💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

💻 Computing Basics:

📊 **Bit:** *The smallest unit of digital information.*

🔢 **Byte:** *A unit of digital information consisting of 8 bits.*

🔗 **Transistor:** *A semiconductor device used to amplify or switch electronic signals.*

🔌 **CPU:** *Central Processing Unit is the primary component of a computer that performs most of the processing tasks.*

💻 **Turning Machine:** *A hypothetical machine used in computer science to understand the limits of mechanical computation.*

🔍 **Memory Address:** *A unique identifier for a memory location in a computer's memory.*

💾 **RAM:** *Random Access Memory is a type of computer memory that can be read and written to.*

💾 **Machine Code:** *Low-level code that is directly executed by a computer's CPU.*

💻 Computer Architecture:

🔋 **Battery:** *A device that provides electrical energy to a device or system.*

⏰ **Clock Speed:** *The rate at which a computer's processor executes instructions, measured in gigahertz (GHz).*

🕸️ **Client-Server Architecture:** *A computing model where a client requests resources or services from a server.*

🛡️ **Firewall:** *A network security system that monitors and controls incoming and outgoing network traffic.*

🎛️ **Integrated Circuit:** *A circuit that contains multiple electronic components on a single chip of semiconductor material.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🔌 **Power Supply Unit:** *A device that supplies power to a computer.*

🌡️ **Thermal Design Power:** *The maximum amount of heat that a computer system's cooling system is required to dissipate.*

💾 Data Storage:

📀 **Optical Disc:** *A type of data storage device that uses a laser to read and write data on a plastic disc.*

📀 **Blu-ray Disc:** *A type of optical disc used for high-definition video and data storage.*

💻 **Solid State Drive:** *A data storage device that uses NAND-based flash memory to store data.*

💻 **Hard Disk Drive:** *A data storage device that uses spinning disks to store data.*

💾 **Magnetic Tape:** *A type of data storage device that uses magnetic tape to store data.*

📁 **File System:** *The method used to organize and manage data on a computer's storage devices.*

💻 Data Representation:

🔢 **Binary:** *A number system that uses only two digits, 0 and 1.*

🔢 **Hexadecimal:** *A number system that uses 16 digits, 0-9 and A-F, to represent numbers.*

🔢 **Nibble:** *A unit of digital information consisting of 4 bits.*

🔤 **Character Encoding ASCII:** *A character encoding standard used to represent text in computers.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🧮 Mathematics:

➗ **Division:** *A mathematical operation that determines how many times one number can be divided by another.*

✖️ **Multiplication:** *A mathematical operation that determines the product of two numbers.*

🔢 **Matrix:** *A rectangular array of numbers, symbols, or expressions arranged in rows and columns.*

📈 **Regression Analysis:** *A statistical technique used for modeling the relationship between two or more variables.*

📉 **Data Analysis:** *The process of inspecting, cleaning, transforming, and modeling data with the goal of discovering useful information.*

💻 Programming Concepts:

📝 **Data Types:** *A type of data that specifies the kind of values that can be stored and manipulated in a computer program.*

📝 **Variable:** *A container used to store data in a computer program.*

📝 **Dynamic Typing:** *A programming language feature that allows a variable to hold different data types at different times during program execution.*

📝 **Static Typing:** *A programming language feature that requires variables to be declared with a specific data type before they can be used.*

🔗 **Pointer:** *A variable that holds the memory address of another variable.*

🗑️ **Garbage Collector:** *A program that automatically frees up memory used by objects that are no longer needed.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🔢 **int:** *A data type that represents an integer number.*

🔢 **signed/unsigned:** *A property of integer data types that determines whether they can represent negative values or not.*

🔢 **float:** *A data type that represents a floating-point number.*

🔢 **Double:** *A data type that represents a double-precision floating-point number.*

🔣 **Char:** *A data type that represents a single character.*

📝 **string:** *A sequence of characters.*

🔢 **Big endian/Little endian:** *Byte order used in computer systems.*

📚 **Array:** *A data structure that stores a fixed-size sequential collection of elements of the same type.*

📚 **Linked List:** *A data structure that consists of a sequence of nodes, each pointing to the next node in the sequence.*

📚 **Set:** *A data structure that stores a collection of unique elements.*

📚 **Stack:** *A data structure that follows the Last-In-First-Out (LIFO) principle.*

📚 **Queue:** *A data structure that follows the First-In-First-Out (FIFO) principle.*

📚 **Hash:** *A data structure that stores data in a key-value pair format.*

📚 **Tree:** *A data structure that represents a hierarchical structure.*

📚 **Graph:** *A data structure that consists of a collection of nodes connected by edges.*

📚 **Nodes and Edges:** *Components of a graph data structure.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🔍 **Algorithms:** *A set of instructions to solve a specific problem.*

📝 **Functions:** *A block of code that performs a specific task.*

📝 **Return:** *A statement used to return a value from a function.*

📝 **Arguments:** *Values passed to a function when it is called.*

📝 **Operators:** *Symbols used to perform arithmetic and logical operations in a program.*

🔢 **Boolean:** *A data type that represents two values - True or False.*

💬 **Expression:** *A combination of values, variables, and operators that can be evaluated to a single value.*

📜 **Statement:** *A complete line of code that performs a specific action in a program.*

🚦 **Conditional Logic:** *A programming construct that allows a program to make decisions based on certain conditions being met.*

🔄 **While Loop:** *A programming construct that repeatedly executes a set of statements as long as a certain condition is true.*

🔁 **For Loop:** *A programming construct that iterates over a range of values and executes a set of statements for each value.*

🌐 **Iterable:** *An object that can be iterated over, such as a list or a string.*

🌫️ **Void:** *A data type that represents the absence of a value.*

🔁 **Recursion:** A programming technique in which a function calls itself to solve a problem.

📚 **Call Stack:** *A data structure used by a program to keep track of the order in which functions are called.*

❌ **Stack Overflow:** An error that occurs when the call stack exceeds its maximum size.

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🛑 **Base Condition:** *A condition in a recursive function that causes the function to stop calling itself and return a value.*

⏰ **Big-O:** *A measure of the efficiency of an algorithm in terms of its worst-case scenario.*

⏱️ **Time Complexity:** *A measure of the time it takes for an algorithm to complete as the size of the input grows.*

💾 **Space Complexity:** *A measure of the amount of memory used by an algorithm as the size of the input grows.*

🔨 **Brute Force:** *An algorithmic approach that solves a problem by trying every possible solution.*

➗ **Divide and Conquer:** *An algorithmic approach that breaks a problem into smaller subproblems and solves them recursively.*

📈 **Dynamic Programming:** *An algorithmic approach that breaks a problem into smaller subproblems and uses the solutions to those subproblems to solve the larger problem.*

📝 **Memoization:** *A technique used in dynamic programming to store the solutions to subproblems and avoid redundant computations.*

💰 **Greedy:** *An algorithmic approach that makes the locally optimal choice at each step in the hope of finding a global optimum.*

📧 **Dijkstra's Shortest Path:** *An algorithm for finding the shortest path between two nodes in a graph.*

🔙 **Backtracking:** *An algorithmic approach that tries out all possible solutions to a problem and backtracks when a solution does not work.*

📝 **Declarative:** *A programming paradigm in which programs are written to describe the desired output, rather than the steps to produce it.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🚀 **Functional Language:** *A programming language that emphasizes the use of functions to solve problems.*

📝 **Imperative:** *A programming paradigm in which programs are written as a series of steps to perform a task.*

👷 **Procedural Language:** *A programming language that emphasizes the use of procedures, or subroutines, to solve problems.*

🌐 **Multiparadigm:** *A programming language that supports multiple programming paradigms, such as object-oriented, functional, and procedural programming.*

🎭 **OOP:** *Object-oriented programming, a programming paradigm that uses objects to represent and manipulate data.*

🏷️ **Class:** *A blueprint for creating objects that defines their properties and methods.*

🔑 **Properties:** *The attributes of an object, such as its name or size.*

🔍 **Methods:** *The functions that an object can perform, such as sorting or printing.*

👪 **Inheritance:** *A mechanism by which a subclass can inherit the properties and methods of its superclass.*

🔍 **Design Patterns:** *Reusable solutions to common programming problems.*

🌱 **Instantiate:** *The process of creating a new instance of a class.*

💾 **Heap Memory:** *A region of a computer's memory where dynamic memory allocation takes place.*

🔗 **Reference:** *A value that refers to the memory location of an object or variable.*

🧵 **Threads:** *Independent units of execution within a process.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🚀 **Parallelism:** *Simultaneously executing multiple tasks at the same time in order to improve performance.*

🔁 **Concurrency:** *The ability of a program to execute multiple tasks concurrently, often achieved through the use of threads.*

🌐 Networking:

🌐 **Bare Metal:** *Refers to the use of a computer system without a base operating system or virtualization layer.*

💻 **Virtual Machine:** *A software program that emulates a physical computer and can run its own operating system and applications.*

🔍 **IP Address:** *A unique identifier assigned to every device connected to a network that uses the Internet Protocol.*

🌐 **URL:** *The address of a resource on the Internet.*

🌐 **DNS:** *A system that translates human-readable domain names into IP addresses.*

📶 **TCP:** *A reliable, connection-oriented protocol used for transmitting data over a network.*

📦 **Packets:** *Units of data that are transmitted over a network.*

🔒 **SSL:** *A protocol used for secure communication over the internet, commonly used for websites.*

🌐 **HTTP:** *A protocol used for transmitting data over the internet.*

📚 **API:** *A set of protocols and tools for building software applications.*

🖨️ **Printers:** *Output devices that produce physical copies of electronic documents.*

By: Waleed Mousa

💻 COMPUTER SCIENCE CHEAT SHEET 🔥🔥

🌐 Web Development:

🎨 **CSS:** *Cascading Style Sheets, a language used for describing the presentation of web pages.*

🖼️ **Front-end Development:** *The development of the parts of a website or web application that the user interacts with.*

🖼️ **Back-end Development:** *The development of the parts of a website or web application that the user does not directly interact with.*

🕸️ **Web Server:** *A program that serves web pages to clients upon request.*

👥 **User Authentication:** *The process of verifying the identity of a user.*

🔒 **Encryption:** *The process of encoding data in a way that makes it unreadable to unauthorized users.*

🚀 **CDN:** *Content Delivery Network, a distributed network of servers that delivers content to users based on their geographic location.*

🎭 **AJAX:** *Asynchronous JavaScript and XML, a technique used for creating dynamic web pages that update without requiring a page reload.*

By: Waleed Mousa