

**CPSC 2710**  
**Software Construction**

**Chapter1: System Installation**  
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**AUBURN**  
UNIVERSITY

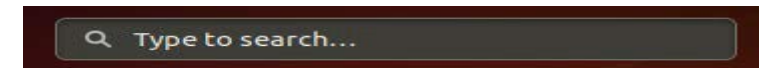
SAMUEL GINN  
COLLEGE OF ENGINEERING

# Overview--Login

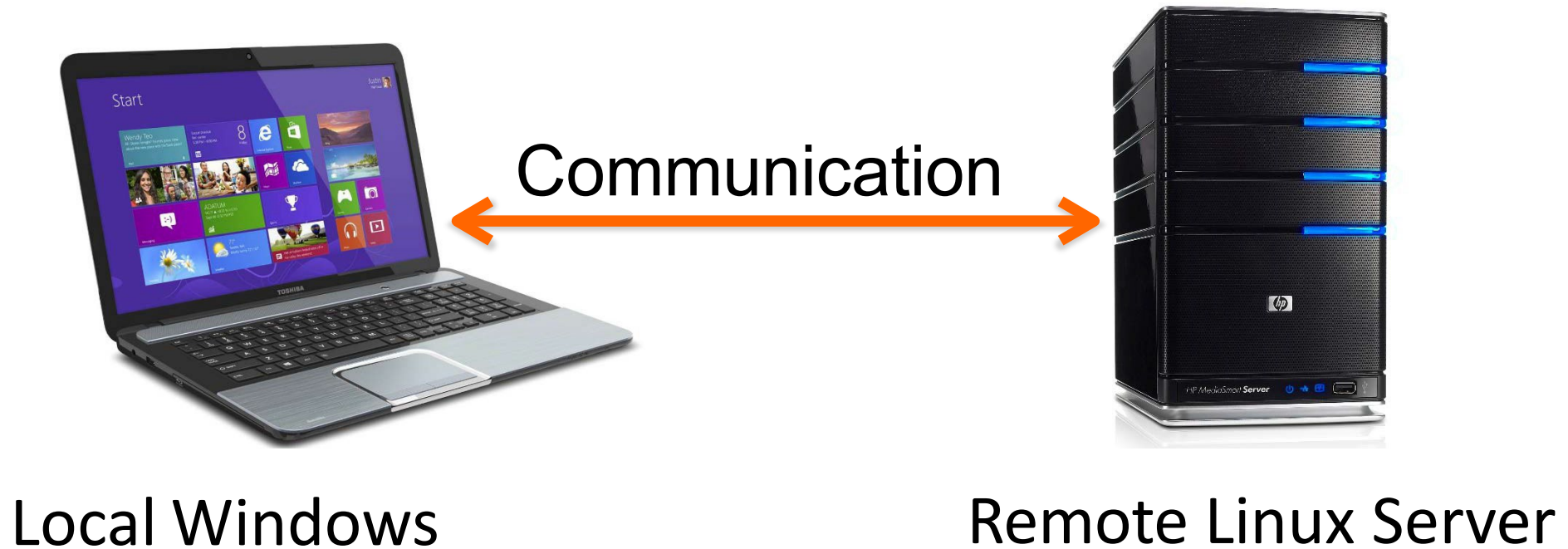
- System installation
  1. Mac/Linux users: open a terminal
  2. Windows users: install a Linux subsystem
- Login
  1. Tutorials of how to log in AU server
  2. What if common login failures?

# Terminal: (Mac/Linux)

- Mac
  - Boot your computer -> click a “search” icon on the top right corner -> type “terminal” -> click “Enter”
- Linux
  - Boot your computer -> click a “search” icon on the top/bottom left corner -> type “terminal” -> click “Enter”
- Please type “terminal”

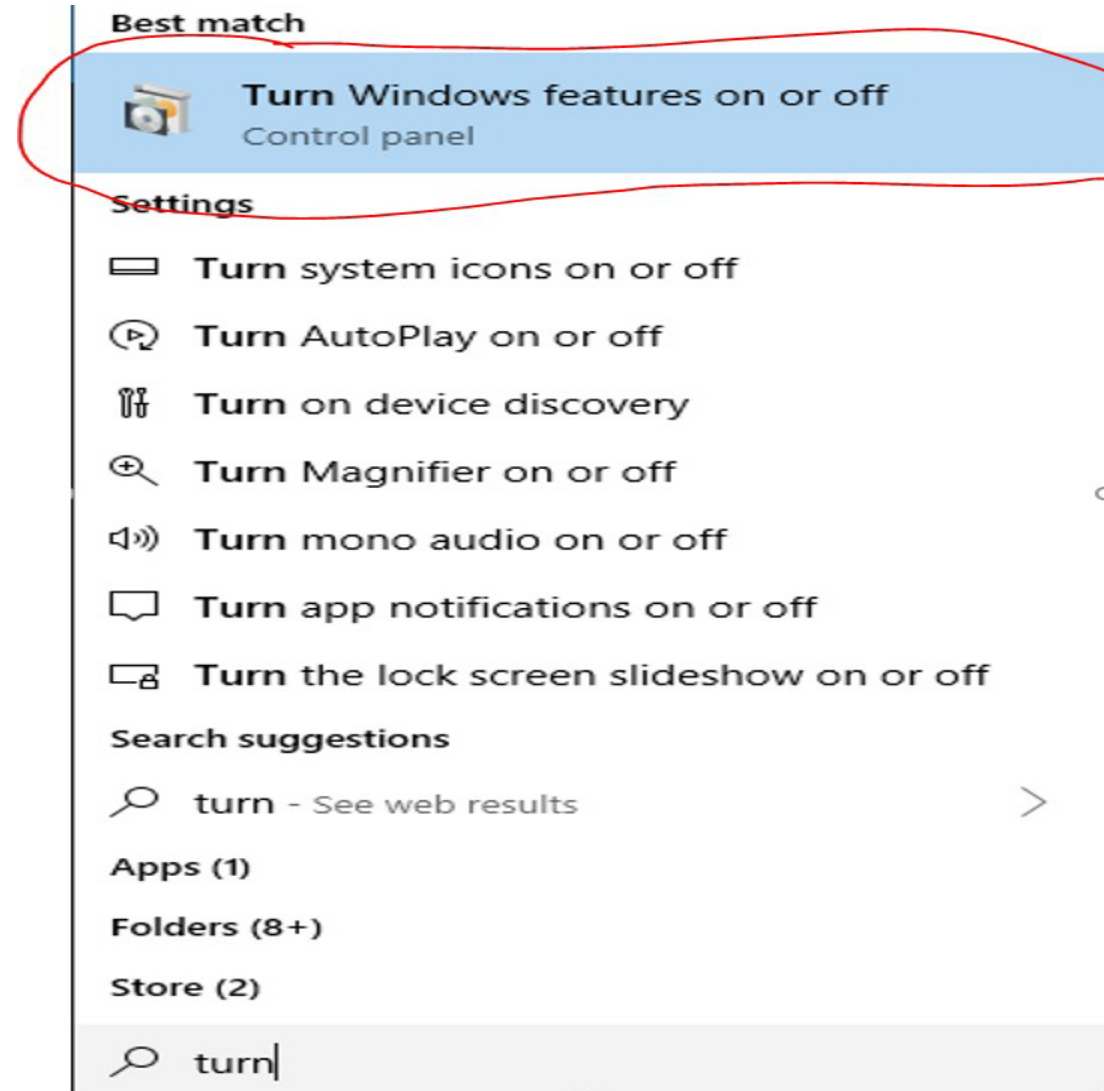


# What you need on Windows for Linux Programming



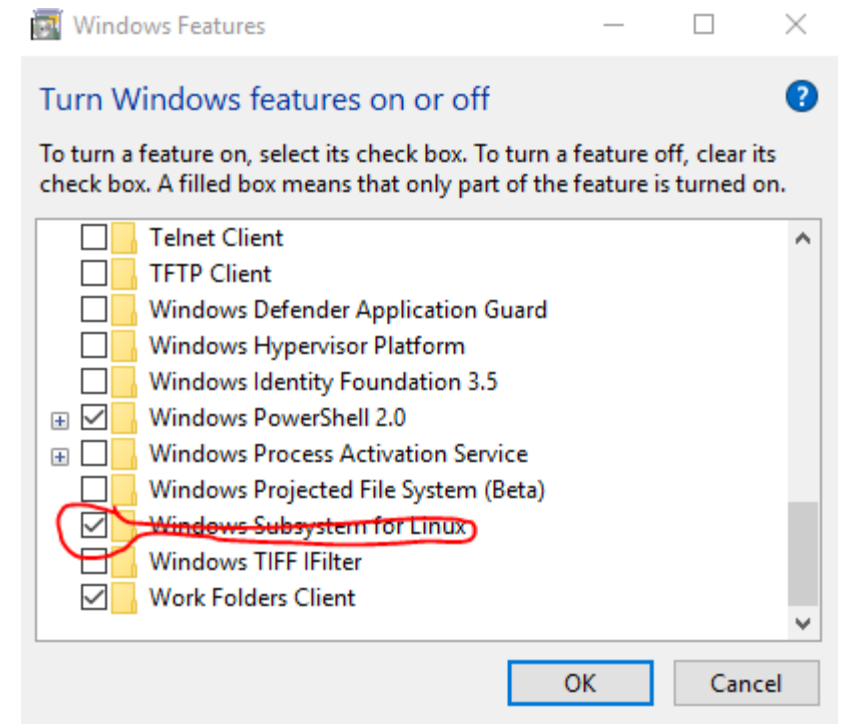
# Terminal: (WinSub)

1. Under a search bar, type “Turn Windows feature on or off” and enter it.



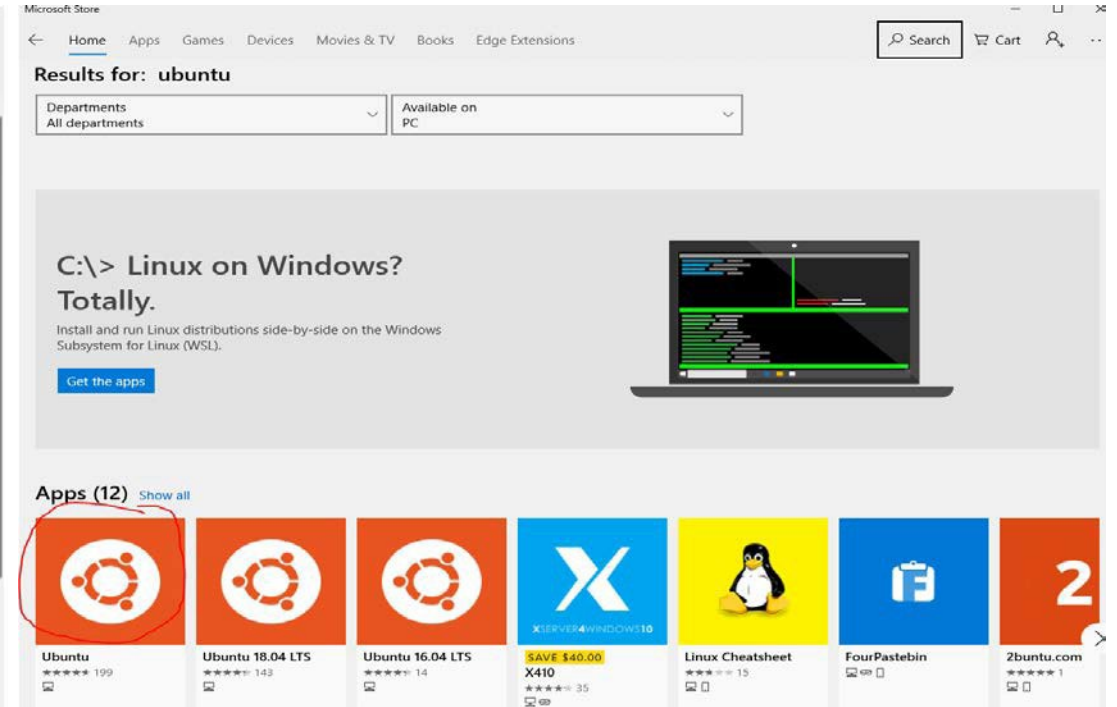
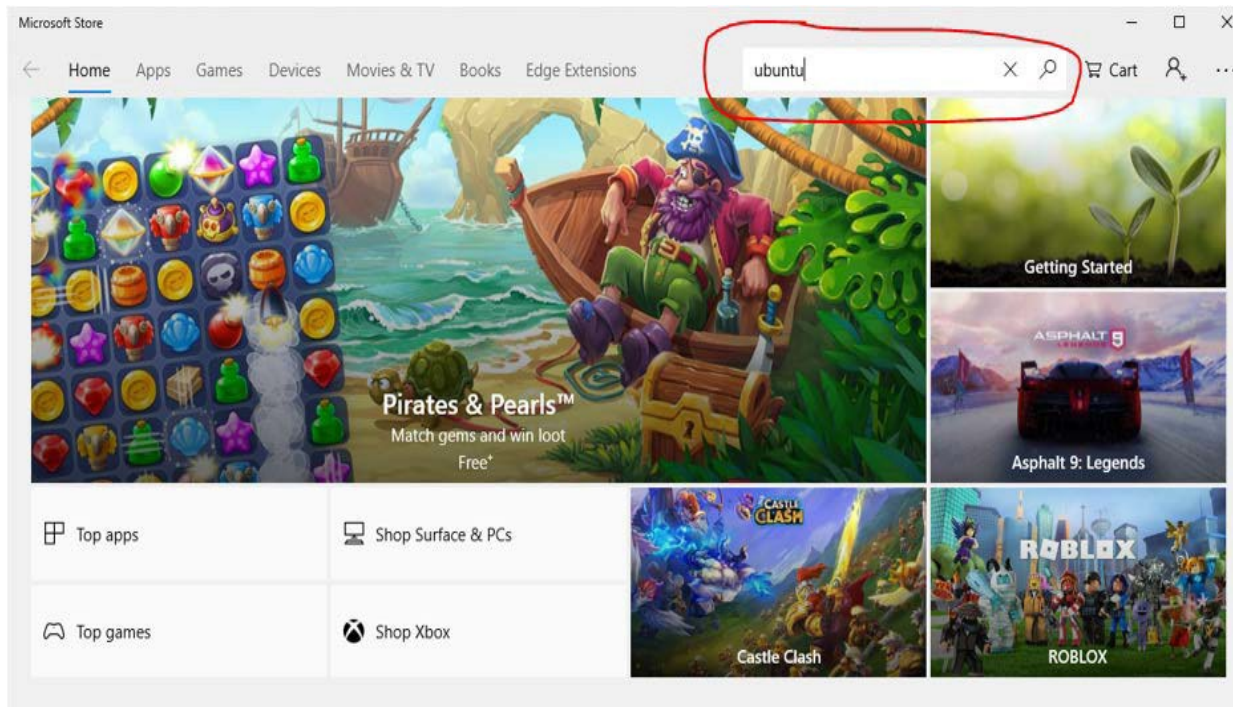
# Terminal: (WinSub)

2. Please check the box of “Windows subsystem for Linux” and click OK.



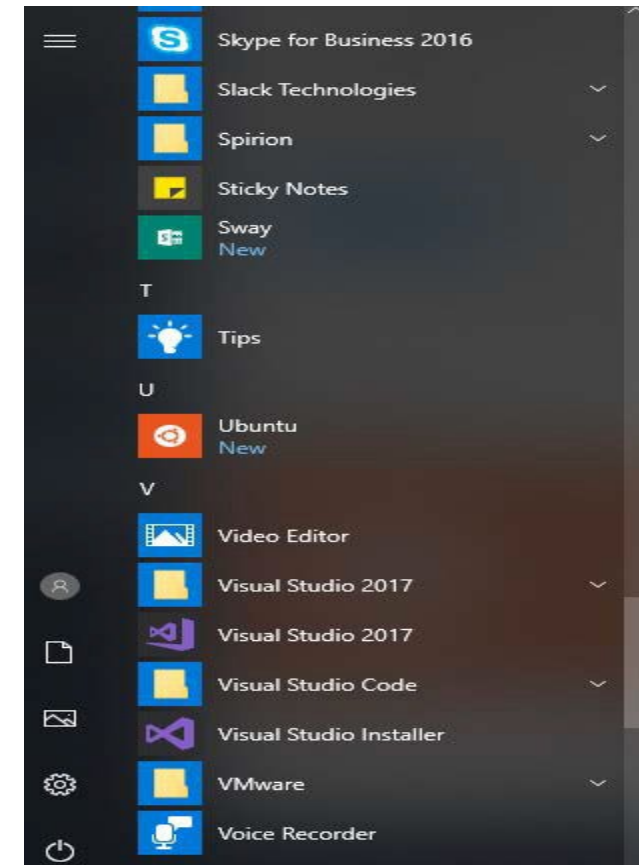
# Terminal: (WinSub)

## 3. Launch “Window store”.



# Terminal: (WinSub)

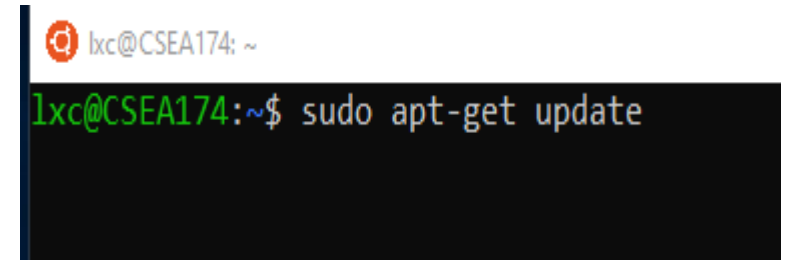
4. Click a “start” button and launch your “Ubuntu”.





# Terminal: (WinSub)

5. On your “Terminal”, please type “sudo apt-get update” to get a latest version.



```
lxc@CSEA174: ~  
lxc@CSEA174:~$ sudo apt-get update
```

# How to log in University gateway

- Option 1
  - In your “Terminal”, type “ssh your\_user\_ID@gate.eng.auburn.edu” -> click “Enter” and then type your password (i.e. Dr. Li’s user ID is xzl0031--> xzl0031(**be sure they are lower cases**)@gate.eng.auburn.edu--> click “Enter” and then type a password
- Option2
  - Download *Palo Alto GlobalProtect (VPN Client)* from <https://cws.auburn.edu/oit/auinstall/> (updated on 10/30/2020. If this linkage is removed OR invalid at the moment you download it, please search it on AU website OR call OIT office)
  - The portal address is "auvpn2.auburn.edu"

# How to log in University gateway

- Option 3
  - Windows PowerShell.
  - If “ssh” cannot be recognized, please enable OpenSSH in Youtube  
<https://www.youtube.com/watch?v=HCmEB5qtkSY&t=353s>

# How to log in University gateway (2)

- Once typing your password, a welcome information will appear and users will be asked to enter the name of an Engineering host name. See a screenshot
- What you need to do is: click “Enter”. Don’t enter any host name. And then enter your password again
- Will show you a demo!

```
Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.4.0-169-generic x86_64)

* Documentation:  https://help.ubuntu.com
* Management:    https://landscape.canonical.com
* Support:        https://ubuntu.com/advantage

New release '18.04.4 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Thu Apr  9 16:59:58 2020 from 24.179.44.243
Welcome to Auburn University -- College of Engineering
=====
WARNING: ANY UNAUTHORIZED ACCESS IS STRICTLY PROHIBITED
=====

For comments, questions, or general contact,
please email admin@eng.auburn.edu
=====

--NOTE:--

The ssh protocol is used to login to unix/linux machines. You
will be prompted to accept a machine key the first time you login
to an individual machine. You will also be prompted for a password a
second time each time you login.

If you choose the default login location you will be connecting
to a linux lab machine located in Davis Hall (Aerospace), room 123.
=====

Please enter the name of an Engineering host <anywhere>:
```

# Failure cases

## **Some of users may encounter failure connection cases such as**

1. Failed to connect server. Port 22
2. Unable to connect server

.....

.....

.....

Please contact OIT help desk during normal business hours: <http://www.auburn.edu/oit/chat.php>

# Overview—File System

- File system operations
  1. Account/folder/file permission
  2. Open/close/edit/move file(s)
  3. Compress/decompress file(s)
  4. Upload/download file(s)
- Retrieve System information
  1. Basic system information for administrators
  2. Extra useful commands for projects

# Folder(s)/File(s) permission--1

One duty as an administrator is to control who can access files, search directories, and run scripts. A general format of permission is :

d

user permission(u)      group permission(g)      other permission(o)      + yourAccountID

r: read w: write x: execute

```
drwxr-xr-x+ 15 wzk0004 cse      23 Mar  5 14:15 wzk0004
drwx-----+ 38 wzl0026 cse      61 Mar  5 14:15 wzl0026
```

- indicate a file type: either a regular file (-), directory (d), a symbolic link (l), or any other special type of file

# Folder(s)/File(s) permission--2

Assign proper permissions for users.

Solution1: specify which group needs to be updated: u/g/o

specify which permissions needs to be assigned: r/w/x

Examples: Assume “drwxrwxrwx 12 cse xzl0031”

E1: `chmod go-rwx xzl0031-----> drwx----- 12 cse xzl0031`

Or

E2: `chmod g-wx o-r xzl0031-----> drwx--x-wx 12 cse xzl0031`



# Folder(s)/File(s) permission--3

Solution2 (numeric shorthands):

- r (read) = 4
- w (write) = 2
- x (execute) = 1
- - (no permissions) = 0

Examples: Assume “drwxrwxrwx 12 cse xzl0031”

E1: `chmod 740 xzl0031-----> drwxr----- 12 cse xzl0031`

7: 4+2+1 in u--->all permissions for user

4: 4+0+0 in g--->just keep **read** permission for group

1: 0+0+1 in 0--->just keep **execute** permission for other

# File transmission



Upload



Type this “big”  
command in a local  
terminal  
Don’t log in AU server!

scp file/path/in/local/machine

destination/in/Server

Examples (Windows users):

```
scp /mnt/c/Users/lixue/OneDrive/Desktop/Helloworld.cpp xz10031@scp.eng.auburn.edu:/home/cse_h1/xz10031
```

single space

single space

# No connection in upload

If you have issues to upload files with errors such as “failed to connect, port 22”, please refer to the option 2 in Slide 10 to download VPN.

If failed to log in VPN, please install DUO 2-factor authentication in your cell phone to “Approve” it.

# File transmission



Download



Type this “big”  
command in a local  
terminal  
Don't log in AU server!

scp destination/in/Server

file/path/in/local/machine

Examples (Windows users):

```
scp xz10031@scp.eng.auburn.edu:/home/cse_h1/xz10031/Helloworld.cpp /mnt/c/Users/lixue/Onedrive/Desktop
```

↑  
single space

↑  
single space

# Editing files -- vi(1)

- Vi is a feature rich editor located on almost all Unix/Linux machines around. Once learned, editing files is extremely fast.



# Editing files -- vi(2)

- Open/create a file--->vi
  - Command mode (you start in this mode)
    - It is used for entering commands
    - The escape key always gets you back to command
  - Insert/Append mode---> i
  - Save mode---> :w
  - exit mode---> :q
  - Save and exit mode---> :wq

Need **more details**? See extra slides in Canvas: File--->Tutorial



# Extra useful commands for projects

Display current path/directory---> `pwd`

Delete---> `rm targetFile/Folder`

Copy/paste---> `cp source destination`

Cut/paste---> `mv source destination`

Compress files/folders---> `tar -cvf yourFileName.tar.gz file1 file2`

- `c`: creates archive
- `v`: displays verbose information
- `f`: creates archive with given filename