

1. Take notes



Tips for effective learning

*Actively taking notes during class can help you **focus** and better **understand** main concepts.*

*Good note-taking will improve your **active listening**, comprehension of material, and retention.*

<https://learningcenter.unc.edu/tips-and-tools/effective-note-taking-in-class/>

Required Reading/Video Materials

- [How to Build a Computer](#) (17 mins)
- [Overheating CPUs](#) (2 mins)
- [How to Build a Gaming PC](#) (15 mins)
- [Lots of Cores or a Faster CPU Clock Speed](#) (5 min read)

CS 101

Computer Basics

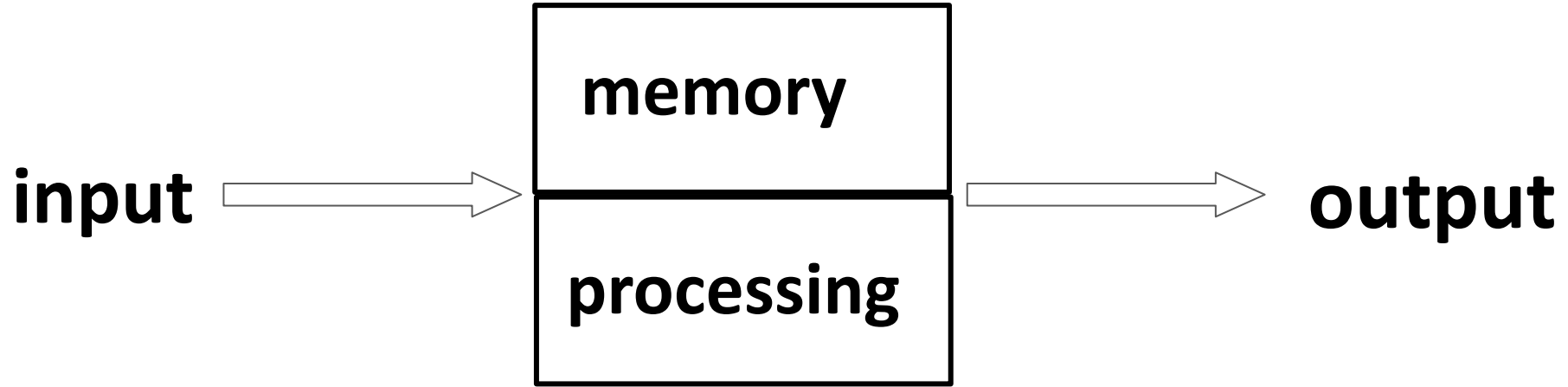
Introduction to **Computer** Science

“Problem Solving using Computational Techniques”

Not Computer Science

- Building computers and designing computer hardware is ***not*** computer science!
- The physical computer is a ***tool*** of a computer scientist, so it is important to understand how it works

What is a computer?



Part 1. Answer the questions on your ICAs

Types of Computers

- Discuss in your groups . . .
 - Come up with at least 5 different kinds of devices that are, at their core, computers
 - What makes a “computer” a “computer” ?

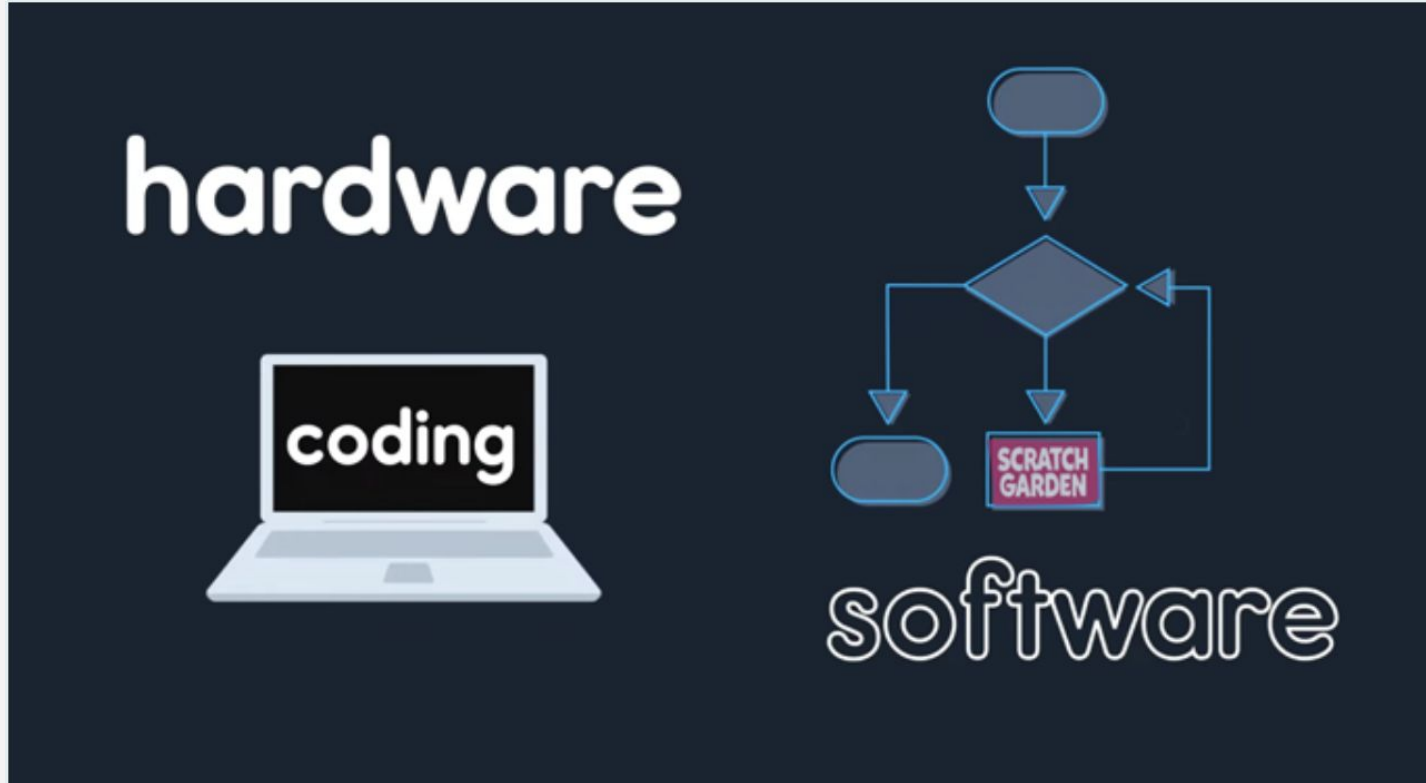
Which of these is (or have) a computer?

A**B****C****D****E**

ALL OF THE ABOVE

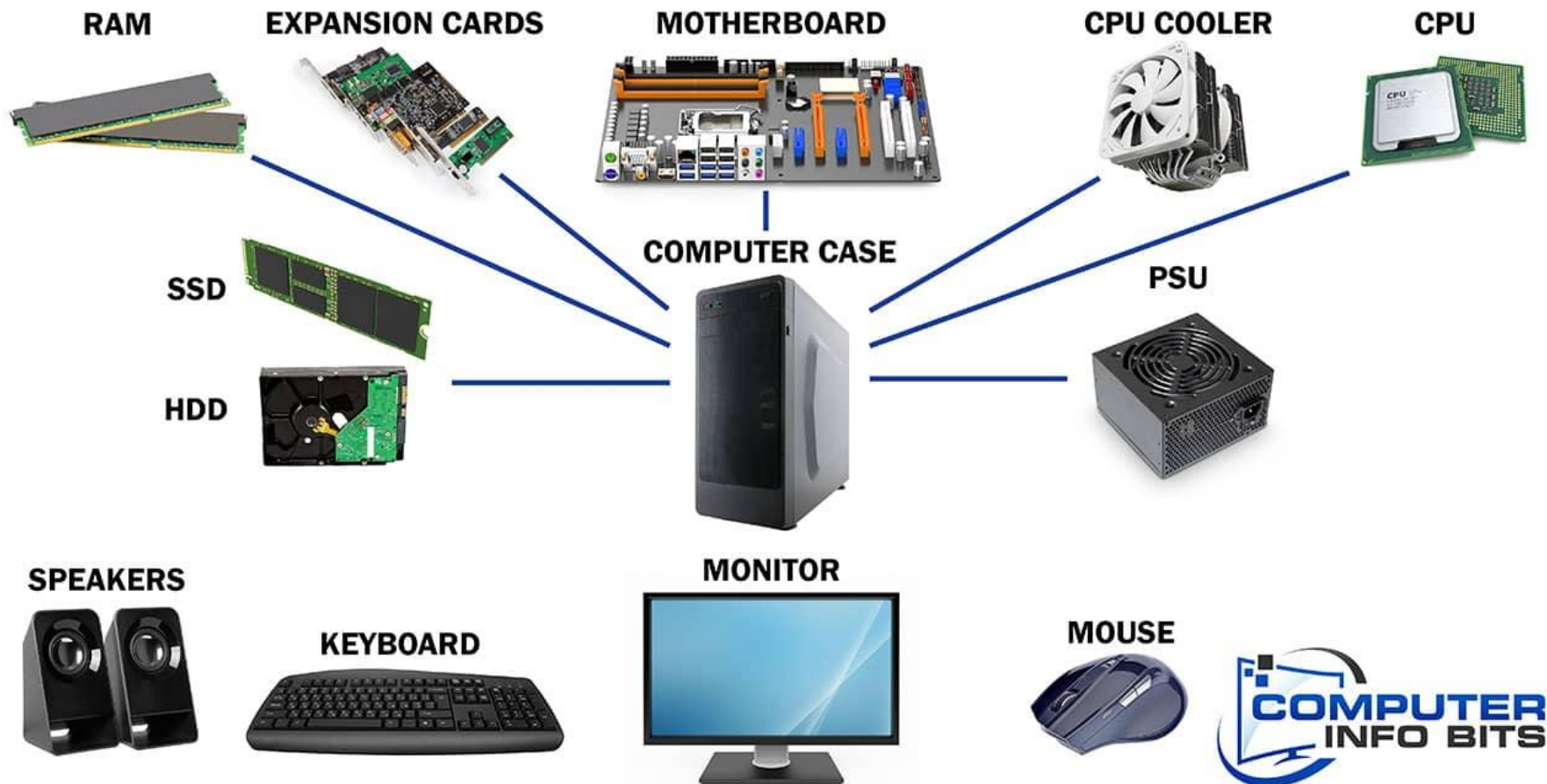
Discuss in your groups

Computer has hardware and software



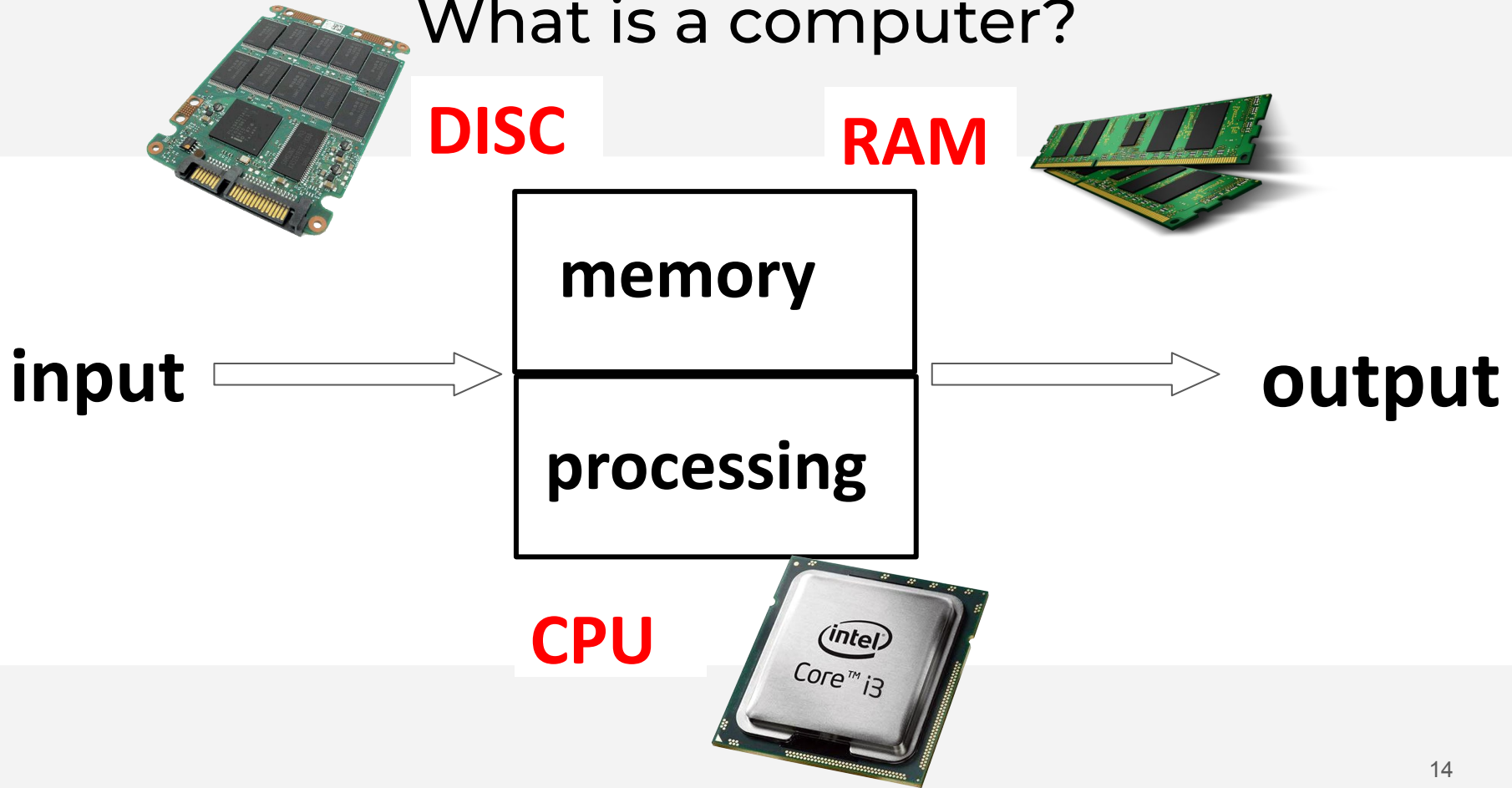
HARDWARE

PARTS OF A COMPUTER



List parts of a computer for input and output

What is a computer?



Central Processing Unit (CPU)

- a processor (the CPU)
 - the "brains" of the computer
 - does arithmetic
 - moves data around
 - controls the other components
- the CPU has a very limited set of instructions it can perform, *but*
 - it's very, very fast



Central Processing Unit (CPU)

- Used to be one CPU
- Now, most have 2, 4, 6, 8, or even more!
- The word "core" has become a synonym for "processor"
- Core™ i3 is a marketing term



Central Processing Unit (CPU)

- A CPU uses an internal clock (like a heartbeat) to step through instructions
- We measure the speed in terms of the number instructions it can do in a second (the number of "beats" or "ticks" in a second)
- 1 beat (or tick) is one *hertz (Hz)*



Computers have two types of memory

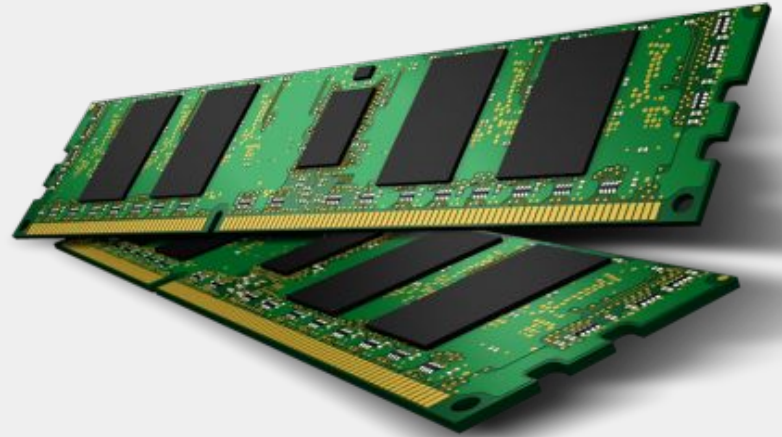
Volatile and Non-Volatile

- ***Volatile Memory (VM)*** is storage that only persists while power is on. Once shut down, all stored info is gone.
- ***Non-Volatile Memory (NVM)*** (persistent storage) is storage that remains regardless of the power state.

(Random Access) Memory (RAM)

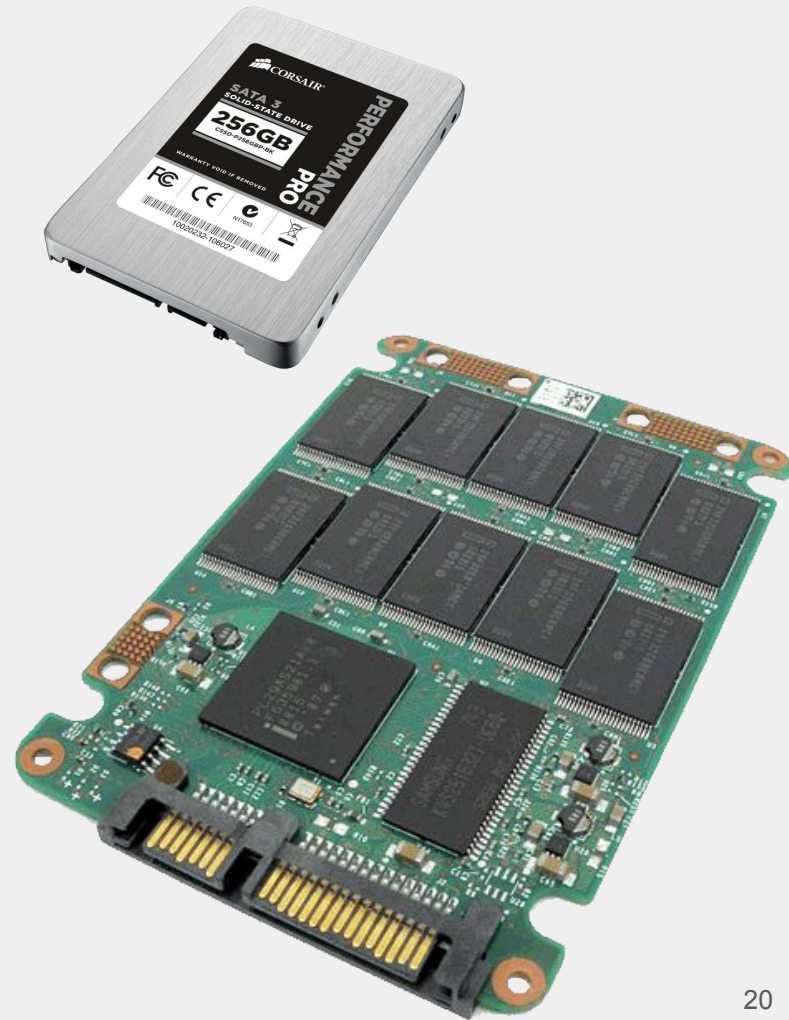
Random-access memory (RAM)

- random
 - can access any location in memory in the same amount of time
- volatile
 - contents of RAM are lost when power is turned off



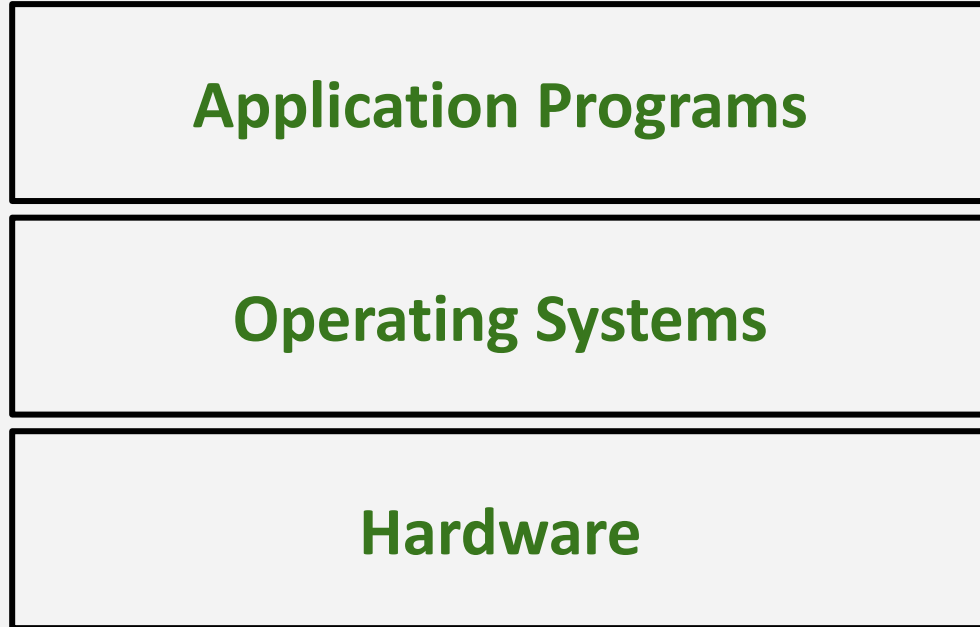
Solid State Drive (SSD)

A ***solid-state drive*** is a non-volatile, solid-state storage device that uses integrated circuit assemblies as memory to store data persistently. SSD technology primarily uses electronic interfaces compatible with traditional block input/output (I/O) hard disk drives (HDDs), which permit simple replacements in common applications. (wp)



SOFTWARE

How does a program run?



What is an operating system?

- A short definition of an operating system: An operating system is a collection of system programs that manage the resources of a computer and control the running of user programs.

Write examples of Operating Systems

What are the operating systems of your laptops?

What are the operating systems of your cellphones?

Operative System has **System Programs**

- File Management
- Command Line Interface(CLI's)
- Many others...

- Read more

<https://www.geeksforgeeks.org/system-programs-in-operating-system/>

File Management

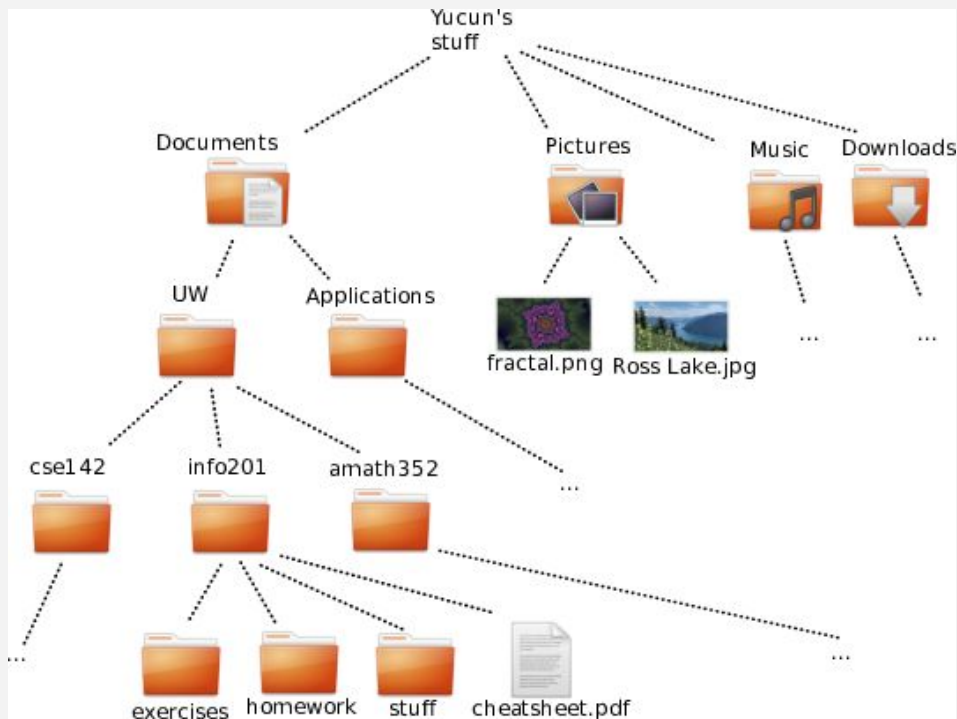
Programs for File Management:

Finder and Explorer

What is the file management Program installed in your computer?

Write your answer on paper and open the program on your computer

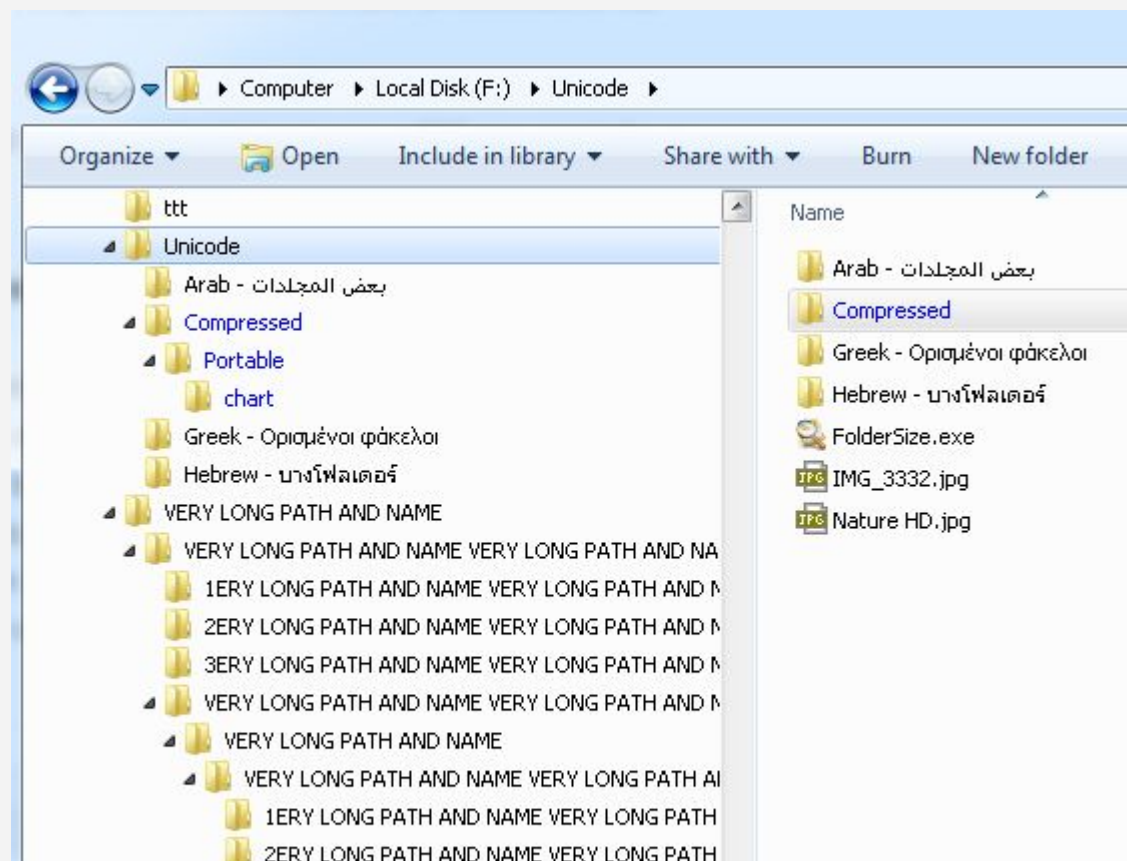
File system tree



Reading:

<https://faculty.washington.edu/otoomet/info201-book/file-system-tree.html>

Graphical view



Textual view

```
— 0
— Desktop
  — Red Alert VM info
— Documents
  — 09.26.19_mailtrap
    — archive.pst
  — poc.txt
— Downloads
  — oracle_vbox_2016.asc
  — Oracle_VM_VirtualBox_Extension_Pack-5.2.18.vbox-extpack
  — SecretMessage1.logicdata
  — team.one
  — Thumbs.db
  — VirtualBox_kkkkali_30_08_2018_07_16_30.png
— Music
— Pictures
  — seal of approval.jpg
— Public
— Templates
— Videos
— VirtualBox VMs
  — GreenAlertUbuntu.vdi
```

All files have a name, extension and a path

C:\Source\project\docs\file.txt

Working "Directory" Path

Filename

All files have a name, extension and a path

A **path** for files and folders is the list of parent directories that the computer must go through to find that particular item.

Read more:

<https://education.launchcode.org/intro-to-professional-web-dev/chapters/terminal/filesystem-and-paths.html#:~:text=A%20path%20for%20files%20and,file%20from%20the%20root%20directory.>



C:\Source\project\docs\file.txt

All files have a name, extension and a path

The Path answer to Where the file is located.



C:\Source\project\docs\file.txt

The image shows a file path 'C:\Source\project\docs\file.txt' with a blue rectangular border highlighting the directory portion 'C:\Source\project\docs\'.

All files have a name, extension and a path

The Name answer to What is the file about.

C:\Source\project\docs\file.txt



All files have a name, extension and a path

The Extension answer to What Type of file it is.

C:\Source\project\docs\file.txt

Types of file extensions

- **Text and word processing files.** doc, docx, odt, pages, rtf, txt, wpd, wps.
- **Spreadsheet files.** csv, numbers, ods, xls, xlsx.
- **Web-related files.** asp, aspx, css, htm, html, jsp, php, xml.
- **Image files.** bmp, gif, ico, jpeg, jpg, png, raw, tif, tiff.
- **Audio and video files.** aif, mov, mp3, mp4, mpg, wav, wma, wmv.
- **Programming files.** c, cpp, cs, java, js, json, py, sql, swift, vb.
- **Compression and archive files.** 7z, rar, tar, tar.gz, zip.
- **Executable program files.** app, bat, bin, cmd, com, exe, vbs, x86.

Follow the guide on File Management

- For Windows:

<https://bettercomputertech.com/2024-01-24-file-management/>

- For MacOS

https://www.apple.com/voiceover/info/guide/_1122.html

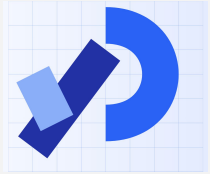
On your Laptop

1. Create a folder under Documents named “CSC101”
2. Create the following subfolders:
 - Lecture Slides
 - Programming Assignments
 - Notes

On paper

- Write the complete path to the folders you just created:
 - Lecture Slides
 - Programming Assignments
 - Notes

In this class



Application Programs

**Processing
programs**



Operating Systems

**Windows,
MacOS**



Hardware

Your laptop

Let's run a program



click run

Application Programs

Operative Systems

Hardware



four_edges.pde



Let's run a program



click run

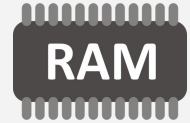


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Application Programs

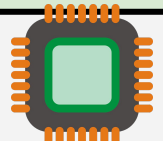
Operative Systems

Hardware



Memory

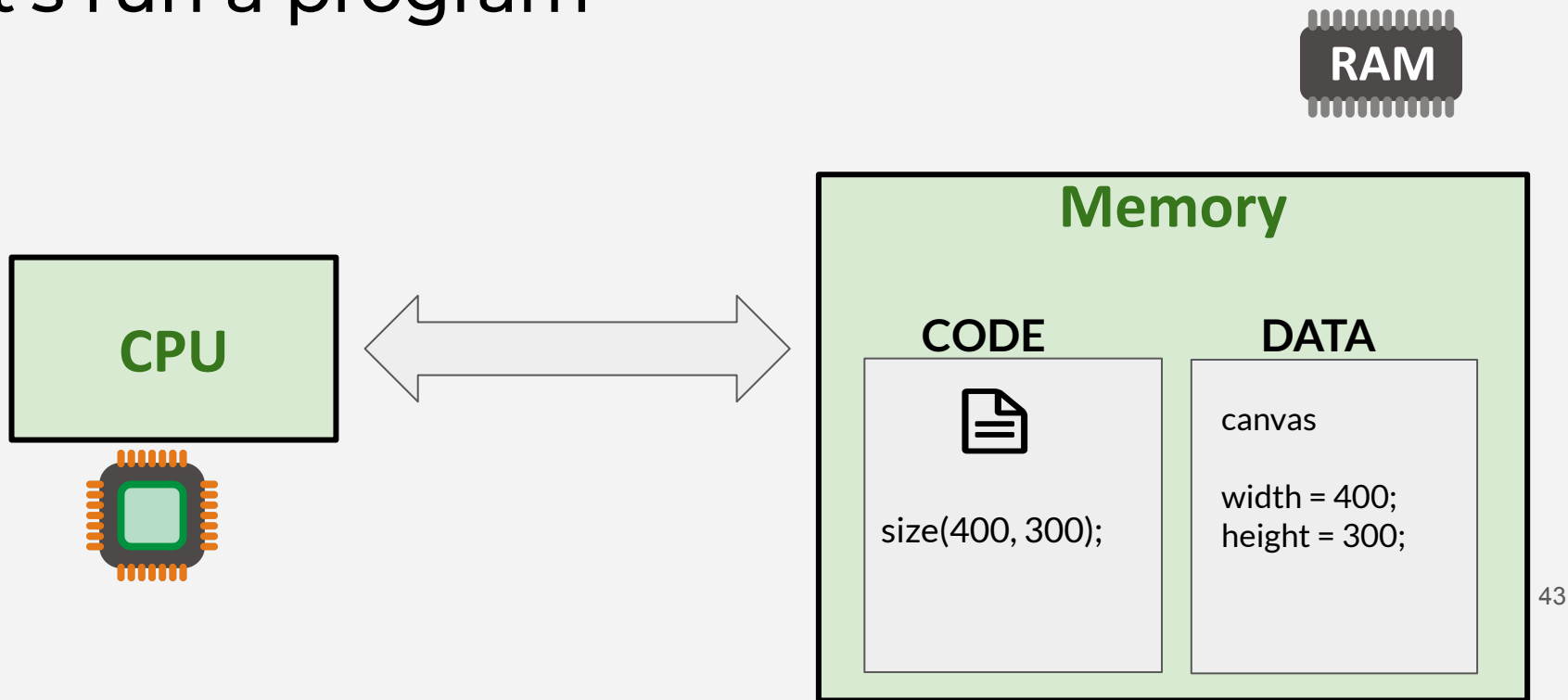
CPU



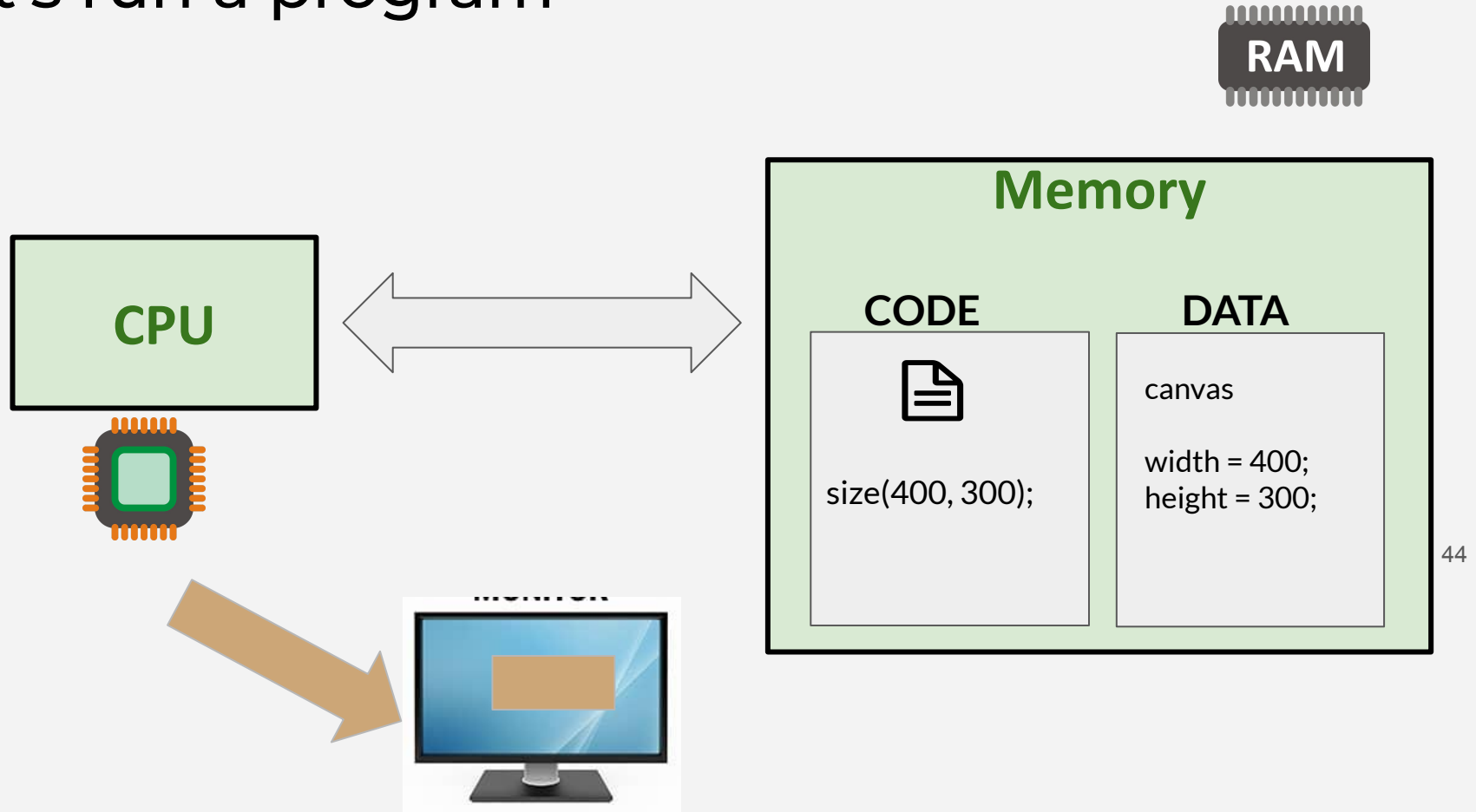
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Let's run a program



Let's run a program



On paper

- Draw the file tree of the folder that contains the Processing program.

Use a textual syntax (example on slide 30)