HELLO!

My name is Matjaž GUŠTIN

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2

Computer engineering student

Productivity

Psychology

Security

Privacy

Teaching

Databases

Open source

I **do** read the Terms and Conditions

Hacking

Blog

Linux & Unix

3

EESTEC LC Trieste

- ▶ Electrical Engineering STudents European assoCiation.
- ▶ Also computer engineering students.

Like ELSA for tech nerds!

... or is ELSA like EESTEC for law nerds?

Computer engineering basics
the scary part made simple

5

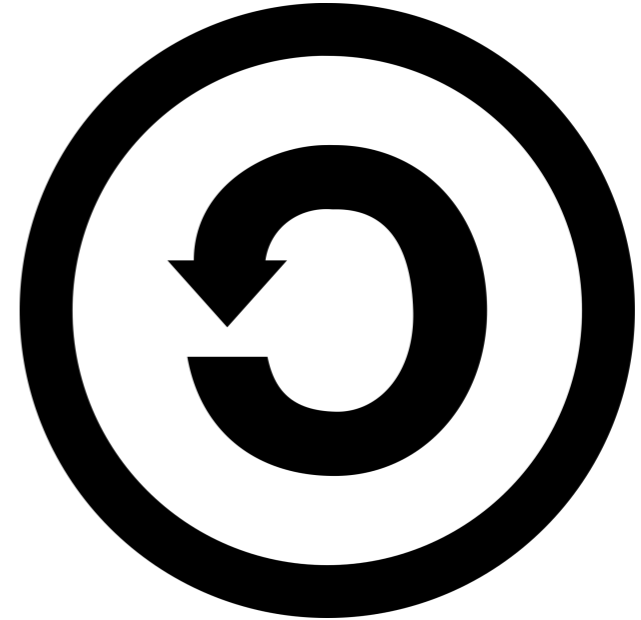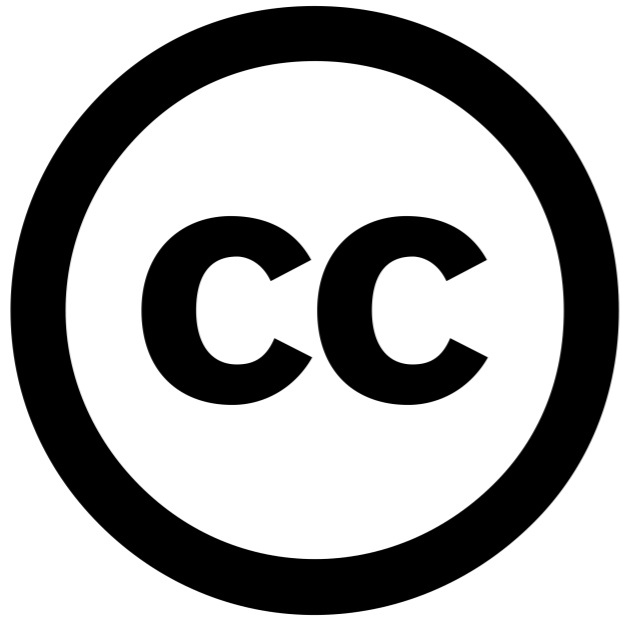*"But I don't know s**t about computers! Help!"*

6

We'll define

- ► Computers, Software, Hardware, Operating systems.
- ► How the Internet works.

Questions are welcome!

For real, ask me stuff.

Computers and systems

10 Computer

▶ A device that **can be instructed** to perform some arithmetical and logical operations automatically.

14 Hardware

▸ Physical electronic components of a computer.

▸ **Outside** the case: mouse, keyboard, screen, printer, USB ports

▸ **Inside** the case: processor, memory, disk, network card, graphic card, sound card

17 Software

▶ Set of machine-readable instructions that directs a computer's processor to perform specific operations.

▶ **It tells the computer what to do.**

▶ **Program** = one set of instructions

▶ Software = set of programs, usually

21 **System**

▶ Interconnected components that behave as one.

▶ Creates output from input.

… thanks for nothing!
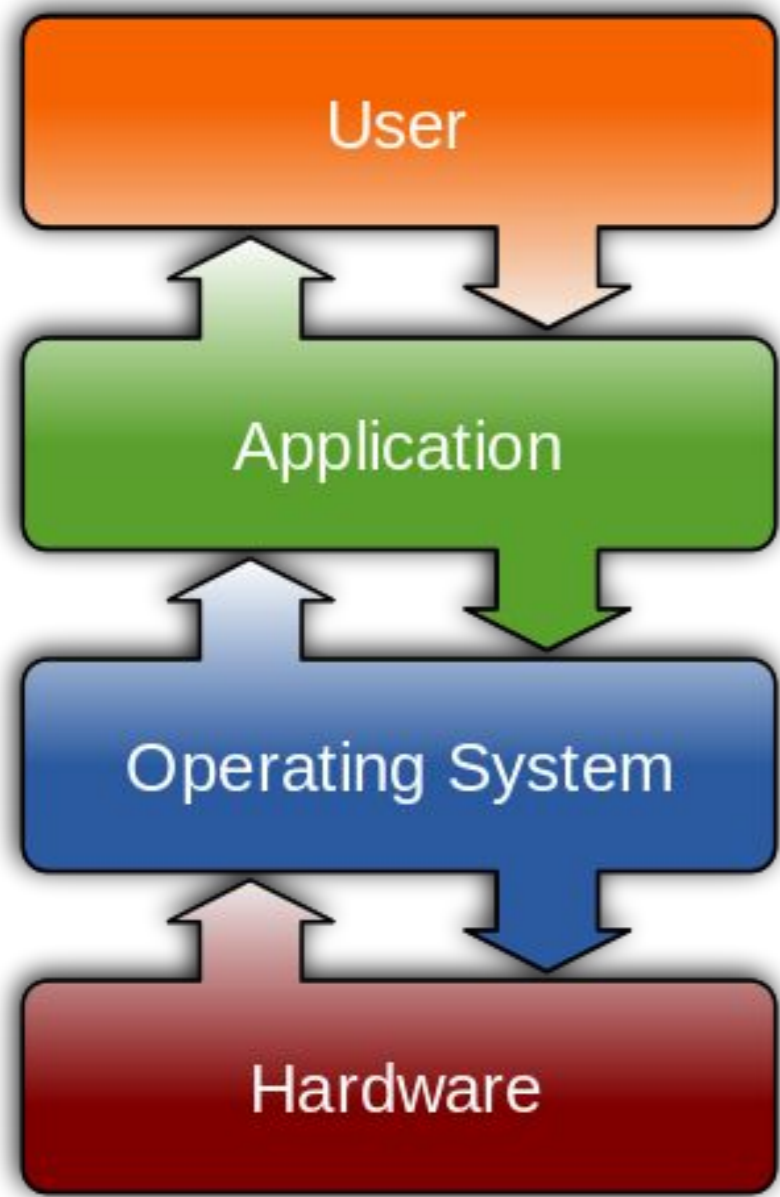
A system is anything we want to consider as one!

23 Operating Systems

▶ Microsoft Windows

▶ GNU Linux

▶ OS X (macOS)

▶ BSD

▶ iOS

▶ Android

etc.

Operating system

▶ Software set that manages computer hardware and other software's resources.

▶ Provides common services for computer programs.

▷ Examples: current time, network connections, windows and buttons

▶ **Kernel** = core of the OS.

https://en.wikipedia.org/wiki/File:Operating_system_placement.svg

User

Application

Operating System

Hardware

Networks and the Internet

28 Computer network

▶ A telecommunications network which allows computers to exchange data.

30 Internet

- ▸ Is the global system of interconnected computer networks.
- ▸ Is a *network of networks*.
- ▸ 2016: ~20 billion devices.
- ▸ 2020: ~50 billion (Cisco estimate).

32

ISP

▶ Internet Service Provider.

▶ The company that gives you access to the Internet (for money).

▶ Offers a telecommunication infrastructure and IP addresses.

33 Finding a computer on the Internet somewhere

▶ Each computer on a network (and on the Internet) has an **IP address**.

▶ A unique (temporary) identifier.

▶ Just **like a phone number**.

▶ Examples:

▷ *216.239.32.10*

▷ *2001:0db8:0000:0000:0000:ff00:0042:8329*

34 Domain Names

▸ We add names to computers.
▸ Easier to remember than IP addresses.
▸ The Domain Name Service (DNS) translates names to IP addresses.
▸ **Like a phone/address book**.
▸ *matjaz.it = 94.141.20.79*

35 Server-Client

- ▶ A **server** is a computer **program** that provides functionality for other programs, called **clients**.
- ▶ Server and client may be on the same machine.
- ▶ Usually on different machines, connected using the Internet, they are *also called server and client*.

37 **World Wide Web, "The Web"**

▶ Set of documents and other resources.

▶ Identified by URLs (links).

▶ Interlinked by hypertext links.

▶ Can be accessed via the Internet

Whatever accessible by a **browser!**

38

URL

▶ Uniform Resource Locator.

▶ Informally termed a **web address**.

▶ Is a reference to a web resource containing:

▷ its **location** on a computer network

▷ a **mechanism** for retrieving it

https://www.example.com/image.jpg

40 Search engine

- ▶ Software designed to search for information on the World Wide Web.
- ▶ Compares the searched terms with the content of web pages.
- ▶ Does not answer any question directly, only proposes related content.

42 Net Neutrality

▶ Is the principle that ISP and governments should **treat all data on the Internet the same**

▶ No discrimination/limiting by

  ▷ User
  ▷ Content
  ▷ Site
  ▷ Application
  ▷ Encryption

Cookies

44

▶ A small piece of data sent from a website and stored in the user's web browser.

▶ For websites to remember the status of the user.

▷ Authentication

▷ Shopping cart

▷ Purchase procedure steps

45 **Cookies**

▶ **Needed for a website to work properly**, just like images or fonts.

▶ Tracking and advertisement cookies may be a **privacy issue**.

▶ Example:

  ▷ Google Analytics has tracking cookies

  ▷ Amazon has session cookies

  ▷ *matjaz.it* has no cookies at all

NOW YOU TELL ME

48

1. Wi-Fi
2. Open Source
3. SW Licenses
4. File Sharing
5. Peer to Peer
6. BitTorrent
7. Database
8. Hack/Crack
9. Viruses
10. Social Network
11. VPN
12. Proxy
13. Tor & Anonymity
14. Privacy
15. Tracking
16. Big Data
17. Internet of Things
18. Cloud Computing
19. Cloud Storage

49

1. CDN
2. BIOS
3. IPv4, IPv6
4. USB
5. HDMI
6. HTTP(S)
7. TLS/SSL
8. GNU
9. CA
10. HTML
11. SaaS
12. IaaS
13. TCP/IP
14. UX
15. UI
16. LAN
17. PGP/GPG
18. WWW

50 THANKS!

Contact me, maybe?

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