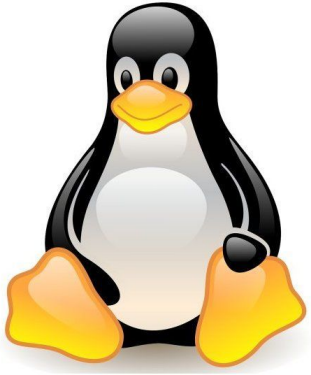


Introduction to Linux

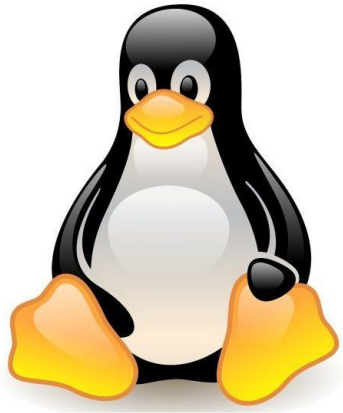
Linux Essentials
Session-1

Table of Contents

Why Linux?

Where Linux?

When Linux?



Why Linux?

- ★ Total cost of ownership
- ★ Beginner friendly and easy to use
- ★ Reliability
- ★ Hardware
- ★ Software
- ★ Security
- ★ Freedom
- ★ Annoying crashes and reboots
- ★ Server segment
- ★ Linux is everywhere

* http://www.linuxandubuntu.com

Where Linux?


Google
http://www.tecmint.com
IBM
twitter
WIKIPEDIA
amazon.com
McDonald's
London Stock Exchange
NYSE
New York Stock Exchange
UnionBank
30 Companies and Devices
Running on GNU/Linux

Where Linux?

1. Google

The services of which includes search, cloud computing and online advertising technologies runs on Linux.

2. Twitter

Twitter, famous online social networking and micro-blogging site is Powered by Linux.

3. Facebook

Facebook, one of the most famous and most widely used Social Networking service runs on the same platform.

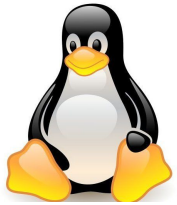
4. Amazon

An American based international company which deals with International Online Retailing is in the list of Linux powered Company.

5. IBM

IBM (International Business Machine Corporation) the American based company which for sure don’t requires any introduction, is again powered by Linux.

Where Linux?



6. McDonalds

The world's largest chain of hamburger fast food restaurant uses GNU/Linux (Ubuntu) too.

7. Submarines

The submarines in the United State Navy are controlled by same platform.

8. NASA

National Aeronautical and Space Administration, The United Nations Space program widely uses Linux in many of their programmes.

9. Watches

Most of you would not be knowing that there are Linux Powered Watches in the market, already. The watch developed by IBM running Linux.

10. Mobile Devices

True, you all know that Linux is powering Mobile Phones, Tablets and Kindle.

Cited from: https://www.tecmint.com

Where Linux?

11. Space

A Specific Linux Distro (Debian) is already in the space. Debian led all the rest.

12. Raspberry pi

The business card sized computer designed for electronic projects as well as desktop computing which is very cheap in cost and is fully functional. Raspberry is a landmark in Linux Development.

13. Desktop Computing

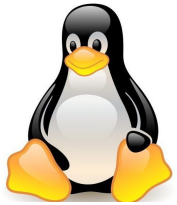
Though a little late, Linux made a notable presence in the desktop computing market. In school and academics as well as in government offices Linux are being widely used, these days.

14. Corporates

The corporate offices are using Linux and finds it more productive than any other alternatives.

Cited from: https://www.tecmint.com

Where Linux?



15. New York Stock Exchange

New York Stock Exchange (NYSC) which provides means for buyers and sellers in order to trade shares of stock in companies registered for public trading relies solely on Linux.

16. Traffic Controlling

The Traffic controlling system in most of the countries be it Road Traffic or Air Traffic Linux proved to be the best than any other available alternative.

17. Nuclear Projects

When it comes to Nuclear Ambitious projects, Linux is the best option. One of such OS is QNX, which lately is acquired by Blackberry Ltd.

18. Bullet Trains

The Bullet Trains in Japan runs at the speed of 240-320 km/h. All train tracking, maintenance, scheduling and controlling is Linux based.

Cited from: https://www.tecmint.com

Where Linux?

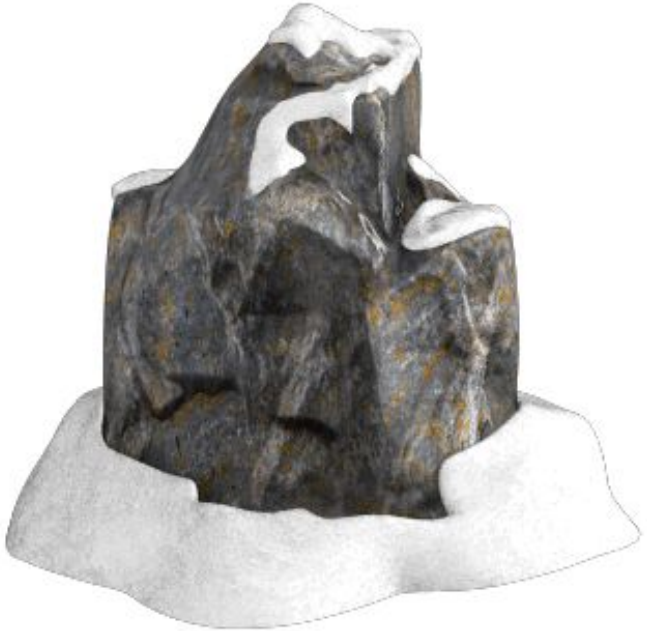
19. Internet Hosting

More than 70% of Internet Hosting and service providers are Linux based. Thought this statistic is difficult to figure out but based upon the Linux compatible hardware sold, and demand for cross platform compatible hardware, the above statistics is a rough estimation.

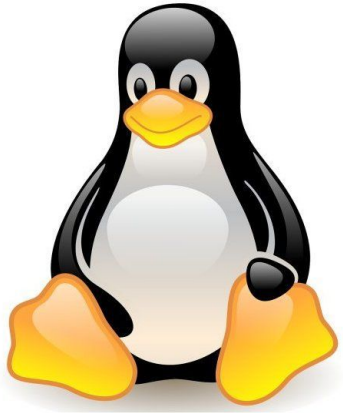
20. Missiles and Weapons

The Missiles and destructive weapons of next generation is themed to be much advanced and Intelligent system than its predecessors. Well what else would have been its alternative.

When Linux?

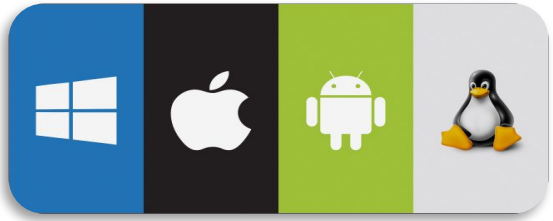


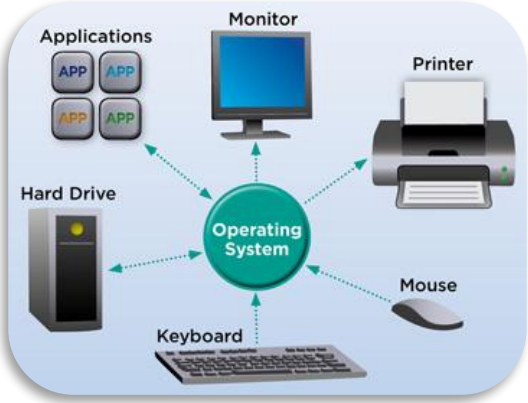
Linux Evolution

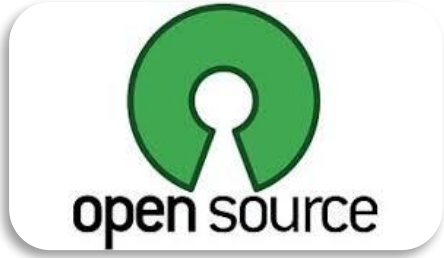


What is Linux?

- Free
- Open-Source
- OS







MEMORABLE LINUX EVENTS

CELEBRATING 30 YEARS OF GNU LINUX

1985 — THE FREE SOFTWARE FOUNDATION IS CREATED BY RICHARD STALLMAN TO PROMOTE SOFTWARE FREEDOM AND FUND THE GNU PROJECT

1989 — GNU GPL VERSION 1 IS PUBLISHED TO ENSURE ELECTRONIC RIGHTS AND ALLOW COLLABORATION

1991 — LINUS TORVALDS POSTS HIS FAMOUS MESSAGE - "HELLO EVERYBODY OUT THERE USING MINIX..." AND RELEASES THE FIRST VERSION OF THE LINUX KERNEL

1992 — LINUS LICENSES VERSION 0.99 OF LINUX UNDER THE GNU GPL. "DEFINITLY THE BEST THING I EVER DID"

1993 — LINUX DISTRIBUTIONS ARE CREATED IN THIS YEAR WE SEE SLACKWARE AND DEBIAN BEING LAUNCHED

1996 — THE 'TUX' LINUX MASCOT WAS CREATED BY LARRY EWING

1998 — JASPER NUYENS STARTS DELIVERING THE FIRST 24 BY 7 LINUX SUPPORT IN EUROPE. ENTERPRISE LINUX USE KICKS OFF AND FUELS THE INTERNET BOOM

1999 — RED HAT GOES PUBLIC ON THE NASDAQ STOCK MARKET

2000 — LINUX BELGIUM IS CREATED AS THE BUSINESS INTERFACE TO THE LINUX COMMUNITY

2004 — UBUNTU LINUX DISTRIBUTION IS FOUNDED WITH AN INITIAL INVESTEMNENT OF 10M USD BY MARK SHUTTLEWORTH

2005 — PUPPET LABS IS FOUNDED TO SUPPORT THE MOST POPULAR CONFIGURATION MANAGEMENT SOFTWARE EVER

2007 — THE GPLv3 IS CREATED TO ADDRESS ISSUES LIKE SOFTWARE PATENTS AND THE 'MICROSOFT PACT'

2008 — THE FIRST ANDROID BASED SMARTPHONE IS LAUNCHED. AFTER 2 YEARS, MOST SMARTPHONES ARE ANDROID BASED

2012 — THE RASPBERRY PI IS INTRODUCED TO MAKE EMBEDDED LINUX MORE ACCESSABLE TO THE GENERAL PUBLIC. IN 3 YEARS 5 MILLION UNITS ARE SOLD

2013 — 8 YEARS AFTER LINUS CREATED GIT, IT HAS BECOME THE MOST POPULAR VERSION CONTROL SYSTEM IN THE WORLD

2014 — THE DEDICATED LINUX EDUCATION CENTER IS OPENED IN DIEGEM.

2015 — 30 YEARS OF GNU HAVE BEEN VERY EXCITING AND CHANGED THE FACE OF THE PLANET. FROM SUPER COMPUTERS TILL EMBEDDED DEVICES. LINUX IS EVERYWHERE

Memorable Linux Events

1991

Linus Benedict Torvalds

☆

Hello everybody out there using minix -

I'm doing a (free) operating system (just a hobby, won't be big and professional like gnu) for 386(486) AT clones. This has been brewing since april, and is starting to get ready. I'd like any feedback on things people like/dislike in minix, as my OS resembles it somewhat (same physical layout of the file-system (due to practical reasons) among other things).

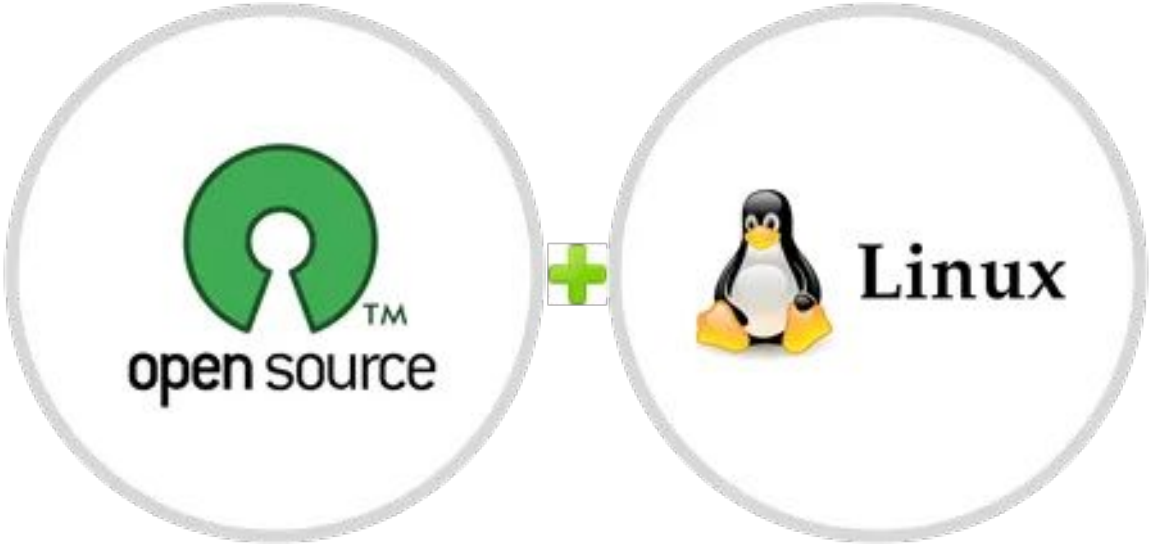
I've currently ported bash(1.08) and gcc(1.40), and things seem to work. This implies that I'll get something practical within a few months, and I'd like to know what features most people would want. Any suggestions are welcome, but I won't promise I'll implement them :-)

Linus (torv...@kruuna.helsinki.fi)

PS. Yes - it's free of any minix code, and it has a multi-threaded fs. It is NOT protable (uses 386 task switching etc), and it probably never will support anything other than AT-harddisks, as that's all I have :-(.

Memorable Linux Events

1992

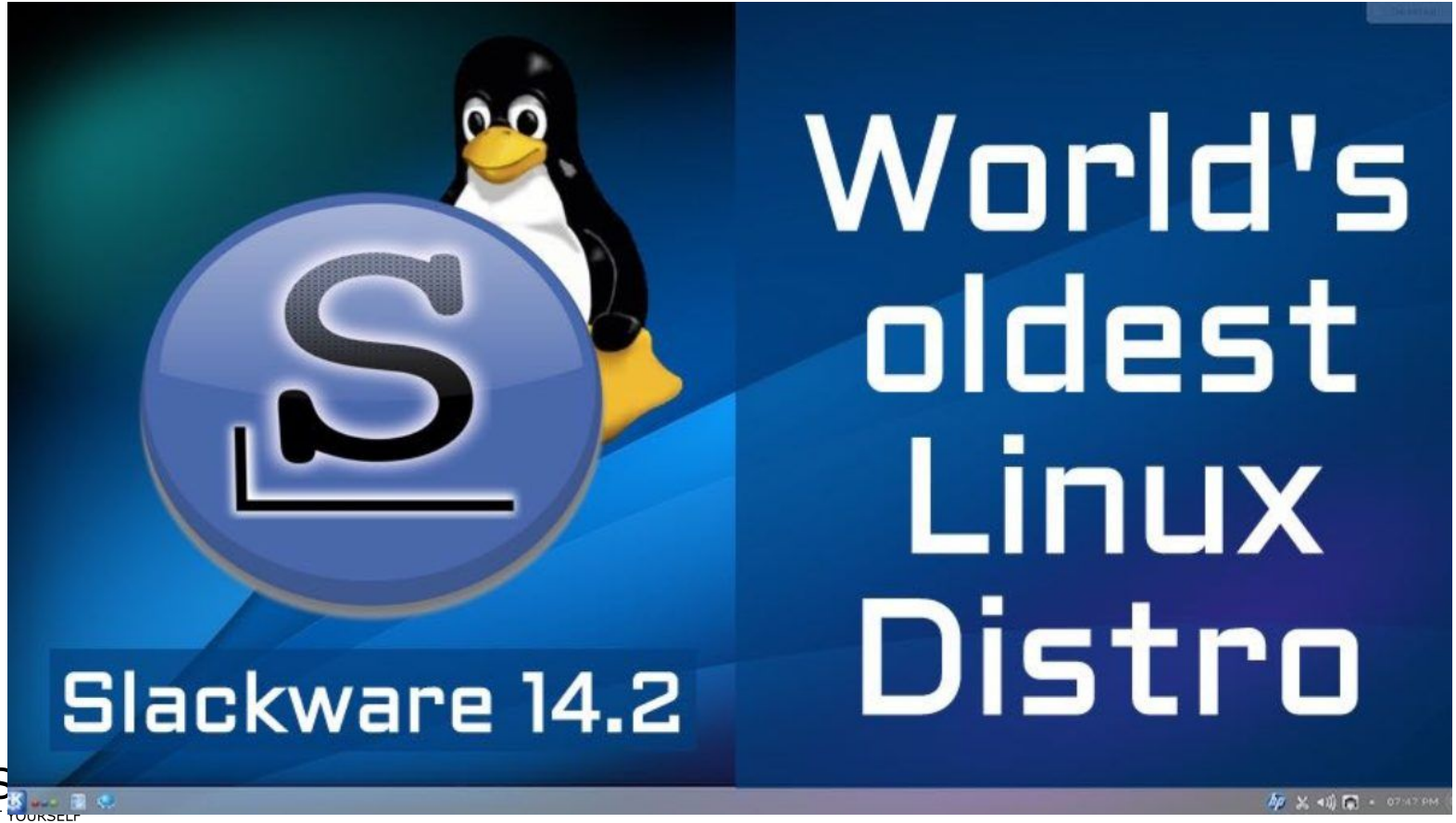


"Making Linux GPLed was definitely the best thing I ever did."

Torvalds, L.

Memorable Linux Events

1993



Memorable Linux Events

1995

Memorable Linux Events

1996

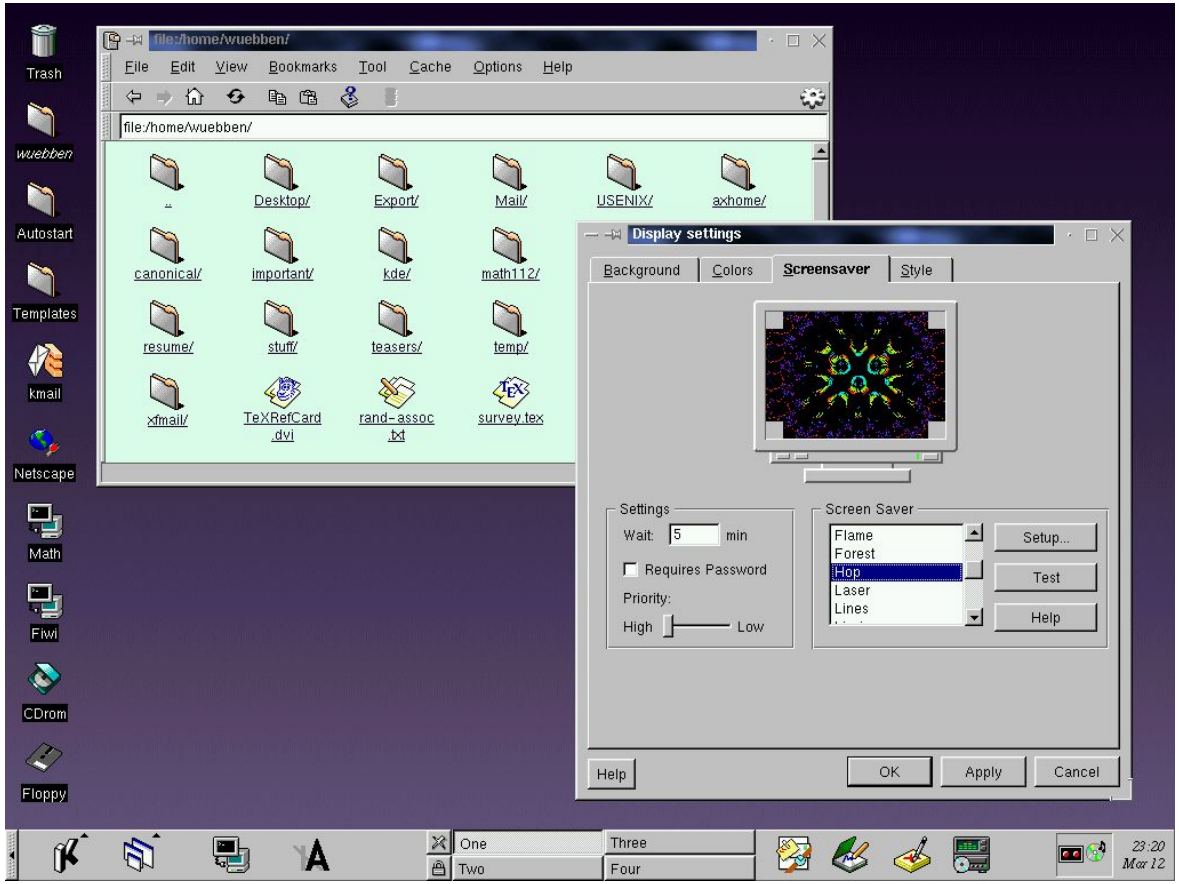
Memorable Linux Events

1997

GNOME™

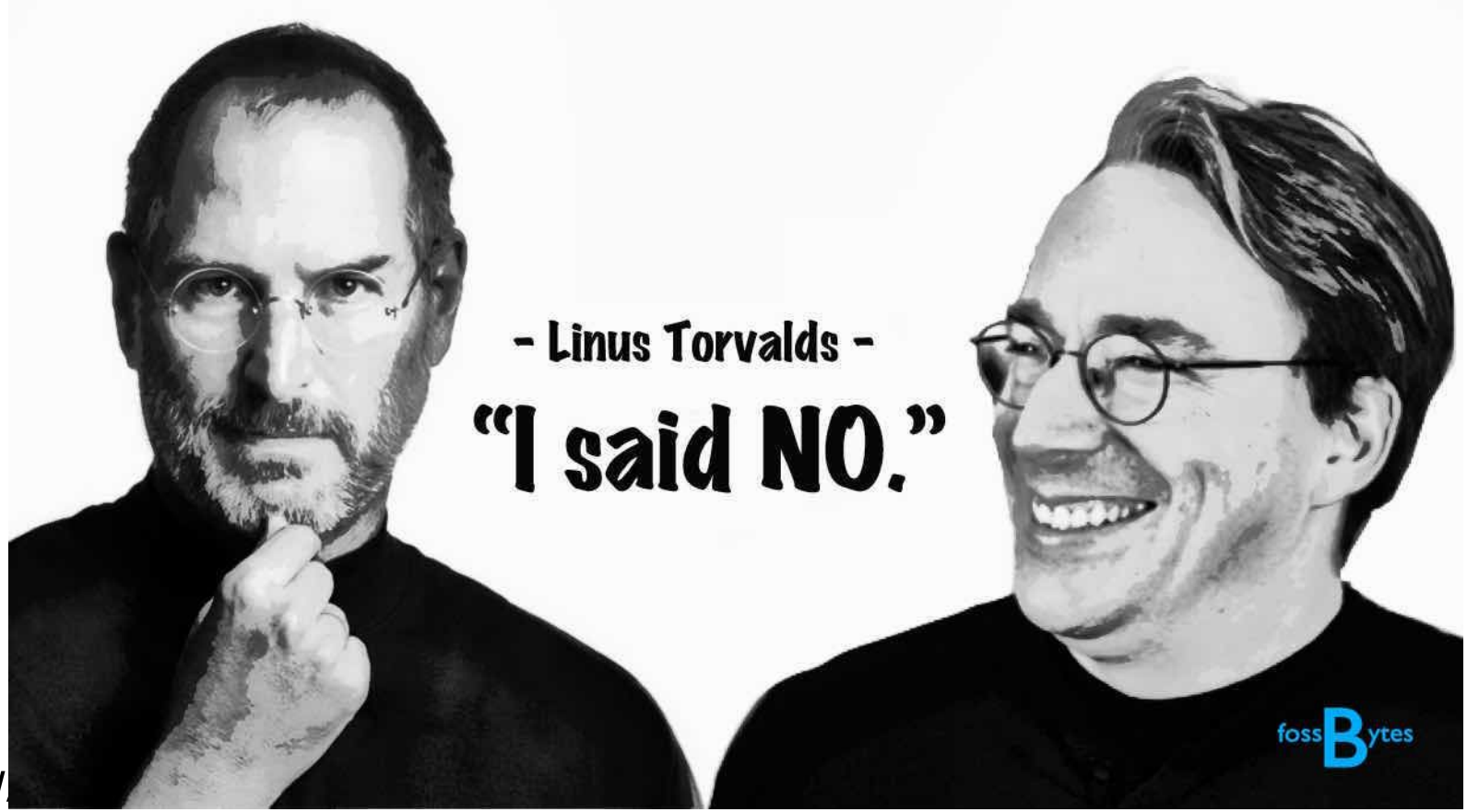
Memorable Linux Events

1998



Memorable Linux Events

2000

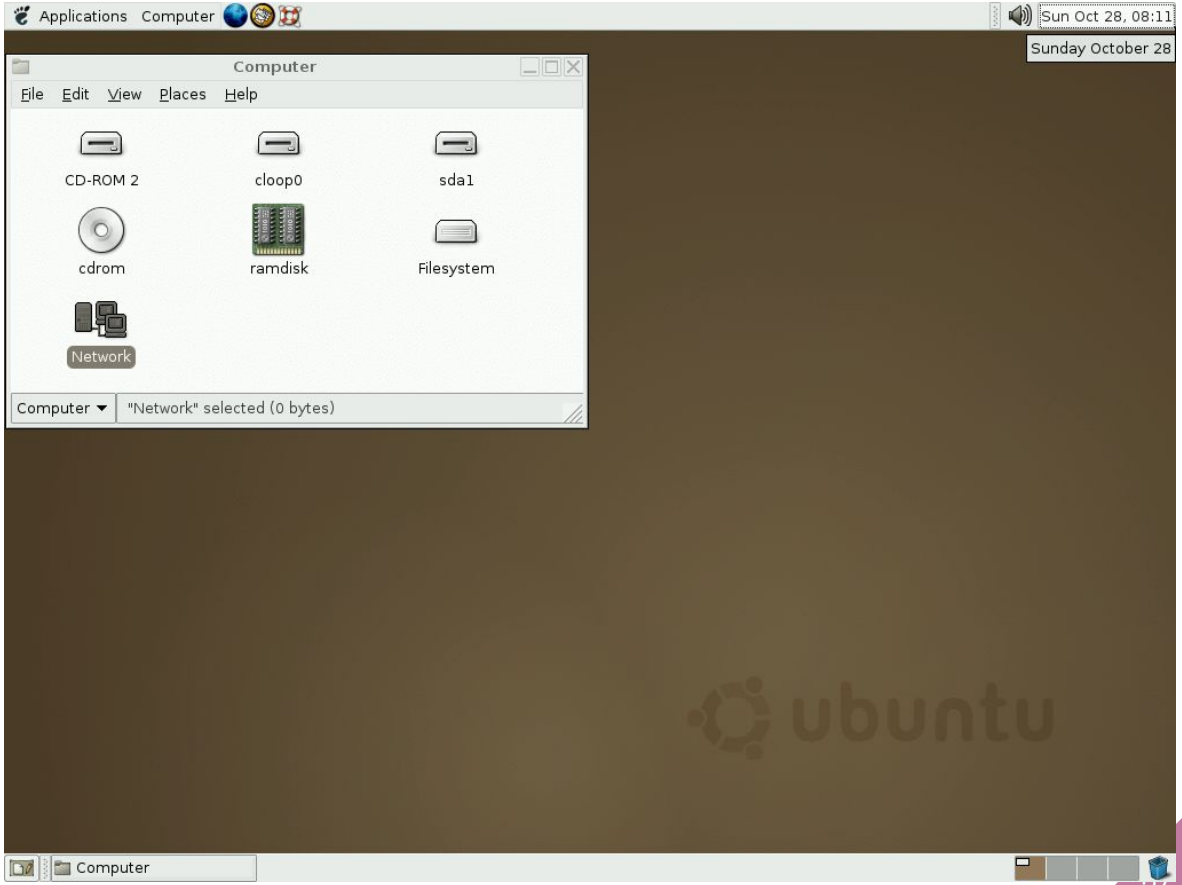


Memorable Linux Events

2002

Memorable Linux Events

2004



Memorable Linux Events

2005

git

Memorable Linux Events

2008

Memorable Linux Events

2009

Google™

Operating System

Google Chrome OS

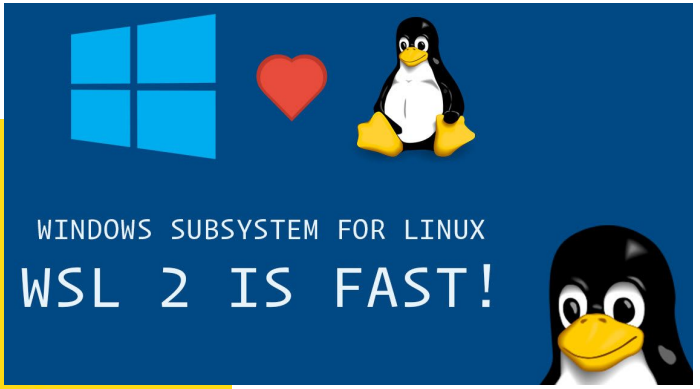
Memorable Linux Events

2014

"Microsoft loves Linux"
-Satya Nadella, 2014

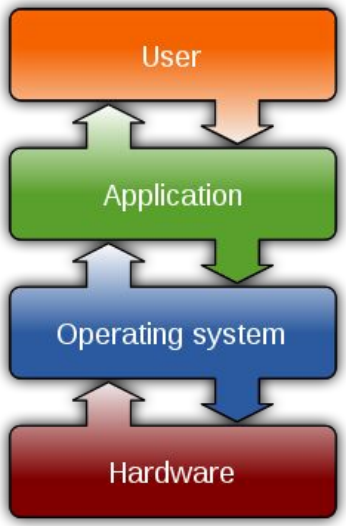
Memorable Linux Events

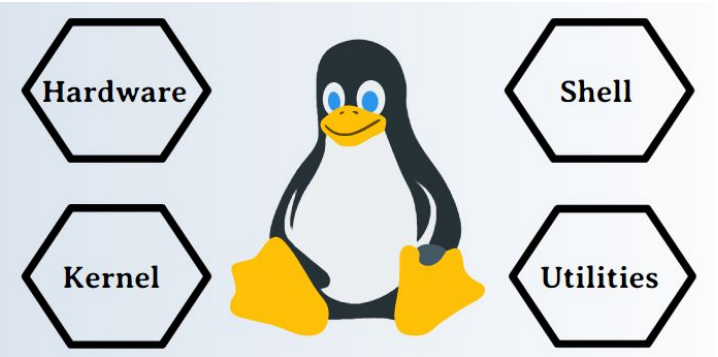
2019

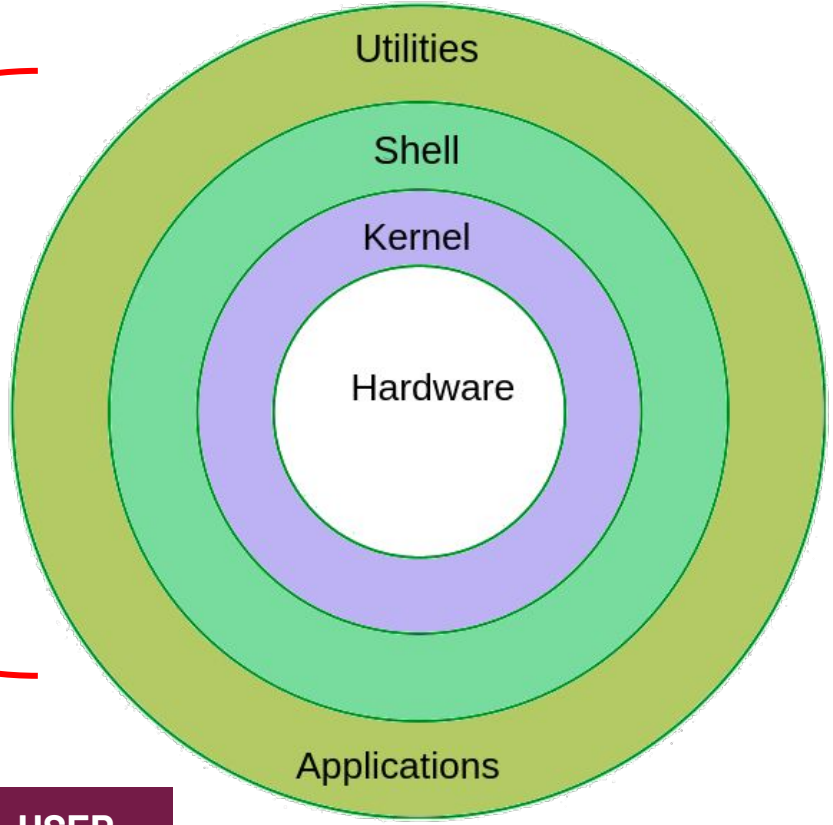


Kahoot!

Components of Linux



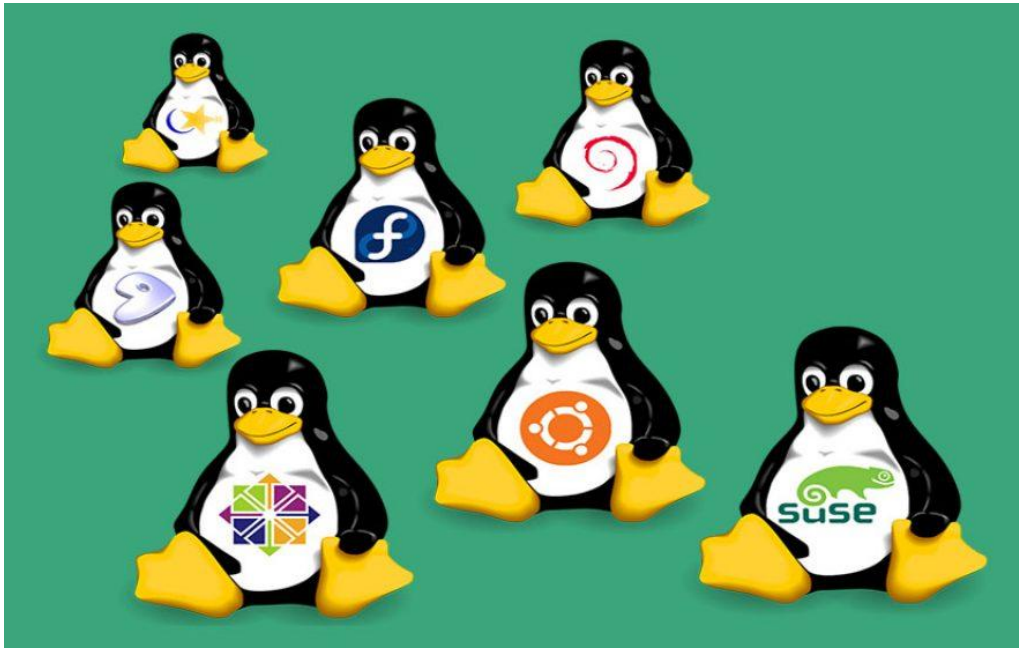


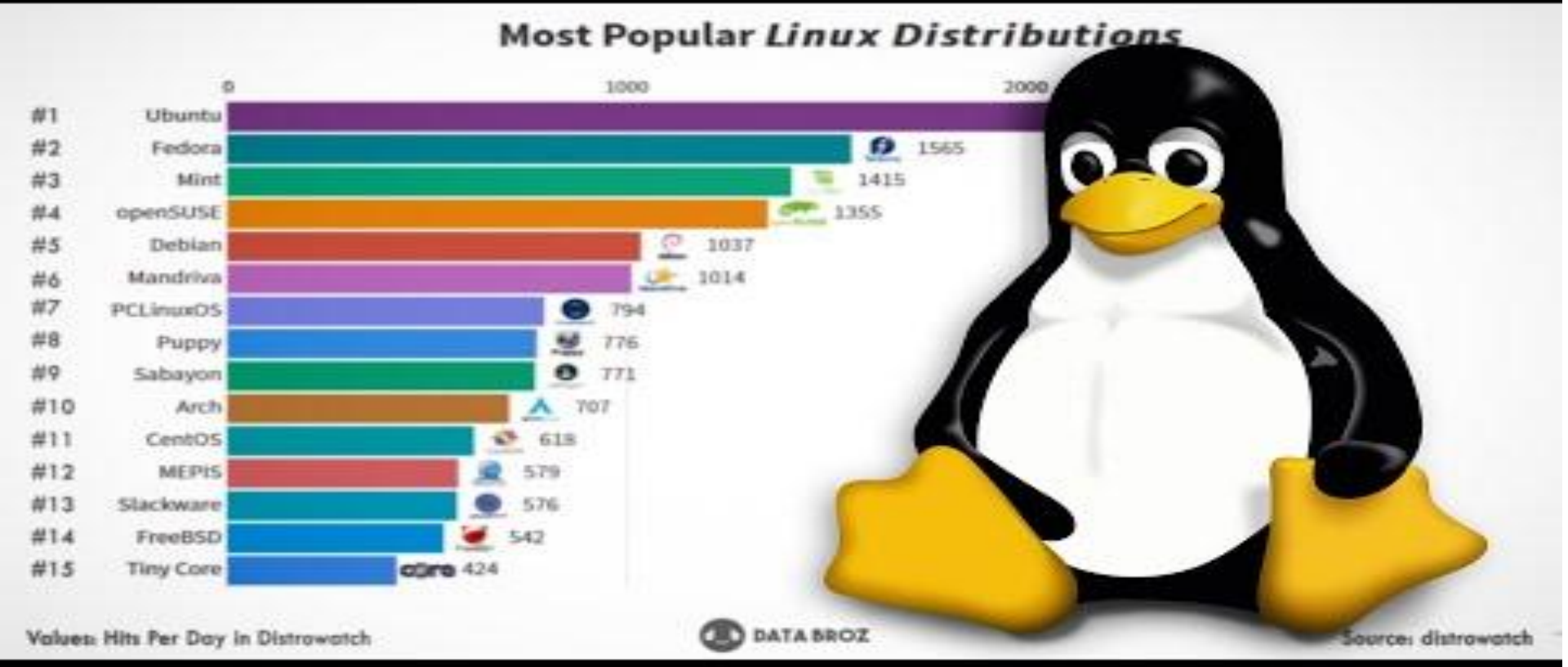


USER

Popular Linux Distributions

- Debian
- Ubuntu
- Mint
- Manjaro
- openSUSE
- RedHat
- Fedora

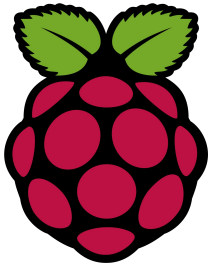


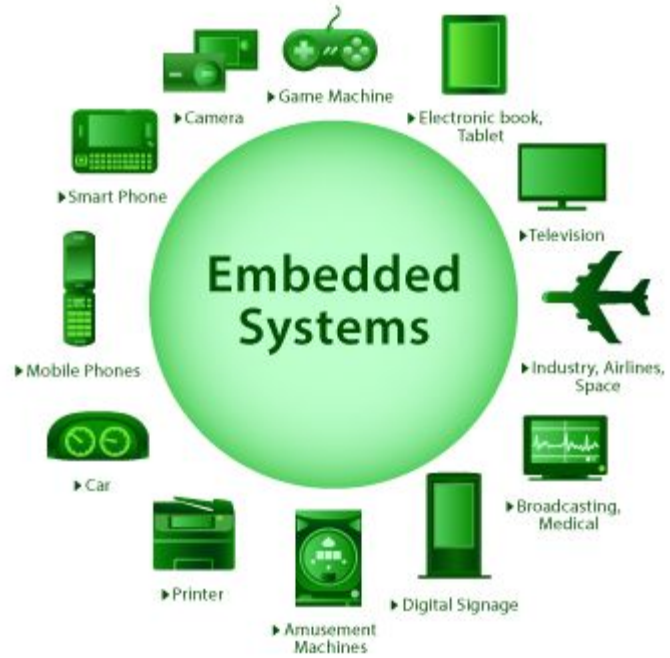

Most Popular Linux Distributions
0
1000
2000
#1 Ubuntu
#2 Fedora 1565
#3 Mint 1415
#4 openSUSE 1355
#5 Debian 1037
#6 Mandriva 1014
#7 PCLinuxOS 794
#8 Puppy 776
#9 Sabayon 771
#10 Arch 707
#11 CentOS 618
#12 MEPIS 579
#13 Slackware 576
#14 FreeBSD 542
#15 Tiny Core 424
Values: Hits Per Day in Distrowatch
DATA BROZ
Source: distrowatch

Linux Embedded Systems

Embedded System

An embedded system is a computer system that is dedicated to one or two specific functions.





Major Open Source Applications

What is open-source

Open-source software is software with source code that anyone can inspect, modify, and enhance.

Desktop Applications

1. LibreOffice
2. VLC Media Player
3. GIMP
4. Shotcut
5. Brave
6. Audacity
7. KeePass
8. Thunderbird
9. FileZilla
10. Linux

LibreOffice

Cited from: https://www.techradar.com/best/best-open-source-software

Server Applications

- Apache Web Server
- NGINX
- MySQL
- Samba
- ownCloud

Package Management Tools

- Contemporary distributions of Linux-based operating systems install software in pre-compiled packages, which are archives that contain binaries of software, configuration files, and information about dependencies.

- **dpkg**: Debian Package Manager
- apt-get
- **rpm**: Red Hat Package Manager
- yum: yellowdog updater modified

Free Software Foundation (FSF)

Open Software Initiative (OSI)

FSF and OSI

Free Software Foundation (FSF)

- The Free Software Foundation (FSF) is a nonprofit organization with a worldwide mission to promote computer user freedom.
- The FSF is working to secure freedom for computer users by promoting the development and use of free software and documentation.

https://www.fsf.org/

FSF and OSI

Open Source Initiative (OSI)

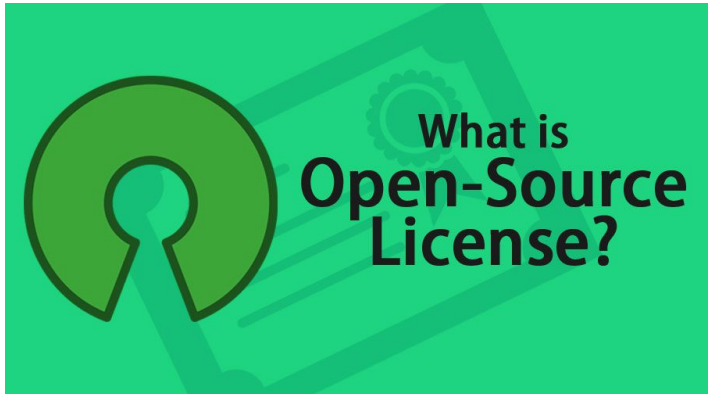
- The Open Source Initiative (OSI) is a non-profit organization dedicated to the promotion of open-source software.
- OSI was founded in 1998 by Bruce Perens and Eric Raymond.

hhttps://opensource.org/

Open-Source Software and Licensing

Open-source Licensing

Open source licenses are licenses that comply with the Open Source Definition — in brief, they allow the software to be freely used, modified, and shared. To be approved by the Open Source Initiative (also known as the OSI), a license must go through the Open Source Initiative's license review process.

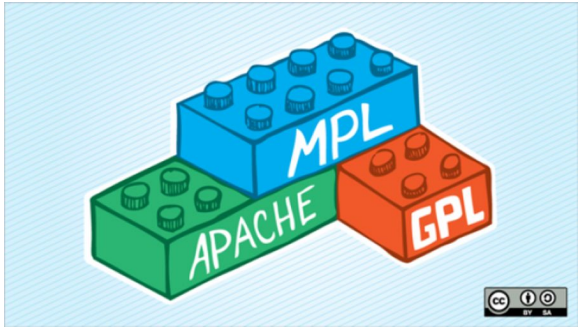


Open-source Licensing

Popular Licenses

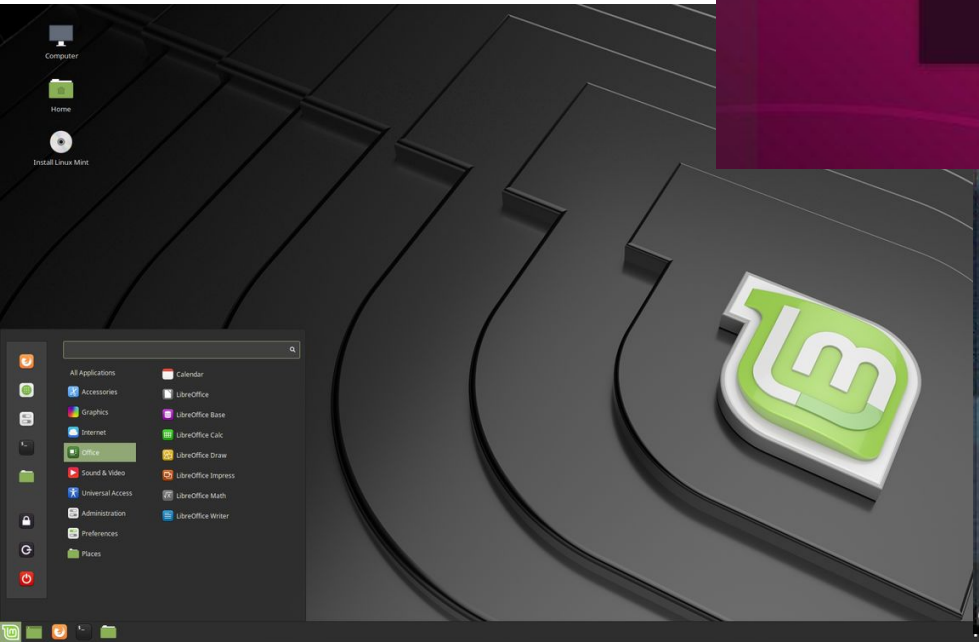
The following OSI-approved licenses are popular, widely used, or have strong communities:

- Apache License 2.0
- BSD 3-Clause "New" or "Revised" license
- BSD 2-Clause "Simplified" or "FreeBSD" license
- GNU General Public License (GPL)
- GNU Library or "Lesser" General Public License (LGPL)
- MIT license
- Mozilla Public License 2.0
- Common Development and Distribution License
- Eclipse Public License version 2.0



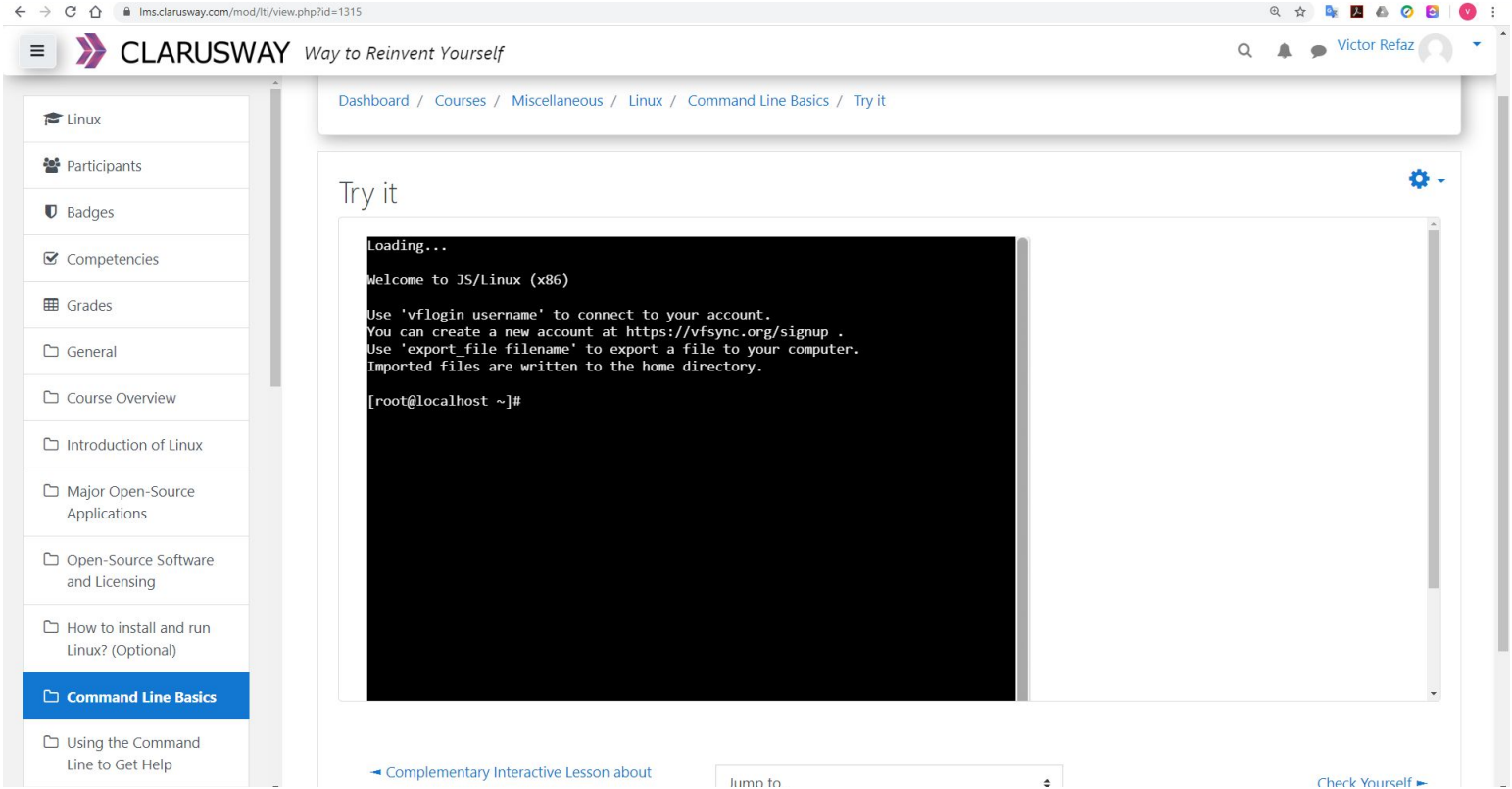
Using Linux on Different Platforms

Linux Alternatives



Linux Alternatives

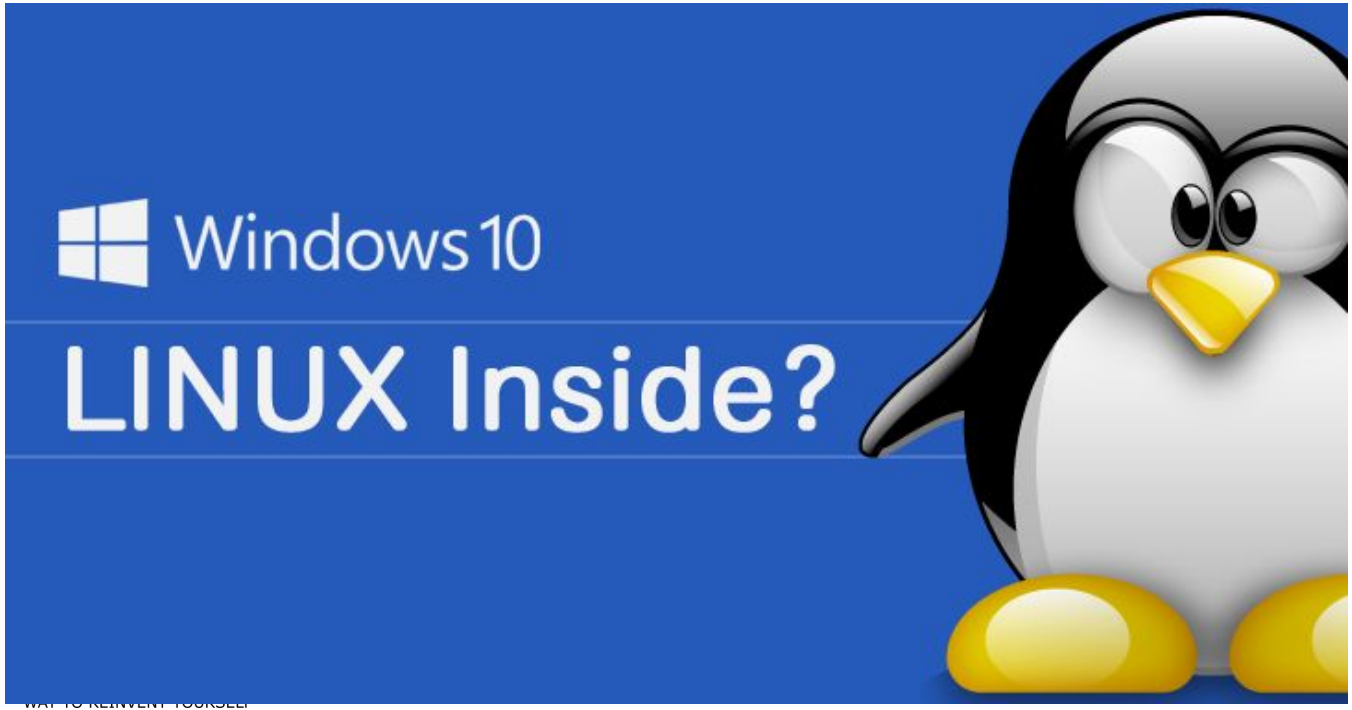
LMS: Try it

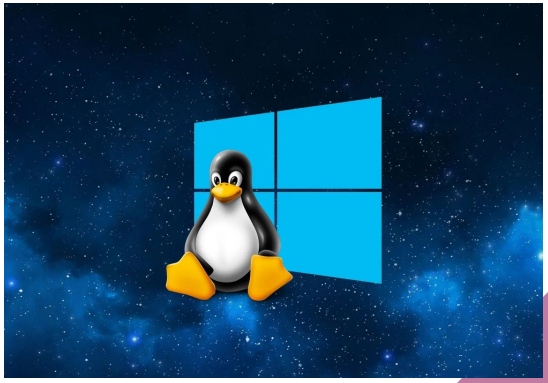


https://lms.clarusway.com/mod/lti/view.php?id=1317

Linux Alternatives

WSL 2





Linux Alternatives

Linux Distros on Virtual Machines

MacOS/Windows

https://www.virtualbox.org/wiki/Downloads

ORACLE VM VirtualBox

Windows

VMware Player

https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html

Linux Distros on Virtual Machines

https://ubuntu.com/download/desktop

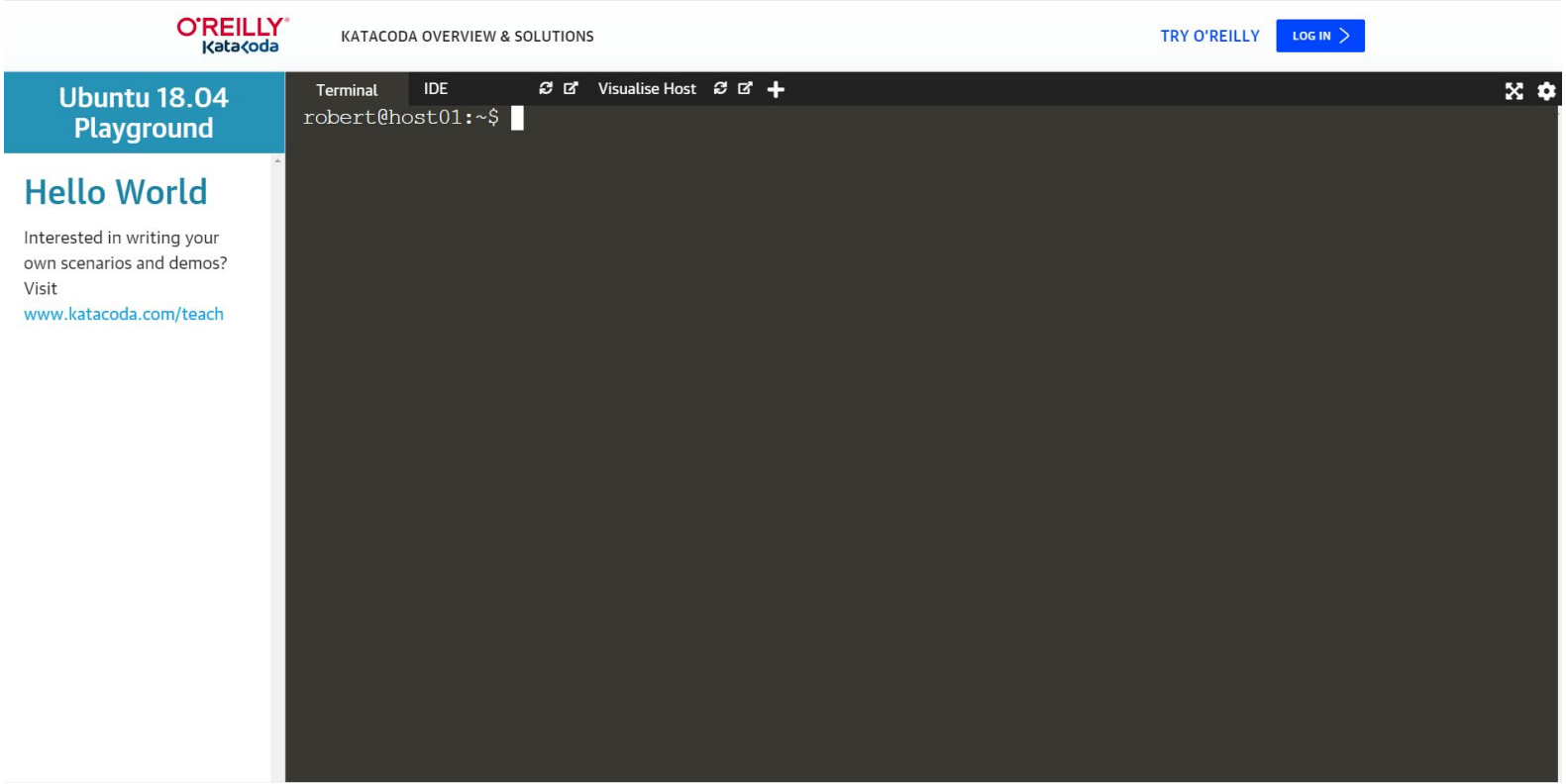
https://www.debian.org/distrib/netinst

THANKS!

Any questions?

Linux Alternatives

Katacoda



https://www.katacoda.com/courses/ubuntu/playground1804

Kahoot!

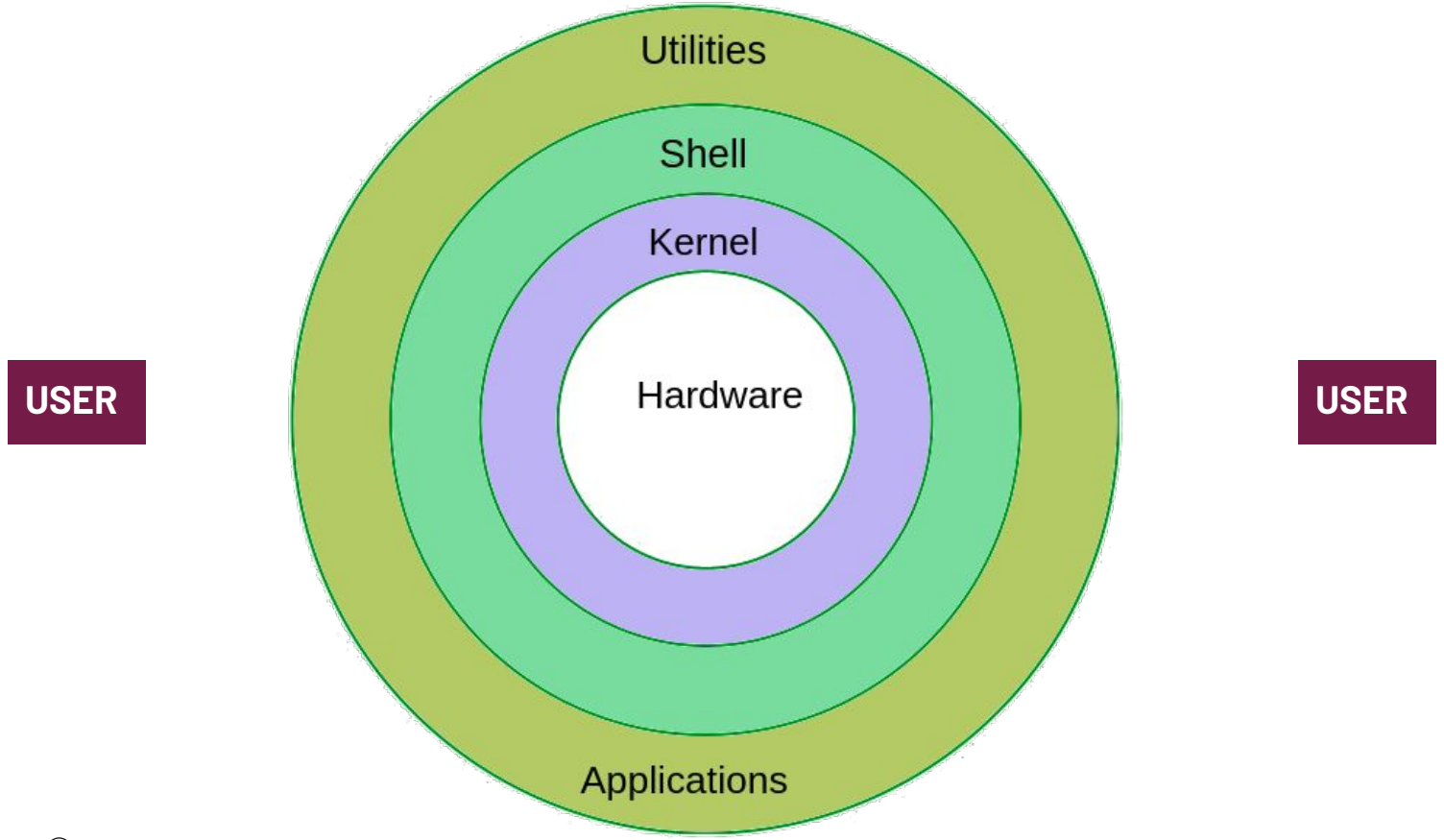
https://www.youtube.com/watch?v=o8NPllzkFhE

Linux Tutorial for Beginners: Introduction to Linux Operating System

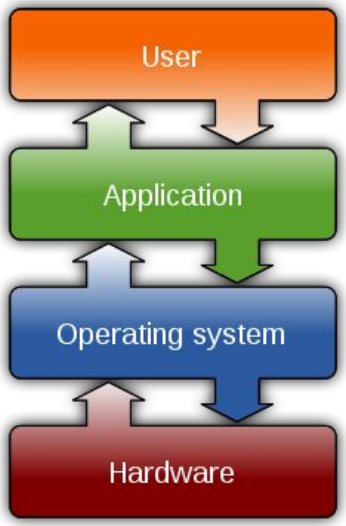
6:50 Most Popular Linux distros
8:37 Installing Linux – VirtualBox
18:05 Introduction to Linux operating system and comparison with windows
24:32 Terminal vs. File Manager
27:20 Command Line Interfaces on Ubuntu Operating system
49:19 Brief of Linux commands
52:04 Ownership in Linux Files (Permissions in Linux)
1:04:58 Print, Email & Install Software on Linux
1:25:34 Regular expressions In Linux/Ubuntu
1:30:46 Basic Environment Variables
1:35:56 Communication in Linux
1:37:21 FTP (File transfer protocol)
1:42:35 Types of Processes in Linux
1:54:07 VI Editor Tutorial
2:01:45 Shell Scripting In Linux
2:09:11 What is PERL Programming
2:13:58 Virtual Terminal
2:20:00 Unix Administration in Linux

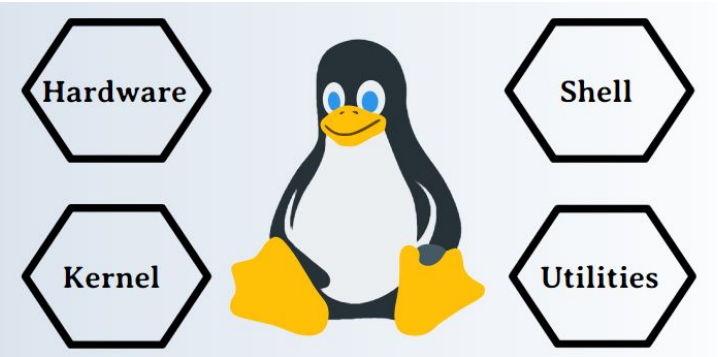
https://www.youtube.com/watch?v=V1y-mbWM3B8

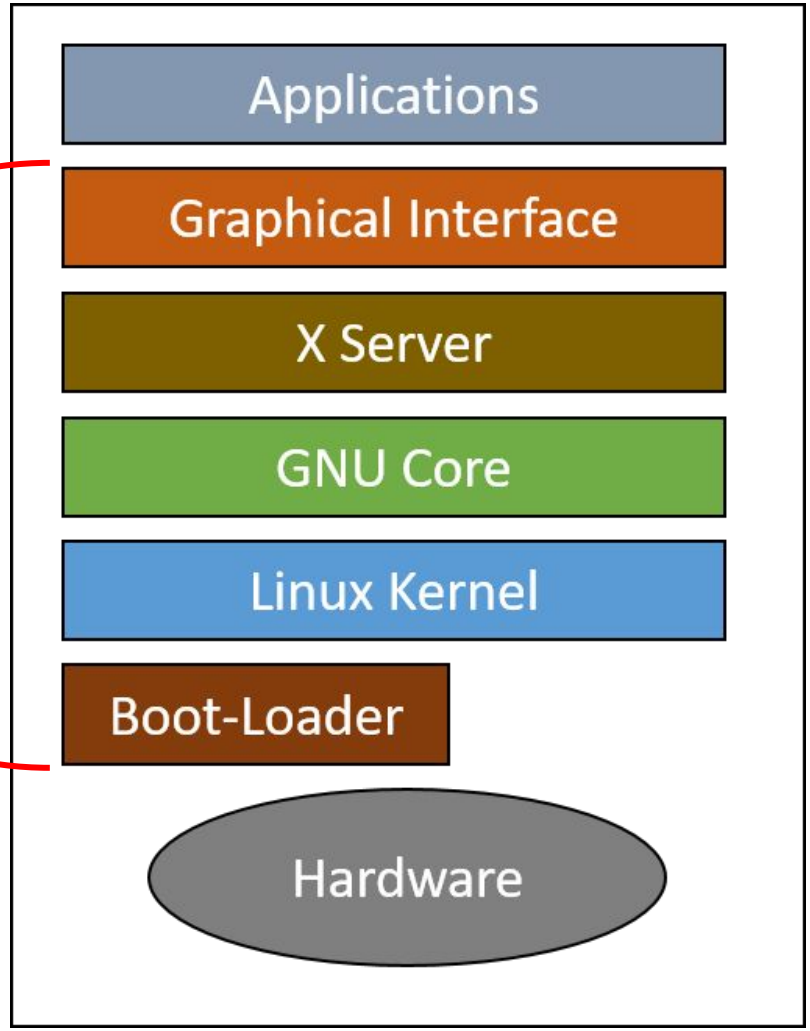
Components of Linux



Components of Linux







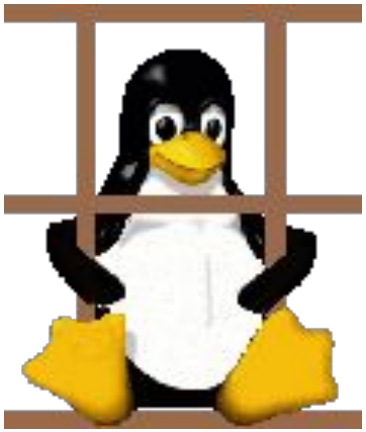
Linux Installation (LinuxZoo)

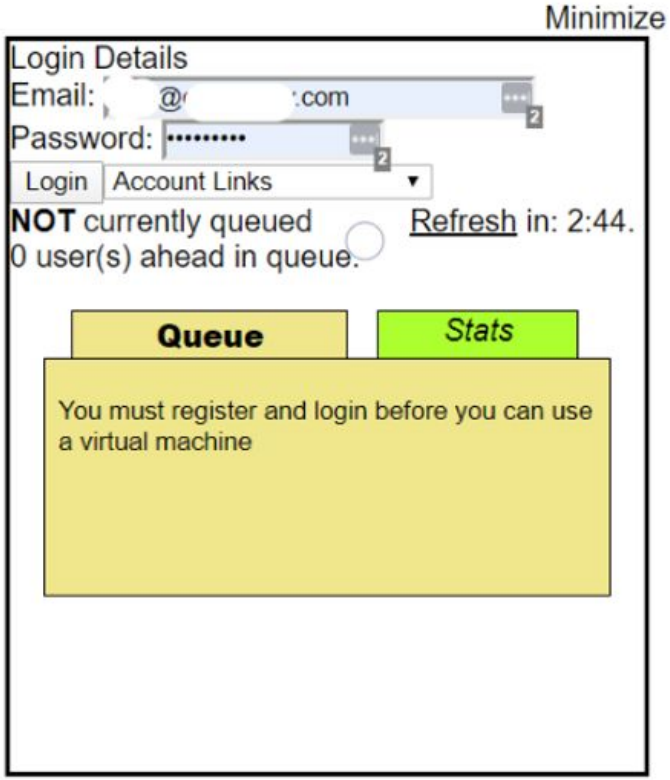
Linux Installation

Step-1: Go to https://linuxzoo.net/

Step-2: Register by filling in the registration form.

Step-3: Login with your credentials.

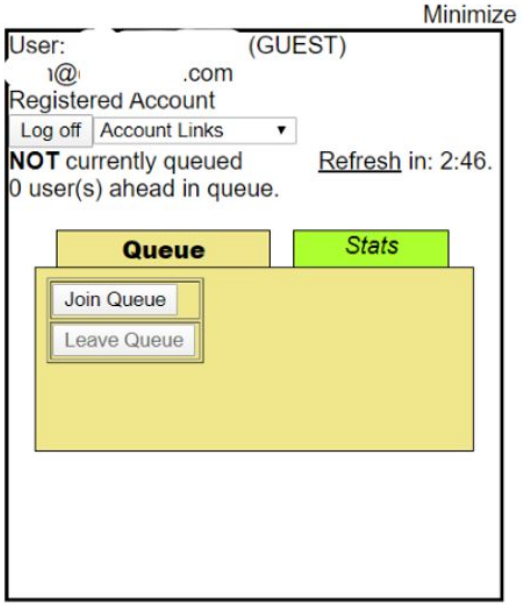




Linux Installation

Step-4: Click “Join Queue” button

Step-5: After the boot progress is completed, click“Javascript VNC” on the “connect” tab



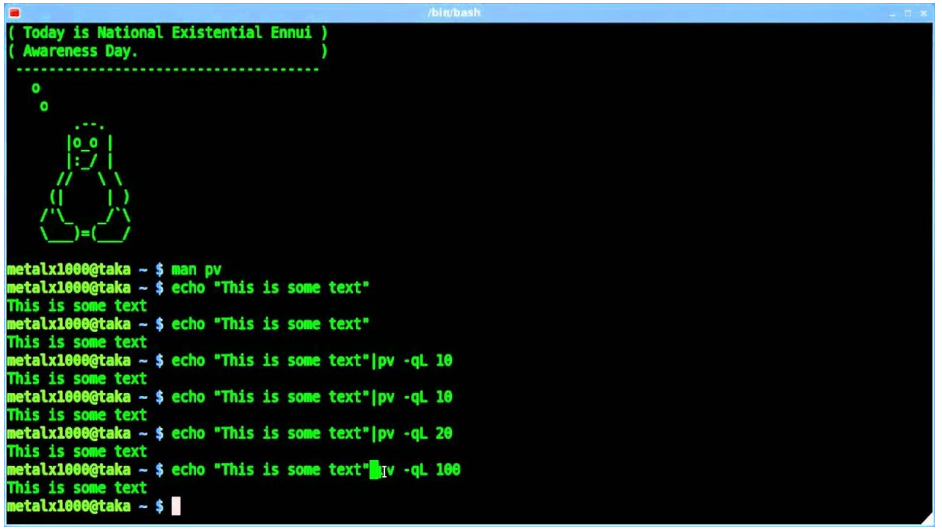
Linux Installation

Step-6: Use “secure” as password to login Linux.

Development Languages

Shell

Shell is a command language interpreter that executes commands read from the standard input device such as a keyboard or from a file.n as a "Bash shell script" (or "script").



Development Languages

- C
- Java
- JavaScript
- Perl
- Python
- PHP