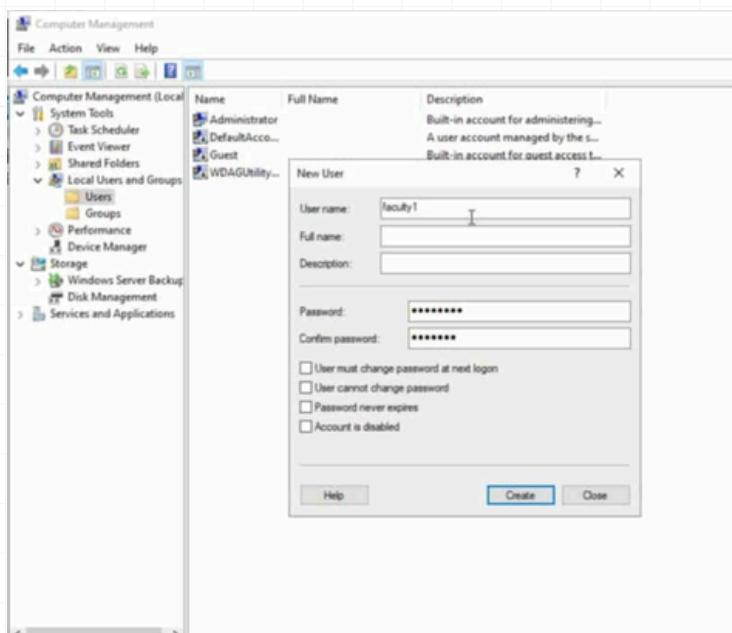
### Scenario:

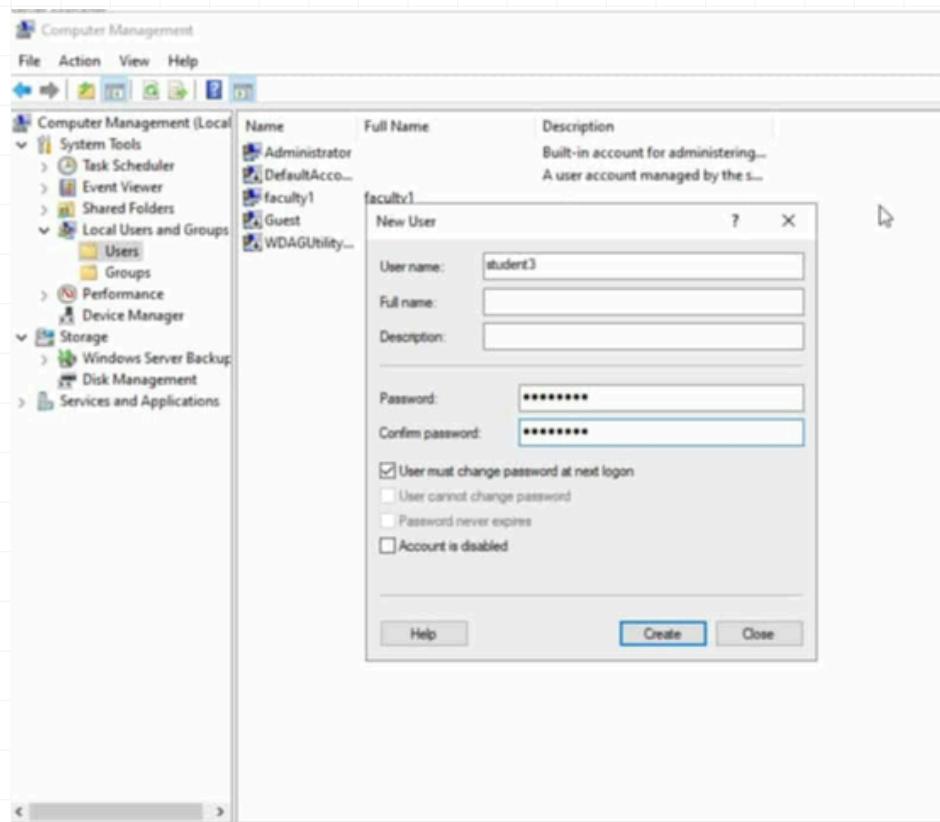
You are the newly appointed system administrator of a university lab. You need to prepare both Windows and Linux servers so that different groups of users (faculty and students) have proper access.

### Exercise Tasks:

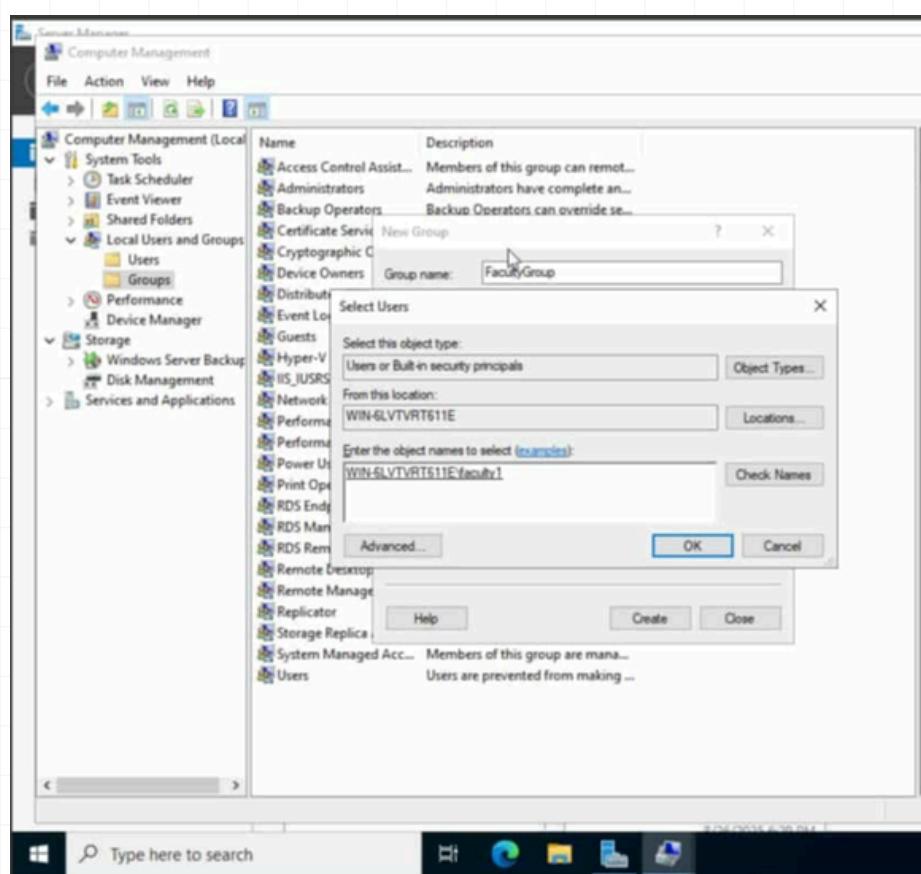
#### 1. On Windows Server:

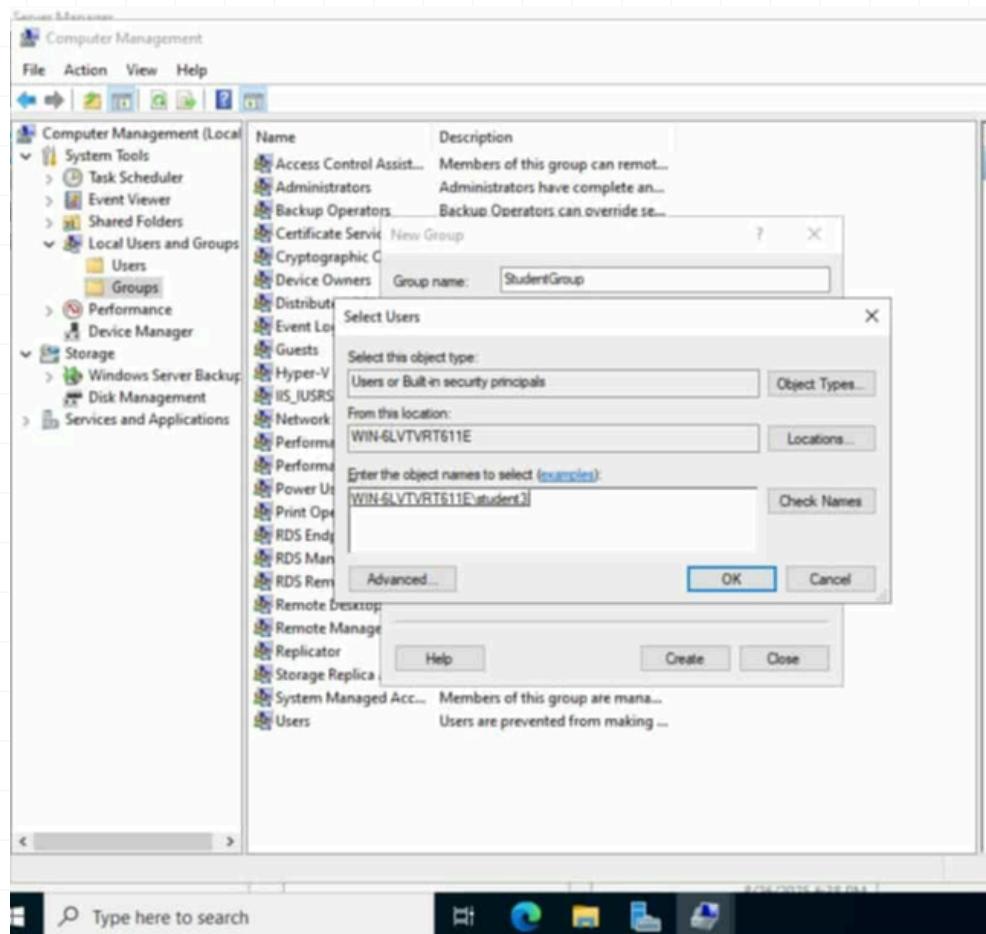
Create two users: faculty1, student3 and password



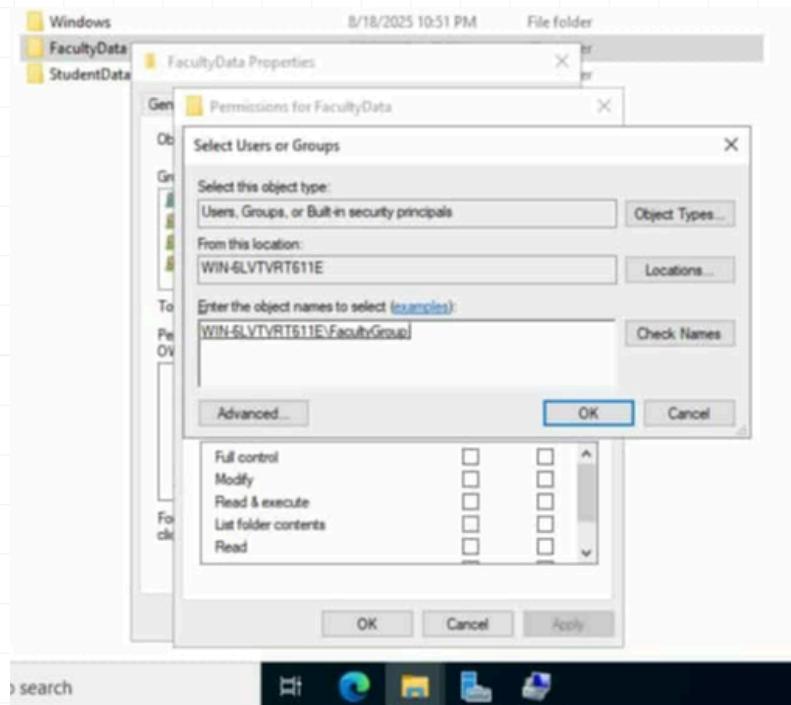


Create two groups: FacultyGroup, StudentGroup and assign each user to their respective group.

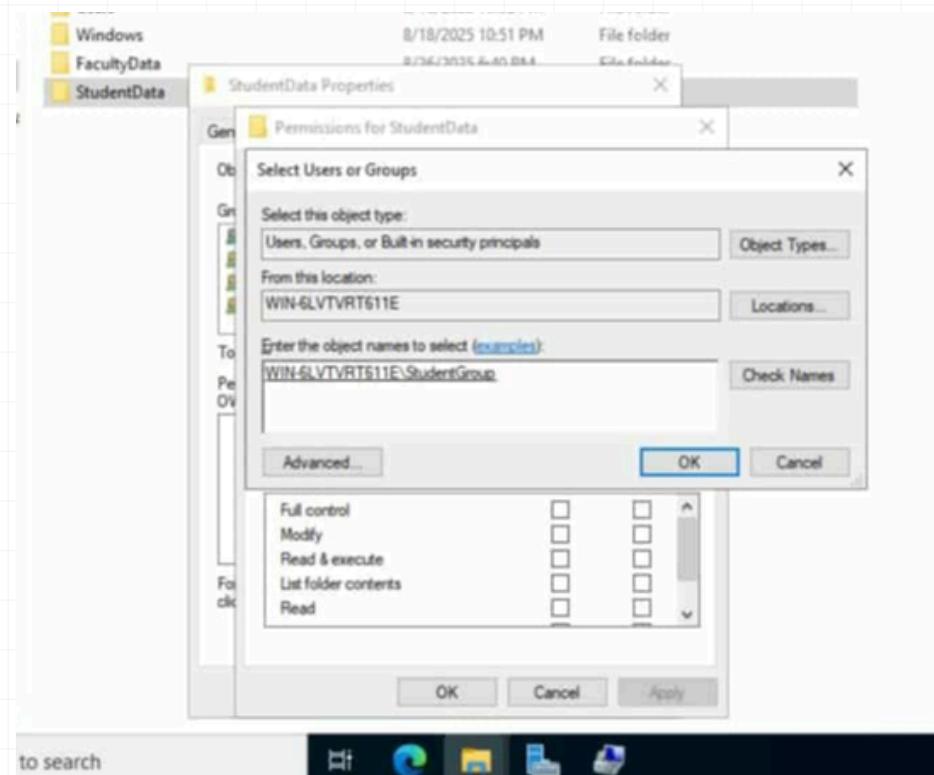




C:\FacultyData → Only FacultyGroup has Modify rights.

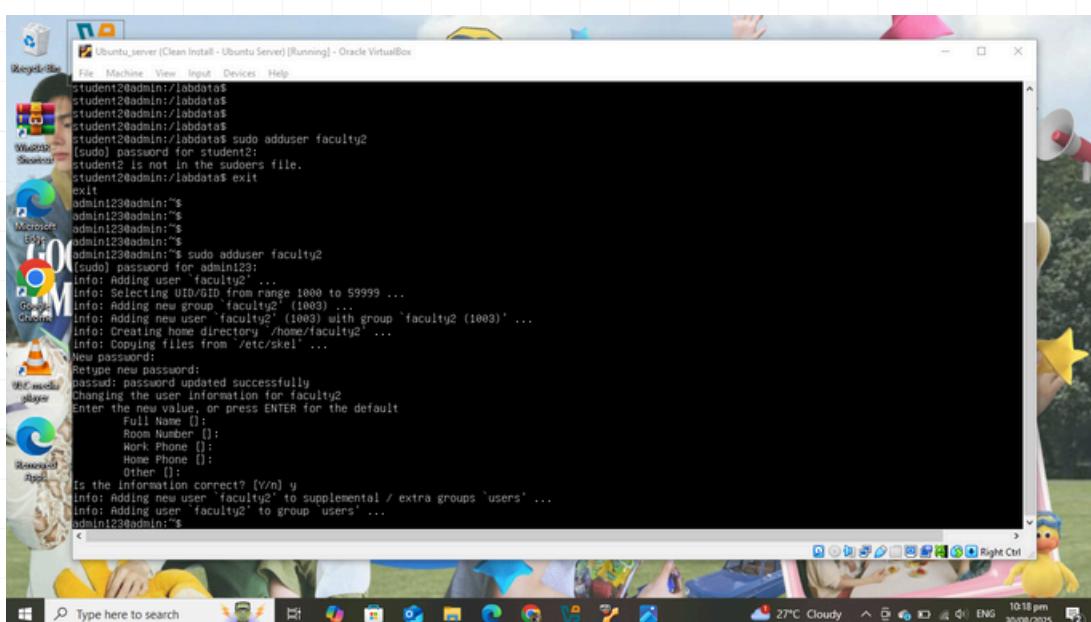


C:\StudentData → Only StudentGroup has Read rights.



## 2. On Ubuntu Server:

Create the users faculty2 and student4, use the commands sudo useradd faculty2 and sudo useradd student4. This will add both users to the system.

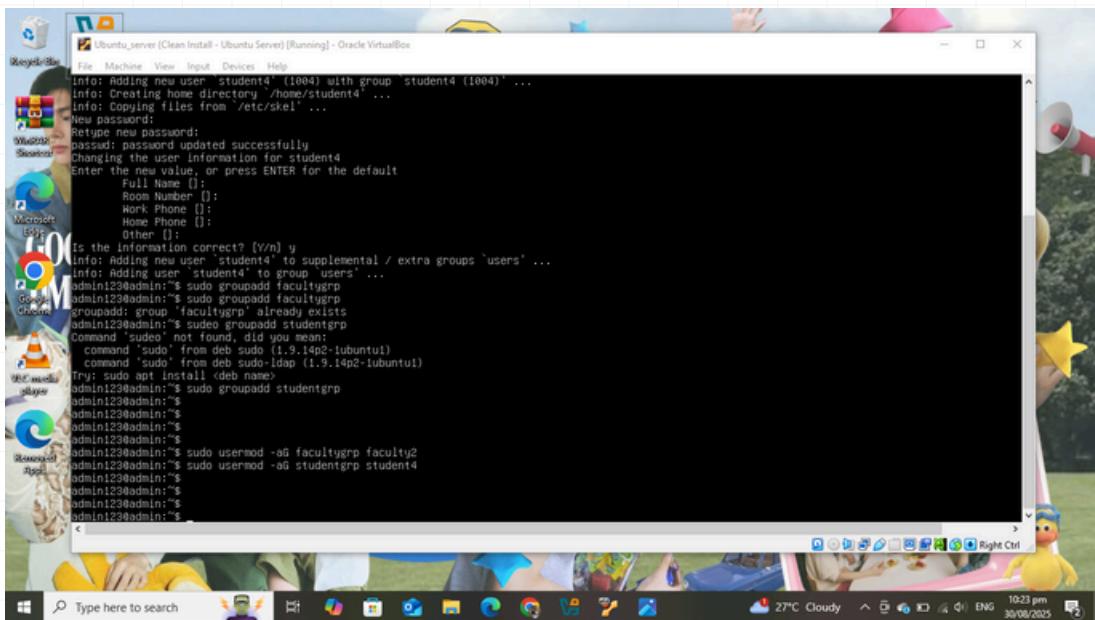


```
File Machine View Input Devices Help
Info: Copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for faculty2
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []
Is the information correct? [Y/n] y
info: Adding new user 'faculty2' to supplemental / extra groups 'users' ...
info: Adding user 'faculty2' to group 'users' ...
admin123@admin:~$ sudo adduser student4
Info: Adding user 'student4' ...
Info: Selecting UID/GID from range 1000 to 59999 ...
Info: Adding new group 'student4' (1004)
Info: Adding new user 'student4' (1004) with group 'student4' (1004) ...
Info: Creating home directory '/home/student4' ...
Info: Copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for student4
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []
Is the information correct? [Y/n] y
info: Adding new user 'student4' to supplemental / extra groups 'users' ...
info: Adding user 'student4' to group 'users' ...
admin123@admin:~$
```

Next, to create the groups `facultygrp` and `studentgrp`, use the commands `sudo groupadd facultygrp` and `sudo groupadd studentgrp`, effectively establishing the groups for faculty and students.

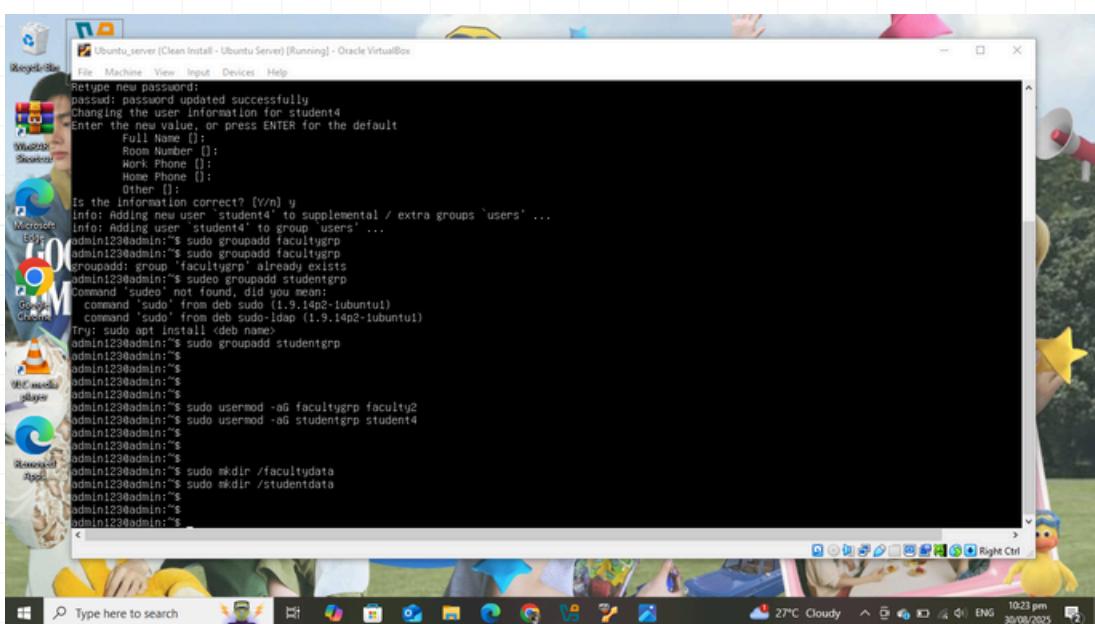
```
File Machine View Input Devices Help
Info: Adding user 'faculty2' to group 'users' ...
admin123@admin:~$ sudo adduser student4
Info: Adding user 'student4' ...
Info: Selecting UID/GID from range 1000 to 59999 ...
Info: Adding new group 'student4' (1004)
Info: Adding new user 'student4' (1004) with group 'student4' (1004) ...
Info: Creating home directory '/home/student4' ...
Info: Copying files from '/etc/skel' ...
New password:
Retype new password:
password: password updated successfully
Changing the user information for student4
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []
Is the information correct? [Y/n] y
Info: Adding new user 'student4' to supplemental / extra groups 'users' ...
Info: Adding user 'student4' to group 'users' ...
admin123@admin:~$ sudo groupadd facultygrp
admin123@admin:~$ sudo groupadd facultygrp
groupadd: group 'facultygrp' already exists
admin123@admin:~$ sudo groupadd studentgrp
Command 'sudo' not found, did you mean:
    command 'sudo' from deb sudo (1:9.14p2-1ubuntu1)
    command 'sudo' from deb sudo-lsb (1:9.14p2-1ubuntu1)
Try: sudo apt install <deb name>
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
```

After creating the users and groups, assign each user to their respective group by executing sudo usermod -aG facultygrp faculty2 for the faculty user and sudo usermod -aG studentgrp student4 for the student user. This ensures that faculty2 is part of facultygrp and student4 is part of studentgrp.



```
Ubuntu_server [Clean Install - Ubuntu Server] [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Info: Adding new user 'student4' (1004) with group 'student4' (1004)
Info: Creating home directory '/home/student4'...
Info: Copying files from '/etc/skel'...
Retype new password:
password: password updated successfully
Changing the user information for student4
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
Info: Adding new user 'student4' to supplemental / extra groups 'users'...
admin123@admin:~$ sudo groupadd facultygrp
admin123@admin:~$ sudo groupadd facultygrp
groupadd: group `facultygrp' already exists
admin123@admin:~$ sudo groupadd studentgrp
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-1ubuntu1)
  command 'sudo' from deb sudo-ldap (1:9.14p2-1ubuntu1)
Try: sudo apt install <deb name>
admin123@admin:~$ sudo groupadd studentgrp
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ sudo usermod -aG facultygrp faculty2
admin123@admin:~$ sudo usermod -aG studentgrp student4
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
```

Next, create the directories /facultydata and /studentdata using the commands sudo mkdir /facultydata and sudo mkdir /studentdata. This will set up the necessary directories for faculty and student data.



```
Ubuntu_server [Clean Install - Ubuntu Server] [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Retype new password:
password: password updated successfully
Changing the user information for student4
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the Information correct? [Y/n] y
Info: Adding new user 'student4' to supplemental / extra groups 'users'...
admin123@admin:~$ sudo groupadd facultygrp
admin123@admin:~$ sudo groupadd facultygrp
groupadd: group `facultygrp' already exists
admin123@admin:~$ sudo groupadd studentgrp
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-1ubuntu1)
  command 'sudo' from deb sudo-ldap (1:9.14p2-1ubuntu1)
Try: sudo apt install <deb name>
admin123@admin:~$ sudo groupadd studentgrp
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ sudo usermod -aG facultygrp faculty2
admin123@admin:~$ sudo usermod -aG studentgrp student4
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ sudo mkdir /facultydata
admin123@admin:~$ sudo mkdir /studentdata
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
```

Finally, set the permissions for these directories by running sudo chown :facultygrp /facultydata followed by sudo chmod 770 /facultydata to grant only facultygrp read/write permissions. For /studentdata, use sudo chown :studentgrp /studentdata and sudo chmod 750 /studentdata to allow studentgrp read-only access.

```
Changing the user information for student4
Enter the new value, or press ENTER for the default
  Full Name []:
  Room Number []:
  Work Phone []:
  Home Phone []:
  Other []

Is the information correct? [y/n] y
Info: Adding new user 'student4' to supplemental / extra groups 'users' ...
Info: Adding user 'student4' to group 'users' ...
admin123@ubuntu:~$ sudo groupadd facultygrp
admin123@ubuntu:~$ sudo groupadd studentgrp
groupadd: group `facultygrp' already exists
admin123@ubuntu:~$ sudo groupadd studentgrp
command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-ubuntu1)
Try: sudo apt install 
admin123@ubuntu:~$ sudo groupadd studentgrp
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo usermod -aG facultygrp faculty2
admin123@ubuntu:~$ sudo usermod -aG studentgrp student4
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo mkdir /facultydata
admin123@ubuntu:~$ sudo mkdir /studentdata
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo chown root:facultygrp /facultydata
admin123@ubuntu:~$ sudo chown root:studentgrp /studentdata
admin123@ubuntu:~$ .
```

```
Command 'sudo' not found, did you mean:
  command 'sudo' from deb sudo (1:9.14p2-ubuntu1)
  command 'sudo' from deb sudo-ldap (1:9.14p2-ubuntu1)
Try: sudo apt install 
admin123@ubuntu:~$ sudo groupadd studentgrp
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo usermod -aG facultygrp faculty2
admin123@ubuntu:~$ sudo usermod -aG studentgrp student4
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo mkdir /facultydata
admin123@ubuntu:~$ sudo mkdir /studentdata
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ sudo chown root:facultygrp /facultydata
admin123@ubuntu:~$ sudo chown root:studentgrp /studentdata
admin123@ubuntu:~$ 
admin123@ubuntu:~$ ls -ld /facultydata /studentdata
drwxr-x--- 2 root facultygrp 4096 Aug 30 14:23 /facultydata
drwxr-x--- 2 root studentgrp 4096 Aug 30 14:23 /studentdata
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ ls -ld faculty2
ls: cannot access faculty2: No such file or directory
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ id faculty2
uid=1003(faculty2) gid=1003(faculty2) groups=1003(faculty2),100(users),1005(facultygrp)
admin123@ubuntu:~$ 
admin123@ubuntu:~$ 
admin123@ubuntu:~$ id student4
uid=1004(student4) gid=1004(student4) groups=1004(student4),100(users),1005(facultygrp)
admin123@ubuntu:~$ .
```

```
Try: sudo apt install <deb name>
admin123@admin:~$ sudo groupadd studentgrp
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ sudo usermod -aG facultygrp faculty2
admin123@admin:~$ sudo usermod -aG studentgrp student4
admin123@admin:~$ 
admin123@admin:~$ 
admin123@admin:~$ sudo mkdir /facultydata
admin123@admin:~$ sudo mkdir /studentdata
admin123@admin:~$ 
admin123@admin:~$ sudo chown root:facultygrp /facultydata
admin123@admin:~$ sudo chown root:studentgrp /studentdata
admin123@admin:~$ 
admin123@admin:~$ sudo chmod 770 /facultydata
admin123@admin:~$ sudo chmod 750 /studentdata
admin123@admin:~$ 
admin123@admin:~$ ls -ld /facultydata /studentdata
drwxr-x--- 2 root facultygrp 4096 Aug 30 14:23 /facultydata
drwxr-x--- 2 root studentgrp 4096 Aug 30 14:23 /studentdata
admin123@admin:~$ 
admin123@admin:~$ id faculty2
uid=1003(faculty2) gid=1003(faculty2) groups=1003(faculty2),100(users),1005(facultygrp)
admin123@admin:~$ 
admin123@admin:~$ id student4
uid=1004(student4) gid=1004(student4) groups=1004(student4),100(users),1006(studentgrp)
admin123@admin:~$ 
admin123@admin:~$
```

To test the setup, log in as faculty2 and student4 to verify their access permissions.

- First, log in as faculty2. Once logged in, try to create a file in /facultydata using the command touch /facultydata/testfile.txt. This should succeed, confirming that faculty2 has read/write access. Next, attempt to create a file in /studentdata using touch /studentdata/testfile.txt. This should fail with a permission denied error, indicating that faculty2 does not have access to the student directory.

```
admin123@admin:~$ id student4
uid=1004(student4) gid=1004(student4) groups=1004(student4),100(users),1006(studentgrp)
admin123@admin:~$ 
admin123@admin:~$ su faculty2
Password:
faculty2@admin:/home/admin123$ cd /facultydata
faculty2@admin:/facultydata$ touch file1.txt
faculty2@admin:/facultydata$ cs /studentdata
Command 'cs' not found, but can be installed with:
apt install csound
Please ask your administrator.
faculty2@admin:/facultydata$ cd /studentdata
bash: cd: /studentdata: Permission denied
faculty2@admin:/facultydata$ ls
file1.txt
faculty2@admin:/facultydata$ touch file2.txt
faculty2@admin:/facultydata$ 
faculty2@admin:/facultydata$ 
faculty2@admin:/facultydata$ 
faculty2@admin:/facultydata$ exit
exit
admin123@admin:~$ su student4
Password:
student4@admin:/home/admin123$ cd /studentdata
student4@admin:/studentdata$ ls
student4@admin:/studentdata$ touch file3.txt
touch: cannot touch 'file3.txt': Permission denied
student4@admin:/studentdata$ cd /facultydata
bash: cd: /facultydata: Permission denied
student4@admin:/studentdata$ 
student4@admin:/studentdata$ 
student4@admin:/studentdata$
```

- Next, log in as student4. Try to create a file in /studentdata using the command touch /studentdata/testfile.txt. This should succeed, confirming that student4 has read access. Then, attempt to create a file in /facultydata using touch /facultydata/testfile.txt, which should fail with a permission denied error, showing that student4 does not have access to the faculty directory.