

Installazione di Linux



Corso di Laurea in Ingegneria Informatica
Università degli Studi di Napoli Federico II
Anno Accademico 2024/2025, Canale San Giovanni

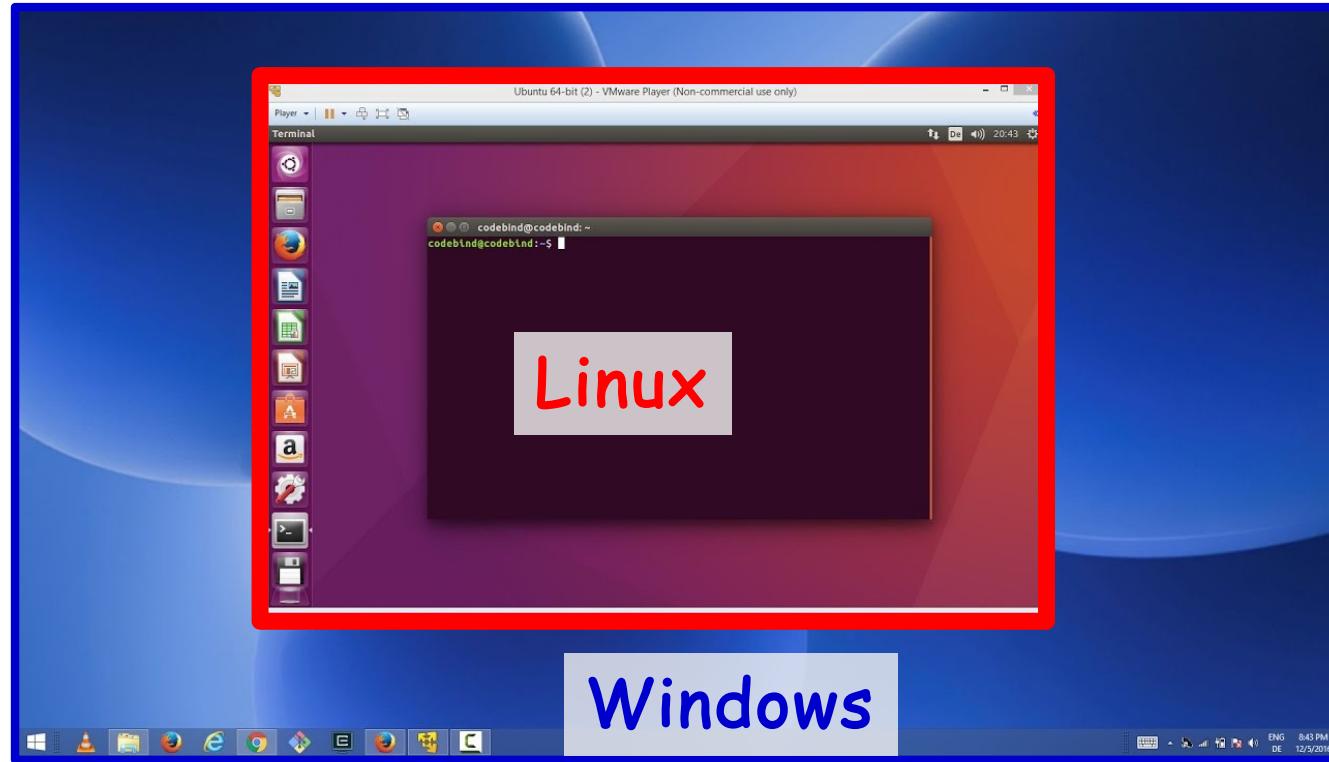


Installazione di Linux

- Sono possibili più soluzioni:
 1. Installare **VMware Workstation/Fusion**, importare il file .OVA (**soluzione suggerita**)
 2. Installare **Windows Subsystem for Linux** (per utenti Windows)
 3. Installare **Cygwin** (per utenti Windows)
 4. Installare **Xcode** (per utenti MacOS X)



Macchine Virtuali (Virtual Machine, VM)



Una macchina virtuale è un "**computer simulato**"
all'interno di una applicazione

VMware Workstation/Fusion Pro



- **VMware Workstation/Fusion Pro** è un tool di virtualizzazione per personal computer
 - Gratuito per uso personale
 - Disponibile sia per Windows sia per Mac

vmware®
by Broadcom



VMware Workstation/Fusion Pro

Develop and Test for Any Platform With VMware Desktop Hypervisors



VMware Fusion Pro for Mac

The simply powerful VMware Desktop Hypervisor app for Mac. Built-in support for Windows 11 for Arm, 3D Hardware accelerated DirectX 11 graphics, ultra fast file-sharing and more.

[DOWNLOAD NOW >](#)



VMware Workstation Pro for PC

Build and test nearly any app with the world's leading desktop hypervisor app for Windows and Linux.

[DOWNLOAD NOW >](#)

<https://www.vmware.com/products/desktop-hypervisor/workstation-and-fusion>



VMware Workstation/Fusion Pro

1. Roberto ...

2. **VMware Cloud Foundation**

3. My Downloads

4. Selezionare **"VMware Workstation Pro"**

My Downloads - VMware Cloud Foundation

- No_Support_Product
- VMmark
- VMware Aria Automation
- VMware Aria Operations for Integrations Management Packs
- VMware Aria Operations for Networks
- VMware Aria Universal
- VMware Cloud Director App Launchpad
- VMware Cloud Director Extension for VMware Data Solutions
- VMware Cloud Director Object Storage Extension
- Tanzu Kubernetes Grid
- VMware Aria Operations for Applications
- VMware Aria Operations for Infrastructure
- VMware Aria Operations for Network Functions
- VMware Aria Universal
- VMware Cloud Director Availability
- VMware Cloud Director Encryption Management
- VMware Cloud Director Extension for VMware Tanzu Mission Control
- VMware Cloud Foundation



Come installare la VM

- Scaricare il file **.ova**, che contiene la macchina virtuale del corso
- Importare il file in VMware
- Avviare la macchina virtuale
 - Username: **so**
 - Password: **so**



File OVA

- Per computer con **CPU x86 (Intel o AMD)**

- [Ubuntu-Linux-SO-2023-x86.ova](#)

<https://communitystudentiunina.sharepoint.com/:u/r/sites/SistemiOperativi202425/Materiale%20del%20corso/Ubuntu-Linux-SO-2023-x86.ova?csf=1&web=1&e=GaQIXY>

- 6.17 GB, aggiornato al 6/9/23

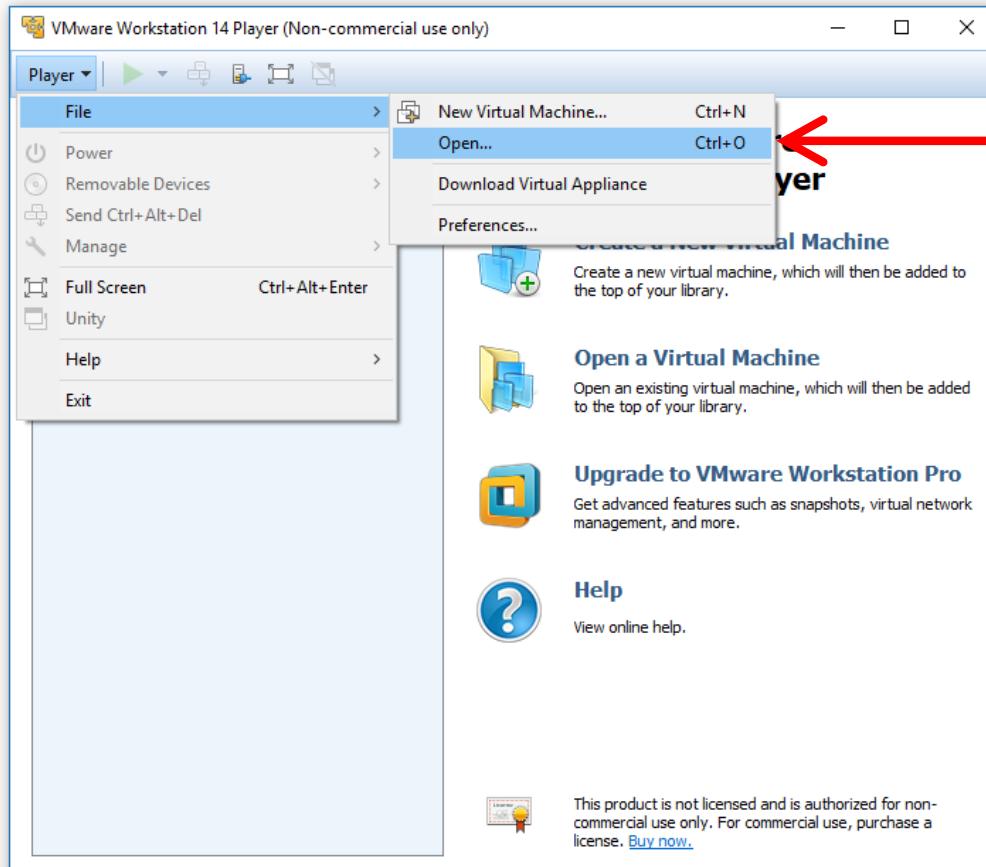
- Per computer con **CPU ARM (Apple Mac)**

- [Ubuntu-Linux-SO-2023-ARM.ova](#)

<https://communitystudentiunina.sharepoint.com/:u/r/sites/SistemiOperativi202425/Materiale%20del%20corso/Ubuntu-Linux-SO-2023-ARM.ova?csf=1&web=1&e=S5z6pN>

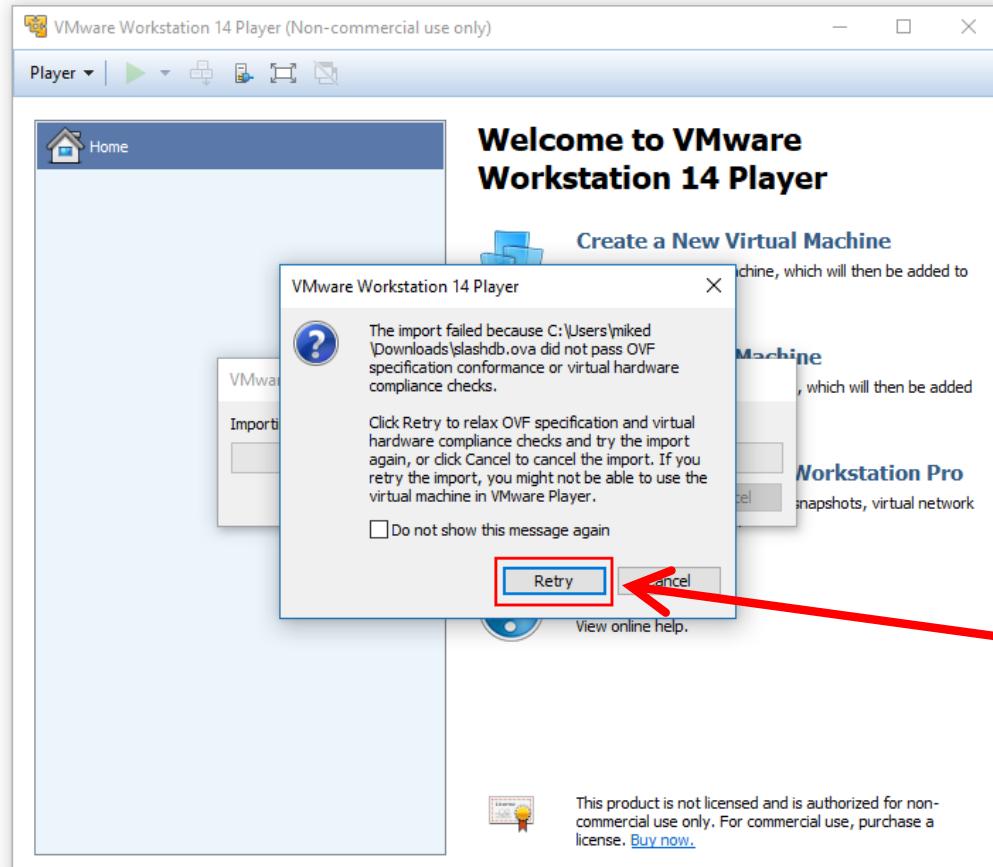
- 6.22 GB, aggiornato al 2/9/24

VMware Workstation



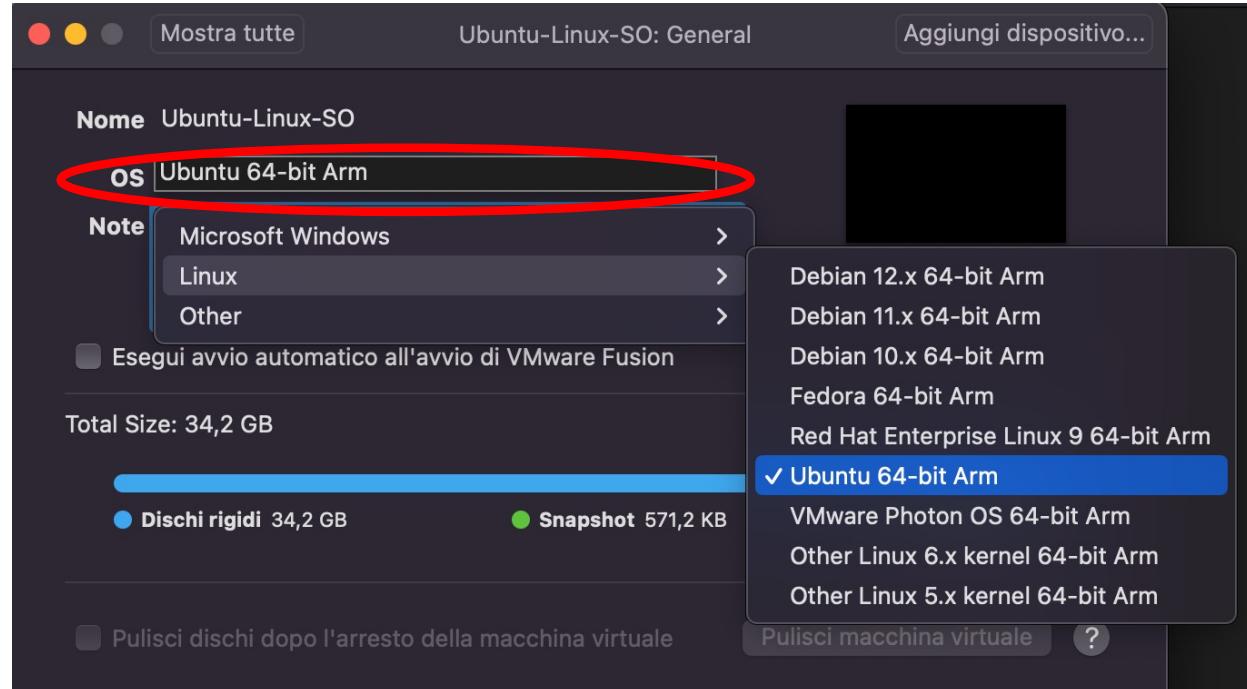
Selezionare il file .ova

VMware Workstation



Selezionare "**Retry**" se appare un messaggio riguardo "OVF specification"

VMware Fusion

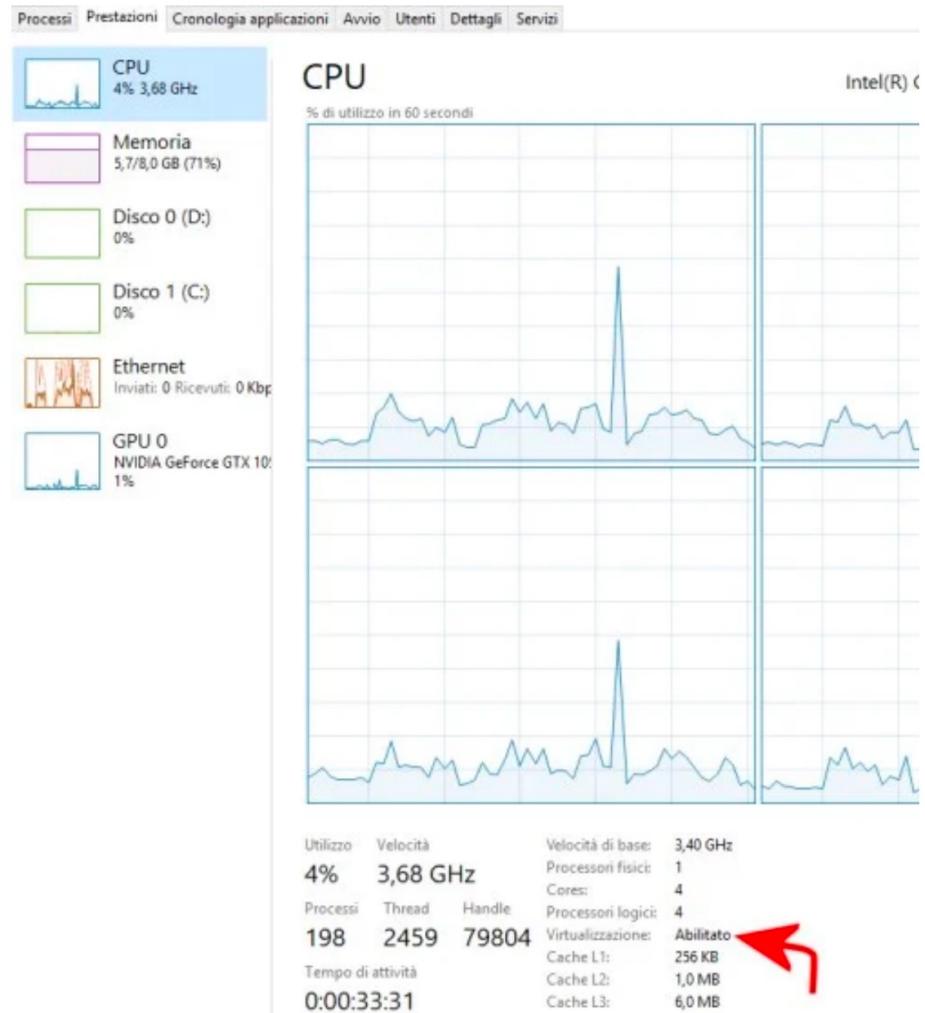


Su VMware Fusion (Apple), può essere necessario **configurare la macchina virtuale come "Ubuntu 64-bit Arm"**



Nota su virtualizzazione

- È richiesta una **CPU con supporto alla virtualizzazione** attivo
- Per verificare:
 1. aprire "Gestione Risorse" (**CTRL+MAIUSC+ESC**)
 2. selezionare la scheda "**Prestazioni**"
 3. selezionare "**CPU**"
 4. leggere la voce "**Virtualizzazione**" in basso





Nota su virtualizzazione

- Alcuni processori **non supportano** la virtualizzazione
 - In questi casi, non è possibile usare Vmware
 - È possibile usare **Cygwin** (vedi prossime slide)





Nota su virtualizzazione

- In altri modelli, il supporto è presente ma disattivato di default
- Si può attivare all'avvio del computer
- Accedere al menu di configurazione del BIOS
 - L'accesso al BIOS dipende dal modello di computer
 - Vedere ad esempio:
https://www.ilsoftware.it/articoli.asp?tag=Come-entrare-nel-BIOS-su-qualsiasi-dispositivo_15618

VirtualBox



- **Oracle VM VirtualBox** è un altro software di virtualizzazione
 - Open-source
 - Utilizzabile nello stesso modo dei tool VMware
 - Alcuni studenti hanno riportato **problemi di lentezza e stabilità**
- <https://www.virtualbox.org/>





Windows Subsystem for Linux

- Windows 10 64-bit ha integrata al suo interno una funzionalità (**WSL**) per creare una macchina virtuale Linux
- È possibile interagire con la macchina virtuale **tramite terminale (senza interfaccia grafica)**
- Importante: utilizzare **WSL versione 2** (la più recente)



Windows Subsystem for Linux

- Avviare la **console dei comandi PowerShell** come "amministratore"
- Digitare "**wsl --install**"
- Riavviare

A screenshot of a Windows PowerShell window titled "Administrator: Windows PowerShell". The window shows the command "wsl --install" being run, followed by output indicating the installation of the Virtual Machine Platform and the Windows Subsystem for Linux, and the download of Ubuntu. It concludes with a message stating that changes will not be effective until the system is rebooted, and a command to restart the computer.

```
PS D:\MyScripts> wsl --install
Installing: Virtual Machine Platform
Virtual Machine Platform has been installed.
Installing: Windows Subsystem for Linux
Windows Subsystem for Linux has been installed.
Downloading: Ubuntu
The requested operation is successful. Changes will not be effective until the system is rebooted.
PS D:\MyScripts> Restart-Computer -Force
```



Windows Subsystem for Linux

- Al riavvio, verrà richiesto di configurare username e password per la macchina virtuale Ubuntu

```
surender@DESKTOP-1QHJF0B: ~
Installing, this may take a few minutes...
Please create a default UNIX user account. The username does not need to match your Windows username.
For more information visit: https://aka.ms/wslusers
Enter new UNIX username: surender
New password:
Retype new password:
passwd: password updated successfully
Installation successful!
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

Welcome to Ubuntu 20.04 LTS (GNU/Linux 5.10.60.1-microsoft-standard-WSL2 x86_64)

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

System information as of Thu Mar  3 09:03:33 IST 2022

System load:  0.17           Processes:      8
Usage of /:   0.4% of 250.98GB  Users logged in:   0
Memory usage: 3%              IPv4 address for eth0: 172.17.152.161
Swap usage:   0%

0 updates can be installed immediately.
0 of these updates are security updates.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

This message is shown once once a day. To disable it please create the
/home/surender/.hushlogin file.
surender@DESKTOP-1QHJF0B: ~$
```



Windows Subsystem for Linux

- Per visualizzare i file attraverso "Esplora Risorse", usare il comando "`explorer.exe .`" (con il punto)

```
surender@BT-WRK-NODE0052: ~
PS D:\MyScripts>
PS D:\MyScripts> wsl -d kali-linux
surender@BT-WRK-NODE0052:/mnt/d/MyScripts$ cd ~
surender@BT-WRK-NODE0052:~$ 
surender@BT-WRK-NODE0052:~$ pwd
/home/surender
surender@BT-WRK-NODE0052:~$ 
surender@BT-WRK-NODE0052:~$ explorer.exe .
surender@BT-WRK-NODE0052:~$ 
surender@BT-WRK-NODE0052:~$ 
```

Name	Date modified	Type	Size
.bash_history	3/3/2022 1:06 PM	BASH_HISTORY File	1 KB
.bash_logout	3/3/2022 11:01 AM	BASH_LOGOUT File	1 KB
.bashrc	3/3/2022 11:01 AM	BASHRC File	4 KB
.profile	3/3/2022 11:01 AM	PROFILE File	1 KB



Windows Subsystem for Linux

- Per copiare i file dalla shell di Linux da/verso Windows, utilizzare il percorso **"/mnt/c/"**

```
surender@BT-HRX-NODE0052: ~
surender@BT-HRX-NODE0052: $ df -Th
Filesystem  Type  Size  Used Avail Use% Mounted on
rootfs      wsif  100G  100G   0G  100% /
none        tmpfs 100G  100G   0G  100% /dev
none        tmpfs 100G  100G   0G  100% /run
none        tmpfs 100G  100G   0G  100% /run/lock
none        tmpfs 100G  100G   0G  100% /run/shm
none        tmpfs 100G  100G   0G  100% /run/user
tmpfs       tmpfs  100G  100G   0G  100% /sys/fs/cgroup
c:/         devfs  100G  100G   0G  100% /mnt/c
D:/         devfs  300G  212G  89G  71% /mnt/d
S:/         devfs  400G  466G  7.5M 100% /mnt/s
surender@BT-HRX-NODE0052: $
surender@BT-HRX-NODE0052: $ ls /mnt/c
ls: cannot access '/mnt/c/DumpStack.log.tmp': Permission denied
ls: cannot access '/mnt/c/hiberfil.sys': Permission denied
ls: cannot access '/mnt/c/pagefile.sys': Permission denied
ls: cannot access '/mnt/c/swapfile.sys': Permission denied
surender@BT-HRX-NODE0052: ~
surender@BT-HRX-NODE0052: $
```



Usare Visual Studio Code con WSL

- Per utilizzare l'ambiente di sviluppo **Visual Studio Code** in Windows con WSL, si consiglia di installare la apposita estensione

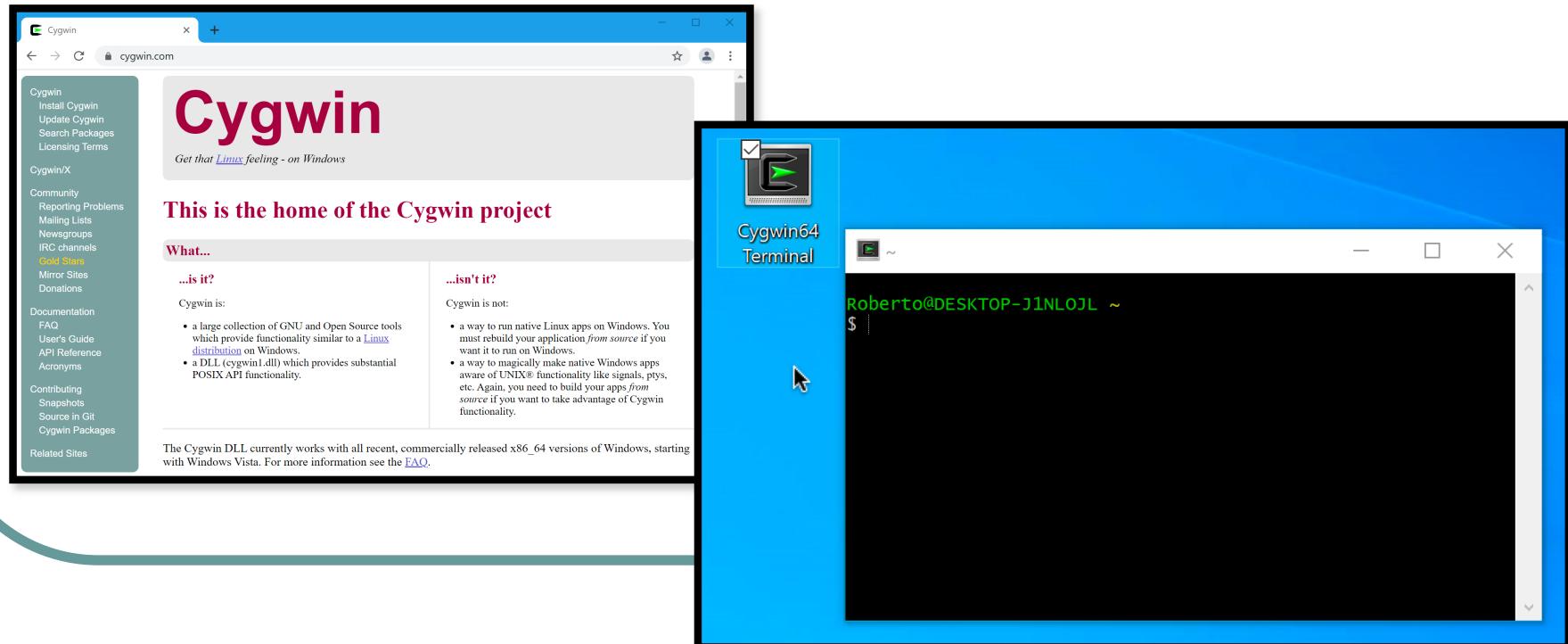
The screenshot shows the Microsoft Store page for the "Remote - WSL" extension. The extension icon is a blue circle containing the white Linux penguin logo. The title is "Remote - WSL" by Microsoft, with a "Preview" badge. It has 3,833,714 installs and a 5-star rating. Links for "Repository", "License", and "v0.50.0" are shown. A description below says, "Open any folder in the Windows Subsystem for Linux (WSL) and take advantage of Visual Studio Code's full feature set." Buttons for "Disable" and "Uninstall" are at the bottom, along with a note that it is enabled globally. A recommendation message at the bottom states, "This extension is recommended because you have Windows Subsystem for Linux (WSL) installed." with links to "Ignore Recommendation".

<https://code.visualstudio.com/learn/develop-cloud/wsl>

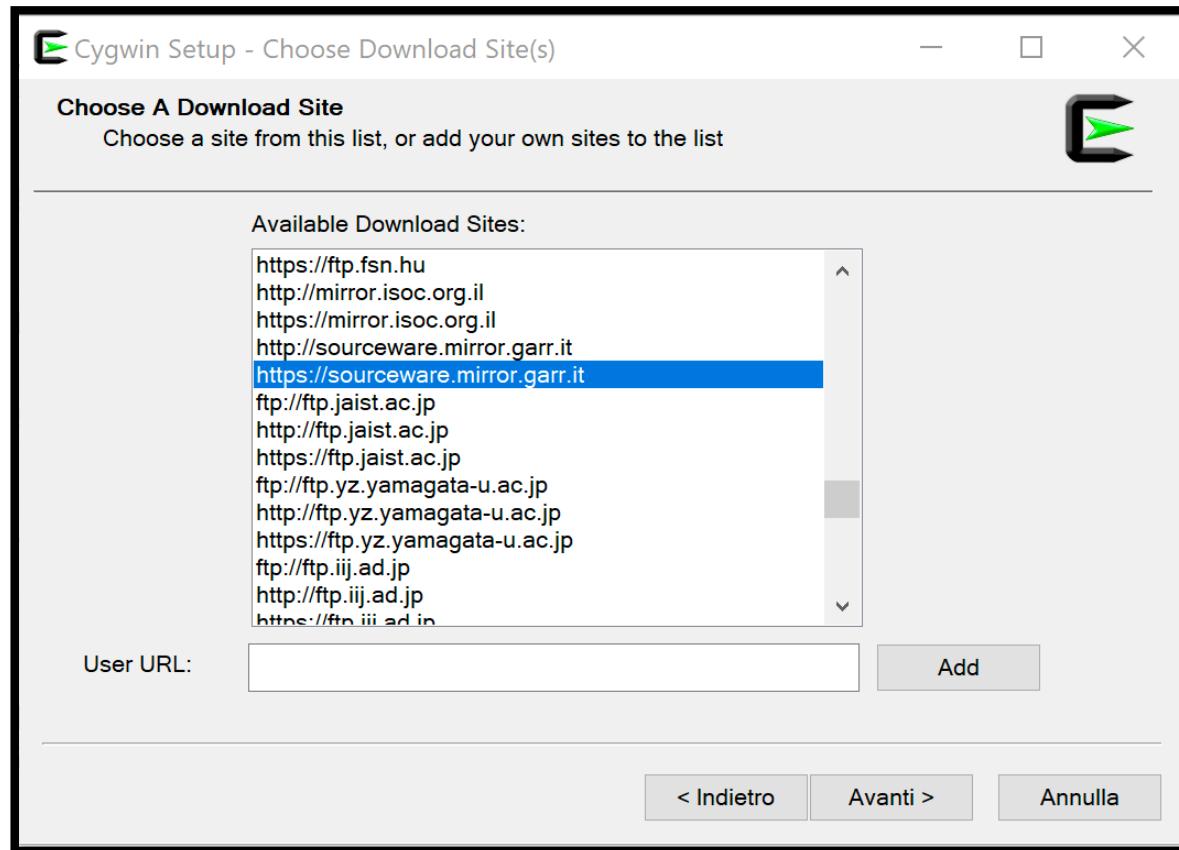
Cygwin



- Cygwin è un programma Windows che implementa la shell e i comandi Linux, senza usare una macchina virtuale
- <https://www.cygwin.com>



Cygwin



Nel wizard di installazione, utilizzare le **opzioni di default**. Per il "**download site**", selezionare un sito a piacere dalla lista (es. il mirror "garr.it")

Cygwin



Cygwin Setup - Select Packages

Select Packages
Select packages to install

View Category Search make Clear

Keep Best Sync Test

Package	Current	New	Src?	Categories	Size	Description
Devel (27)	Default			Devel	3k	Wrapper for multiple versions of Automake
automake	Skip			Devel	689k	(1.10) a tool for generating GNU-compliant Makefiles
automake1.10	Skip			Devel	836k	(1.11) a tool for generating GNU-compliant Makefiles
automake1.11	Skip			Devel	706k	(1.12) a tool for generating GNU-compliant Makefiles
automake1.12	Skip			Devel	749k	(1.13) a tool for generating GNU-compliant Makefiles
automake1.13	Skip			Devel	773k	(1.14) a tool for generating GNU-compliant Makefiles
automake1.14	Skip			Devel	598k	(1.15) a tool for generating GNU-compliant Makefiles
automake1.15	Skip			Devel	812k	(1.16) a tool for generating GNU-compliant Makefiles
automake1.16	Skip			Devel	248k	(1.4) a tool for generating GNU-compliant Makefiles
automake1.4	Skip			Devel	332k	(1.5) a tool for generating GNU-compliant Makefiles
automake1.5	Skip			Devel	365k	(1.6) a tool for generating GNU-compliant Makefiles
automake1.6	Skip			Devel	426k	(1.7) a tool for generating GNU-compliant Makefiles
automake1.7	Skip			Devel	499k	(1.8) a tool for generating GNU-compliant Makefiles
automake1.8	Skip			Devel	557k	(1.9) a tool for generating GNU-compliant Makefiles
automake1.9	Skip			Devel	6,297k	Cross-platform makefile generation system
cmake	Skip			Devel	1,907k	Cross-platform makefile generation system (documentation)
cmake-doc	Skip			Devel	2,082k	Cross-platform makefile generation system (GUI)
cmake-gui	Skip			Devel	281k	Extra CMake Modules for KDE
extra-cmake-modules	Skip			Devel	419k	(gcc-special) a tool for generating GNU-compliant Makefiles
gcc-tools-epoch1-automake	Skip			Devel	589k	(gcc-special) a tool for generating GNU-compliant Makefiles
gcc-tools-epoch2-automake	Skip			Devel	6k	X Makefile dependency tool for GCC
gcmakedep	Skip			Devel	35k	X Imake legacy build system
imake	Skip			Devel	503k	The GNU version of the 'make' utility
make	4.3-1			Devel	29k	X Makefile dependency tool
makedepend	Skip			Devel	7,326k	Qt4 development tools for Win32 toolchain
mingw64-i686-qt4-qmake	Skip					

Hide obsolete packages

< Indietro Avanti > Annulla

Nel menu "Select Packages", aggiungere alla selezione i seguenti pacchetti:

- make
- gcc-core
- gcc-g++
- cygrunsrv

Cygwin



Esegui come amministratore

```
Roberto@DESKTOP-J1NLOJL ~
$ cygserver-config
Overwrite existing /etc/cygserver.conf file? (yes/no) yes
Generating /etc/cygserver.conf file

warning: The following function requires administrator privileges!

Do you want to install cygserver as service?
(Say "no" if it's already installed as service) (yes/no) yes

The service has been installed under LocalSystem account.
To start it, call `net start cygserver` or `cygrunsrv -S cygserver` in a command window.

Further configuration options are available by editing the configuration
file /etc/cygserver.conf. Please read the inline comments in the
file carefully. The best option for the start is probably
`cygrunsrv -S cygserver`.

Basic Cygserver configuration finished. Have fun!

Roberto@DESKTOP-J1NLOJL ~
$ cygrunsrv -S cygserver
Roberto@DESKTOP-J1NLOJL ~
$
```

Per eseguire gli esercizi del corso, è necessario fare dei passi aggiuntivi:

1. Avviare il terminale Cygwin come amministratore (tasto destro sulla icona, "**Esegui come amministratore**")
2. Digitare il comando:
cygserver-config
3. Digitare "**yes**" (2 volte)
4. Digitare il comando:
cygrunsrv -S cygserver

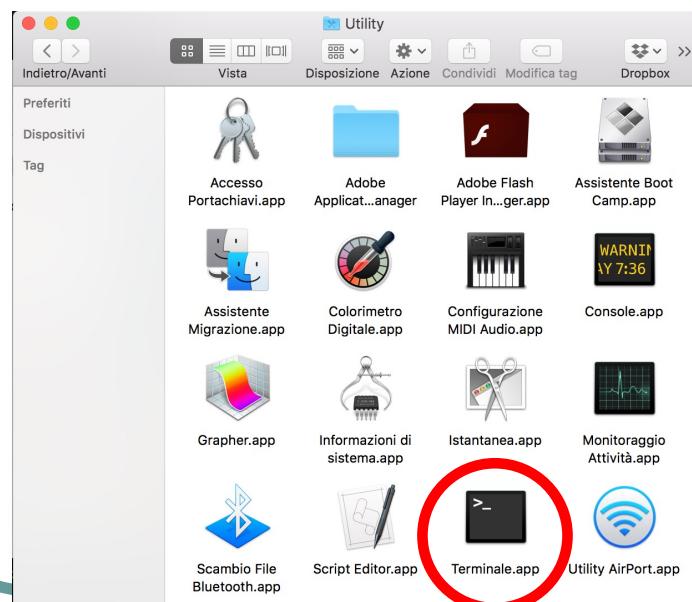
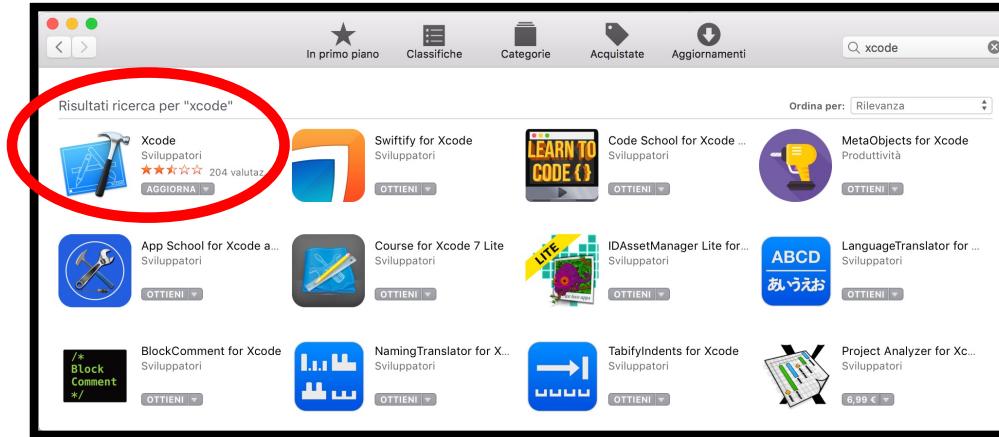


Terminal app + Xcode (Mac OS X)

- Il sistema operativo Mac OS X è basato su un kernel UNIX (non Linux)
- Sia Linux sia Mac OS X aderiscono allo **standard POSIX**
- È possibile sviluppare e utilizzare i programmi del corso **anche in ambiente Mac OS X**



Terminal app + Xcode (Mac OS X)



```
catalin ~ % zsh --version  
zsh 5.8 (x86_64-apple-darwin21.0)  
catalin ~ %
```