Vocational English II (Mesleki Yabancı Dil II)
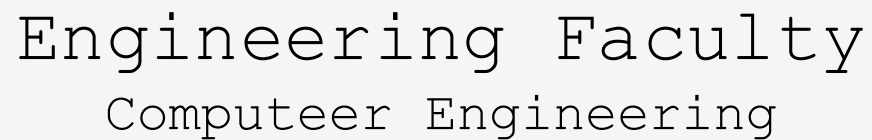# Week 2

Engineering Faculty
Computeer Engineering

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INTRODUCTION

WHY ENGLISH?

- Common language in tech
- Unlock global opportunities
  - Job **opportunities** worldwide
  - International **collaboration**
- Access **cutting-edge** knowledge
  - Learn from the best
- Share your ideas worldwide
- What else?

What does `lingua franca` mean?

ONLINE EDU RESOURCES

- Coursera
- edX
- Udemy
- Khan Academy
- YouTube
- Perfectly Spoken Course Online
- Books
- BUSU
- etc.

Tell us any course you have taken on these resources

NEWS RESOURCES

TechCrunch

HN Hacker News

TheVerge

c|net

WIRED

webrazzi

ACADEMIC RESOURCES

IMPORTANCE OF COMMUNICATION IN CE

- Communication is **essential** for collaboration and teamwork in computer engineering projects.
- Effective communication can help to **prevent** misunderstandings and errors.
- Clear and concise communication can improve **efficiency** and **productivity**.
- Poor communication can **lead** to negative **consequences** (e.g., project delays, **conflict**s, lost opportunities).

5 ways to learn English faster

Listen, watch, and speak English often!

Surround yourself with English

You can Do Anything

Be confident

Don't be afraid to make mistakes!

Think in English

Study on your own or with a teacher

Dedicate time to study

Use the language everyday!
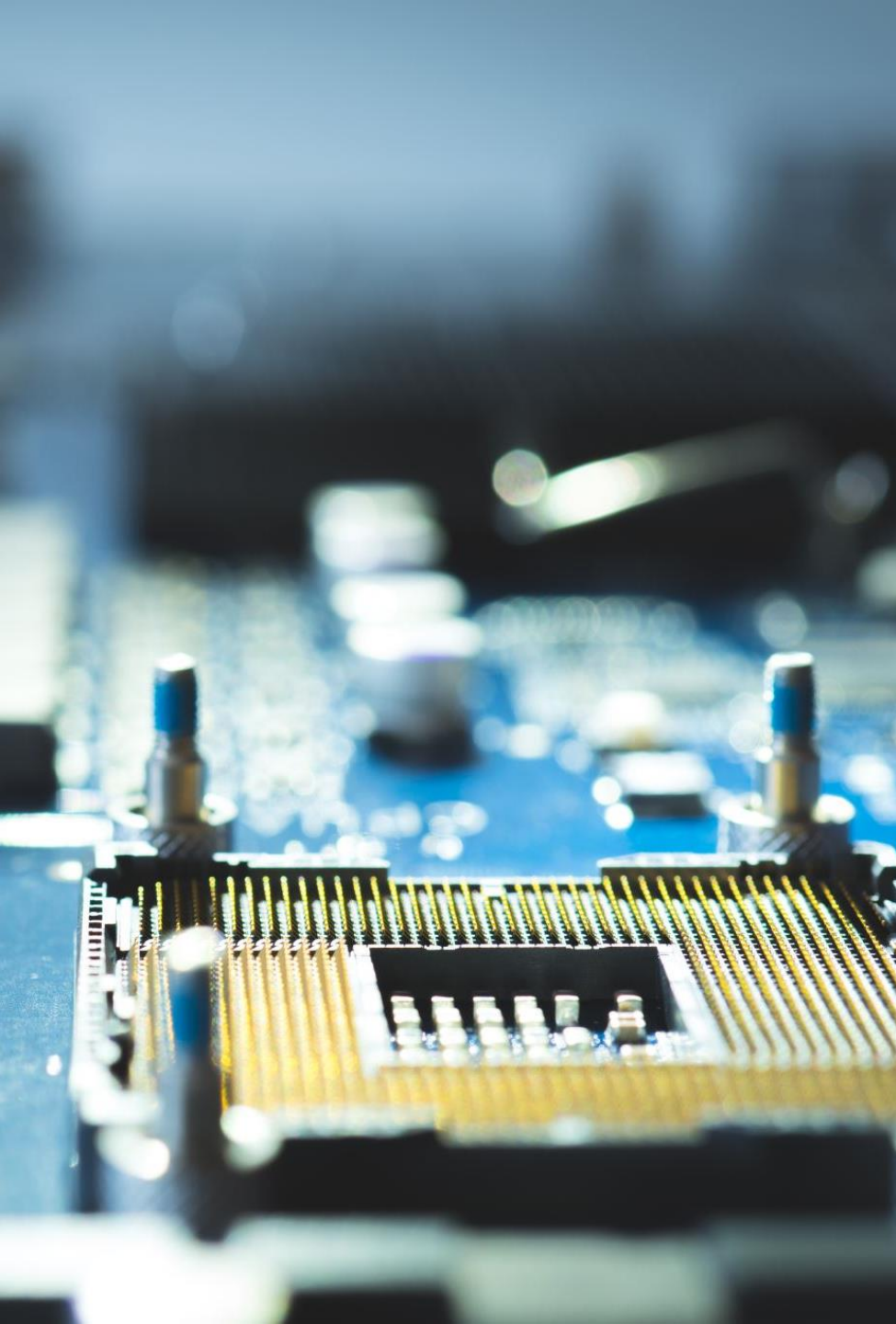
Practice

STRUCTURE OF VOCATIONAL ENGLISH II

1- QUIZ WITH WORDS FROM THE PREVIOUS WEEK
2- WORKING ON ARTICLE OF THE WEEK
3- LISTENING ACTIVITY

THIS WEEK WE WILL WORK ON

Introduction to Computer Science & Programming

Fundamentals

ARTICLE

https://ivanh.substack.com/p/introduction-to-computer-science

THE START

A computer is a device that is capable of storing and manipulating information through various processes. It can perform complex calculations, organize and store vast amounts of data. Computer science is a field that focuses on studying computers and their applications in solving problems for us. All the hardware that you see in a computer and the software work together to make a computer run. This includes the study of computing systems, programming principles, data analysis, networking, the internet, and how computers impact our lives.

THE START

- Computers are better at storing and sharing vast amounts of information and solving calculations quickly than we humans are. Computer scientists will use the computer's abilities to help create new technologies that will improve our lives. They do so by programming computers to complete a task faster and more efficiently.

Examples of computer science:

- Using C++ and C# to program a game

- Developing mobile applications

- Writing programs to calculate math problems a lot faster
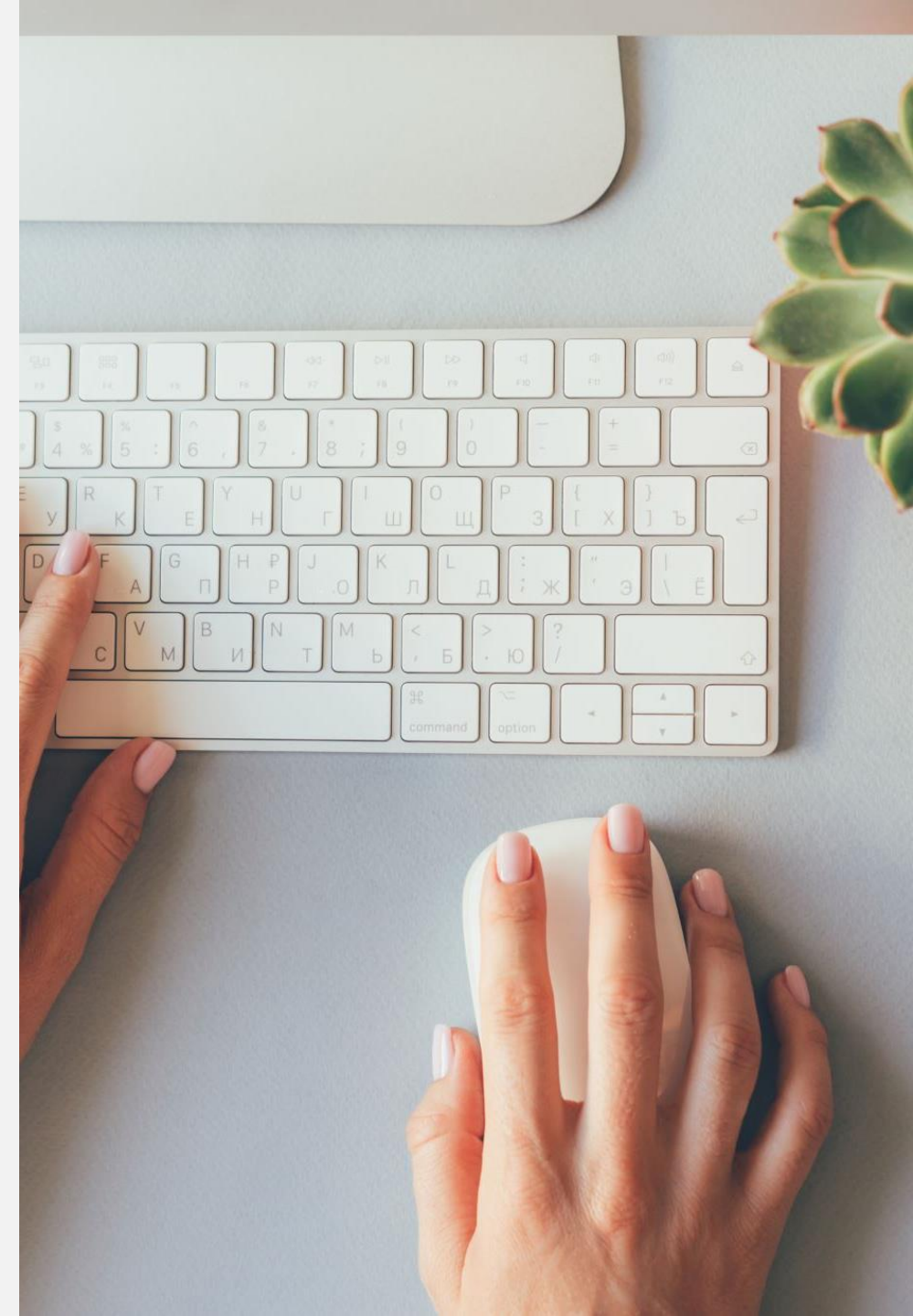
CONCEPTS

Some main concept areas of computer science:

1. Computing systems: Computing systems are the machines that process information and run programs. These include devices such as smartphones, laptops, and desktop computers. Additionally, many electronic appliances and gadgets, such as dishwashers, televisions, and smartwatches, are equipped with embedded computers that enable their functionality and automation. These devices rely on programs and algorithms to carry out specific tasks.

2. Algorithms and programs: Algorithms and programming involve writing out programs (code) that will tell the computer what to perform. An algorithm is a set of instructions or steps written in human language that guides an individual in completing a specific task. A program is a set of instructions translated into code so a computer can understand.

3. Data analysis: Data analysis is collecting, storing, organizing, and studying what the data means. Computers are great at these sorts of things, so they're perfect for analyzing data.

4. Internet and networks: The Internet is a worldwide network that links millions of computers. A network is a group of connected devices that share information.

5. Impacts: This is the study of how computers impact our lives. Just cause we can always build new innovative technologies doesn't mean that we should.

COMPUTERS

- People back in the day used devices like an abacus to help calculate math problems. This all changed during the 1940s or so when the first electronic digital computers were invented. It was called the Colossus and was built in England. But after a while, Americans made a faster computer called ENIAC (Electronic Numerical Integrator and Computer). These computers were massive and they took up the entire room. They were mainly used by governments, large businesses, and researchers.

- Nowadays computers are portable and tiny. Smartphones are considered computers since they can perform calculations, run programs, and store information.
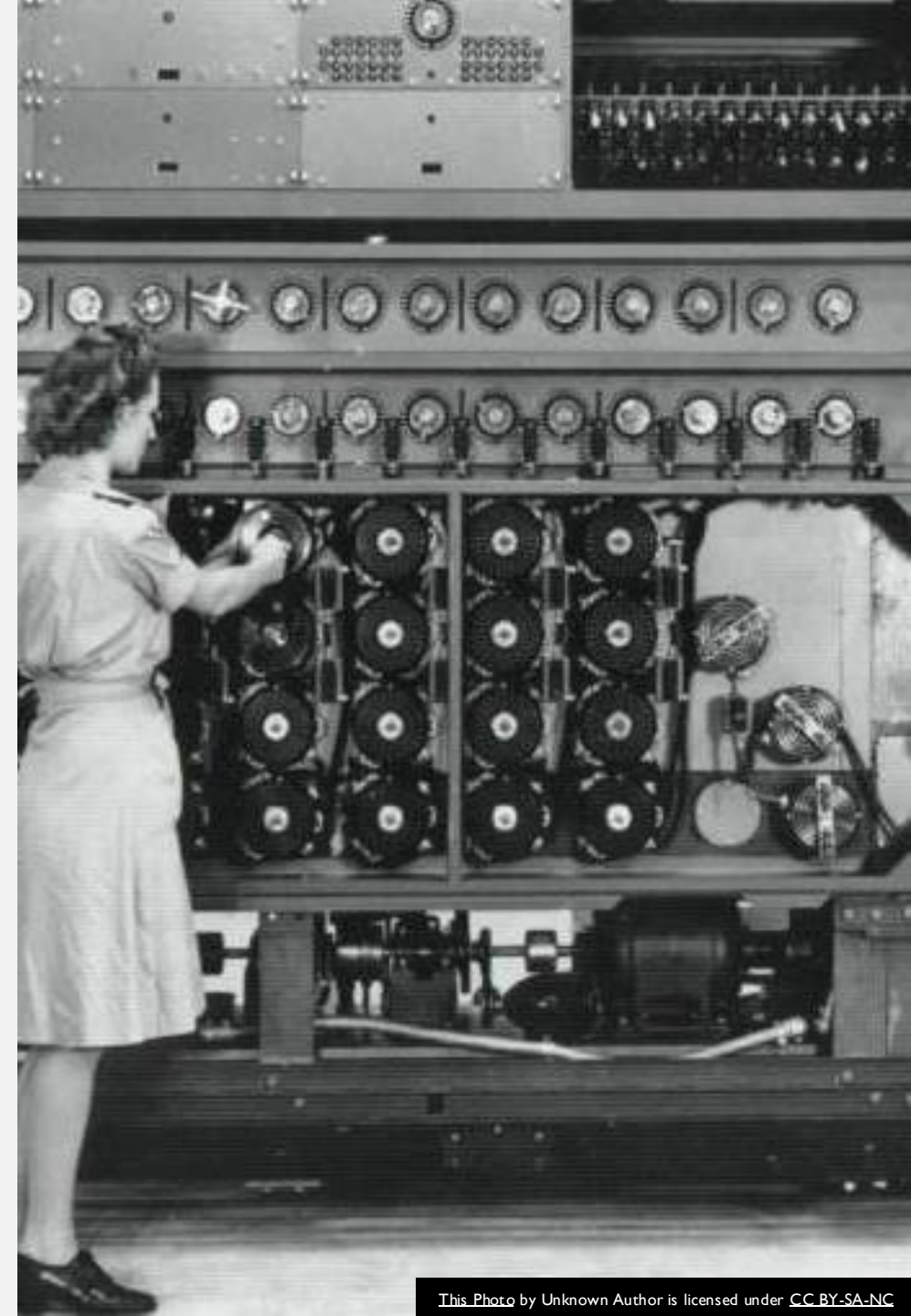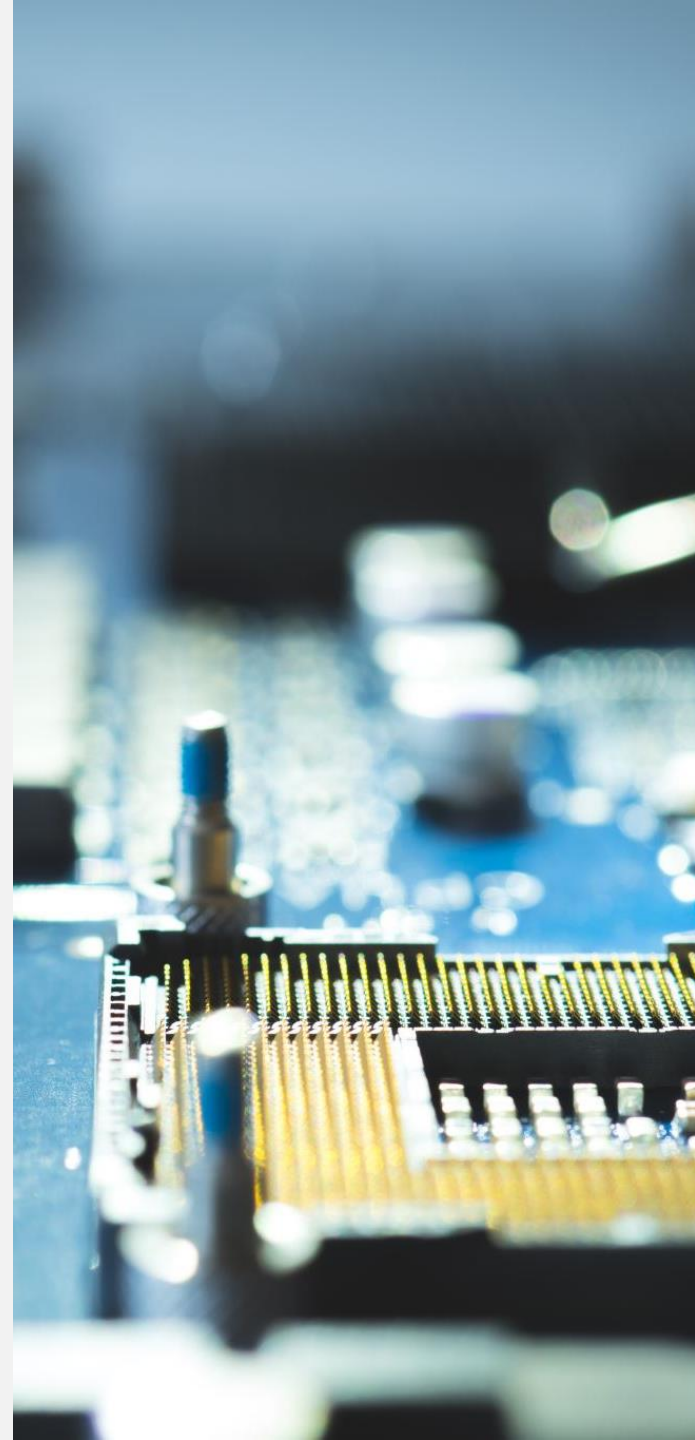
PARTS OF A COMPUTER

Computers are made up of hardware and software.

Hardware: This is the physical part of a computer such as a screen, mouse, and keyboard. If you can see the parts, it is hardware. These can be separated into different categories:

- Input: These are parts used to send information to a computer such as a microphone, keyboard, mouse, and webcam.

- Output: These are parts the computer used to send information to you such as monitor, printer, and speakers.

- Storage: These are parts used to store information such as hard drives, SSD, and flash drives.

- Processing: These are parts of the computers used to run programs which include the central processing unit (CPU) and the graphics processing unit (GPU). A CPU is the brain of the computer. It receives inputs and executes commands. It is made up of the control unit, main memory, and arithmetic logic unit. A GPU is more focused on graphics which are images of different kinds. The GPU delivers images to the computer's screen.

PARTS OF A COMPUTER

Software: This is the set of programs that tells a computer what to do. There are different kinds of software for different purposes. An application is a program that allows a user to perform a certain task. Not all programs are applications, but all applications are programs since some applications are for computers and not for us using them. Software is stored on storage devices such as solid-state drives, hard drives, and flash drives. Like hardware, these can be separated into different categories:

- Application: These are programs that allow users to complete a task.

- System Software: These are programs that allow hardware devices to work together and properly with other programs. Operating systems like MacOS or Windows are examples of system software. Applications can't work without system software.

INTERACTING WITH COMPUTERS

Human-Computer Interaction

This is the study of how users work with computers. The whole purpose is to find improvements and make it easy for users to use. Here are some concepts:

The user interface (UI) includes all the components of a computer system that allow users to interact and operate the computer. It's basically the graphical, textual, and interactive elements that allow us to communicate with the system and perform various tasks.

- A graphical user interface (GUI) is a type of UI that uses symbols and icons. This just makes it easy to use.

- A command-line interface (CLI) uses only text to operate a computer. This is difficult to use as users need to type a specific command for it to work. Most people don't need to know the specific commands.

TROUBLESHOOTING

Troubleshooting is taking a step-by-step approach to solving errors within software or debugging programs.

Debugging is finding and fixing 'bugs,' or errors within a program. Bugs may be caused by syntax errors and/or spelling mistakes.

STORING INFORMATION

Computers are powerful tools that process and manipulate information, enabling us to efficiently utilize and interact with data. For example:

- Map apps use information from satellites to help navigate the world around us

- Self-driving cars gather data and information to make predictions and decisions. LIDAR uses light to measure the distance to a target. Radar uses radio frequency to detect the distance from a target.

DATA

Data is a collection of unorganized numbers, words, and figures that don't have any meaning. Data can take many different forms depending on the information.

- Input data is organized information put into a computer

- Output data is the information the computer gives out after it has been processed

Information is data that have been organized to have meaning. Basically, there is now context.

In order for computers to process data, it needs to be formatted in a way that the computer can understand. This involves encoding the information, which converts different forms of data such as images, videos, or text into a specific code that can be understood and processed by the computer. Encoding allows the computer to interpret and manipulate the data.

COLORS

Different kinds of data such as colors are encoded in different ways. The most common ways are RGB and Hexadecimal.

RGB (Red, Green, Blue) is a color notation system commonly used to represent colors. It employs three numbers separated by commas, with each number ranging from 0 to 255. These three values correspond to the intensity of red, green, and blue. By adjusting the intensity of each color, a wide range of colors can be achieved. When these shades of red, green, and blue are combined in varying proportions, they blend together to produce different colors. There are millions of ways to combine three numbers, so there are millions of colors that can be represented.
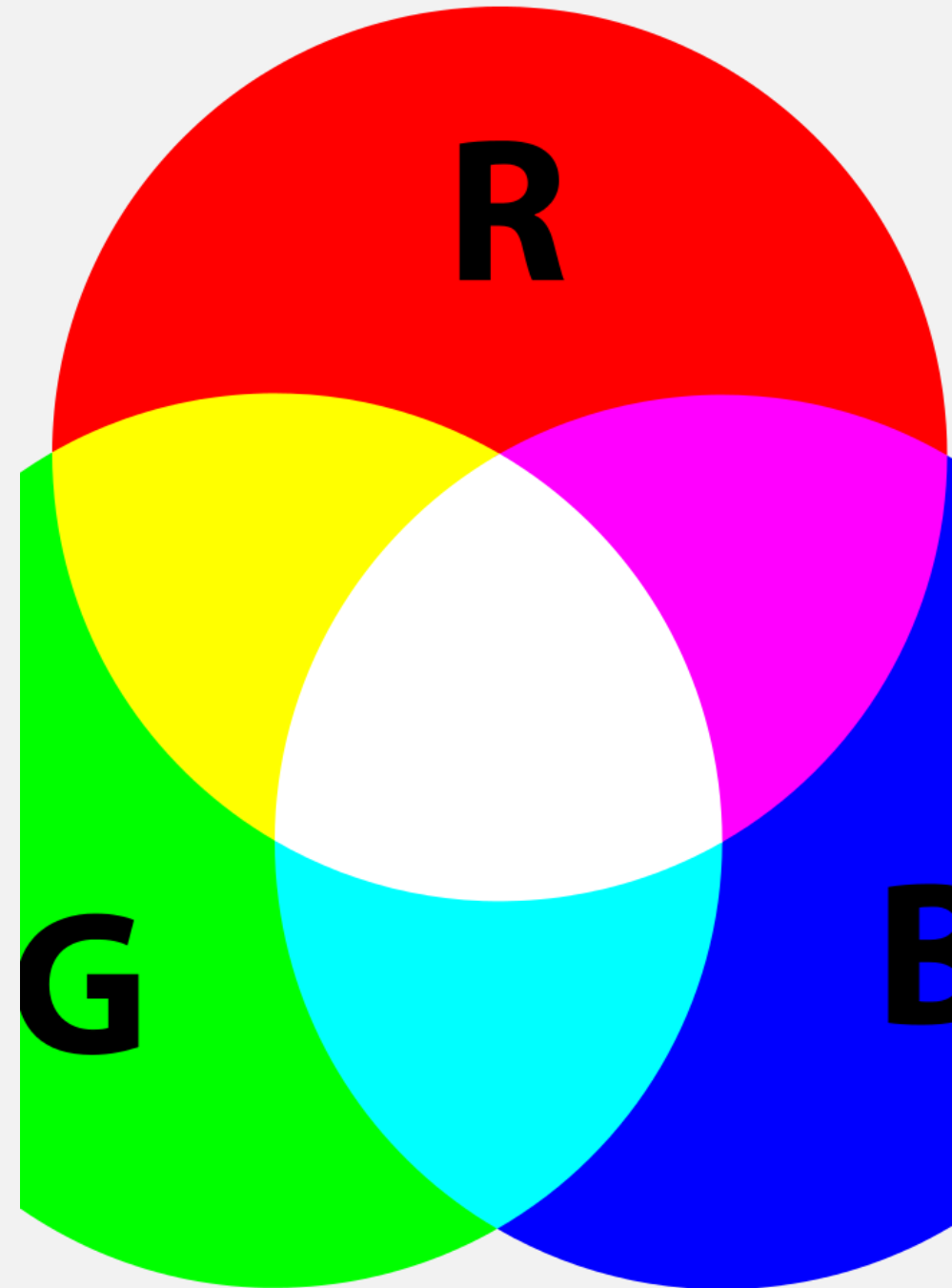
COLORS

The hexadecimal color notation uses six characters to represent the same million of colors as RGB. It's different from RGB because it uses numbers and letters. It's basically a combination of 0-9 and letters A-F. For example, #A020F0 would make a purple color by using the letters A and F as well as the numbers 0 and 2. Each two sets of characters (A0, 20, and F0) represents a different color.

black #000000 (0,0,0)	**gray** #808080 (128,128,128)	**silver** #c0c0c0 (192,192,192)
navy #000080 (0,0,128)	**blue** #0000ff (0,0,255)	**teal** #008080 (0,128,128)
green #008000 (0,128,0)	**lime** #00ff00 (0,255,0)	**olive** #808000 (128,128,0)
maroon #800000 (128,0,0)	**red** #ff0000 (255,0,0)	**purple** #800080 (128,0,128)

DOCUMENTING

Documentation is a vital aspect of software development that provides information about the code. It serves as a reference guide for developers of the program. There are two primary types of documentation commonly used: comments and README files.

Comments

All programming languages have a way to add comments to a code. They are written by programmers about the program's code and are explanations about what the code does, or reminders to add or change the code. Sometimes when you write large programs you might forget what the code does, so commenting helps you remember what the code does.

README

README files give information about a program which may include how to install it, how to use it, or give our credits and references. Usually, they are written in a plain text file and there is one README file per program.

LISTENING/WATCHING ACTIVITY

100+ Computer Science Concepts Explained

https://www.youtube.com/watch?v=-uleG_Vecis&ab_channel=Fireship

WORDS OF THE WEEK

1. Manipulation
2. Computational
3. Embedded
4. Automation
5. Algorithmic
6. Iterative
7. Encoding
8. Decoding
9. Binary Code
10. Graphical User Interface (GUI)

11. Command-line Interface (CLI)
12. Debugging
13. Troubleshooting
14. Documentation
15. Data Analysis
16. Networking
17. Human-Computer Interaction
18. Visualization
19. Test Cases
20. Observations

PS: Keep a journal where you note these words with their meanings and usages in a sentence.

EOF*

*End of Fun/File

REFERENCES/CREDITS

1- https://www.youtube.com/watch?v=-uIeG_Vecis&ab_channel=Fireship
2- https://ivanh.substack.com/p/introduction-to-computer-science