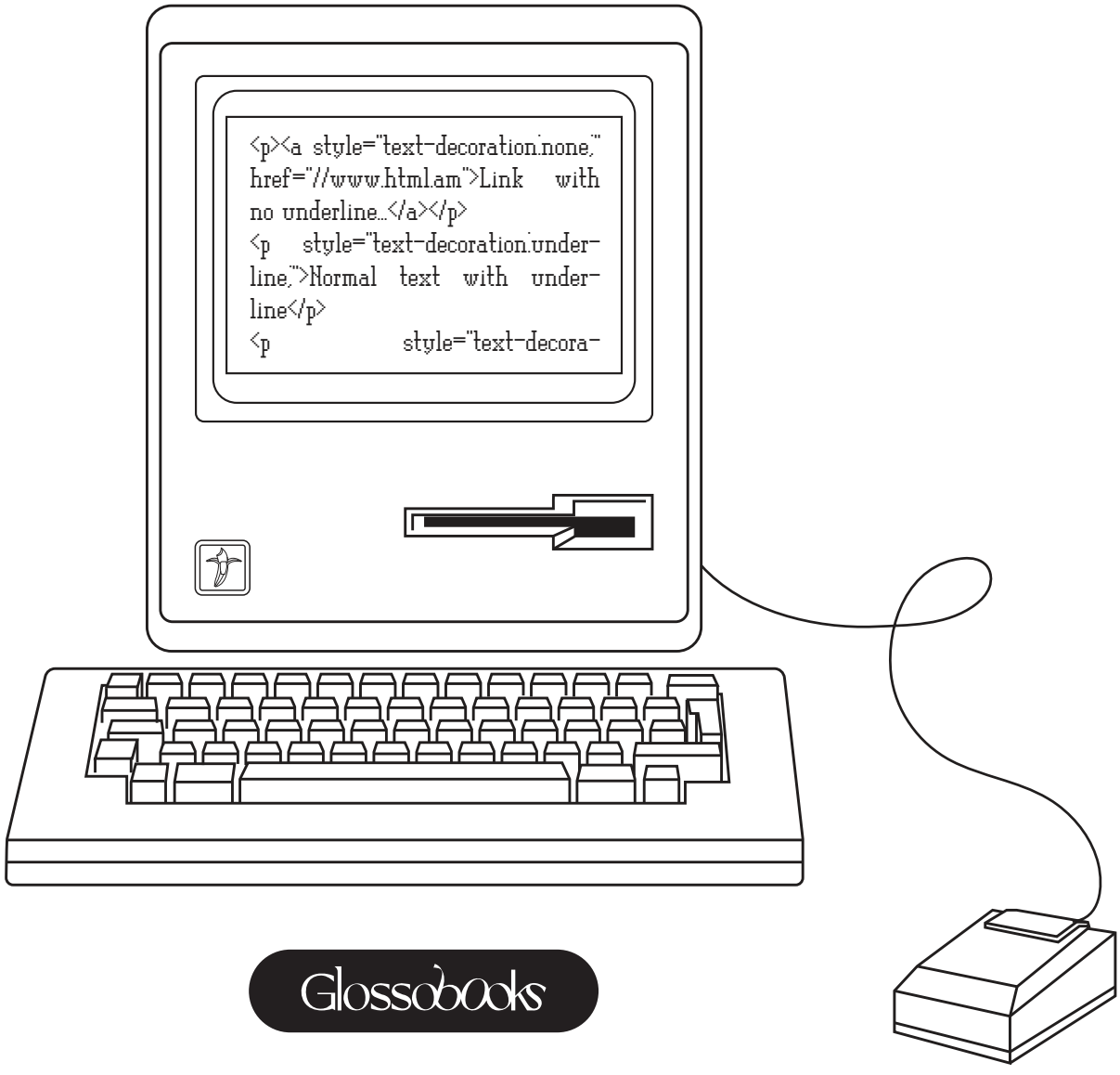
Building BLOCKS

PROGRAMMING + CODING IN ENGLISH



Glossobooks

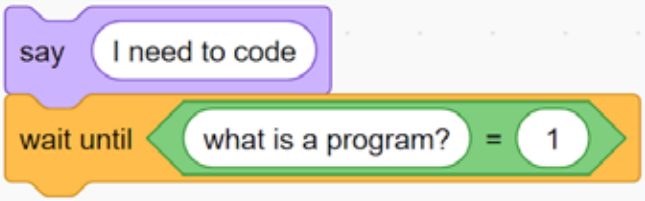
A BOOK BY TASSOS KOLLIAS


Inst
to>

ed

code

WHAT IS A PROGRAM?



A computer program, also known as software or an application, is a set of instructions or code written in a programming language that tells a computer how to perform specific tasks or functions. It is a sequence of instructions that directs the computer to carry out a particular operation or solve a problem.

Computer programs can range from simple scripts that automate repetitive tasks to complex software applications that provide extensive functionality. They can be designed for various purposes, such as word processing, data analysis, graphic design, web development, gaming, and much more.

A computer program typically consists of several components, including:

1

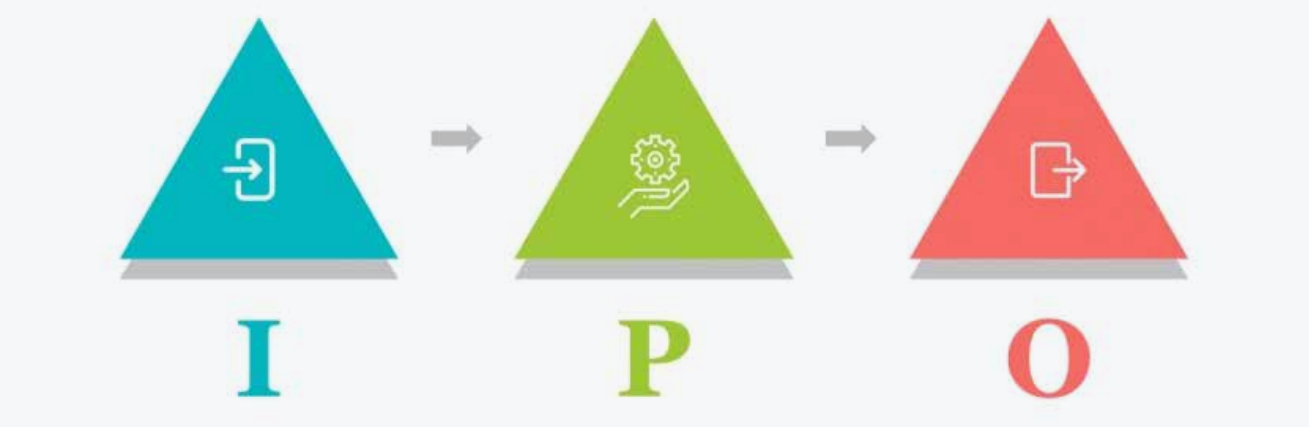
INPUT:
Programs receive input data from various sources, such as user input, files, or network connections. This input provides the program with information to work on or process.

2

PROCESSING:
The program's code specifies the algorithms and logic required to process the input data. It defines the sequence of steps and operations to be executed to achieve the desired outcome.

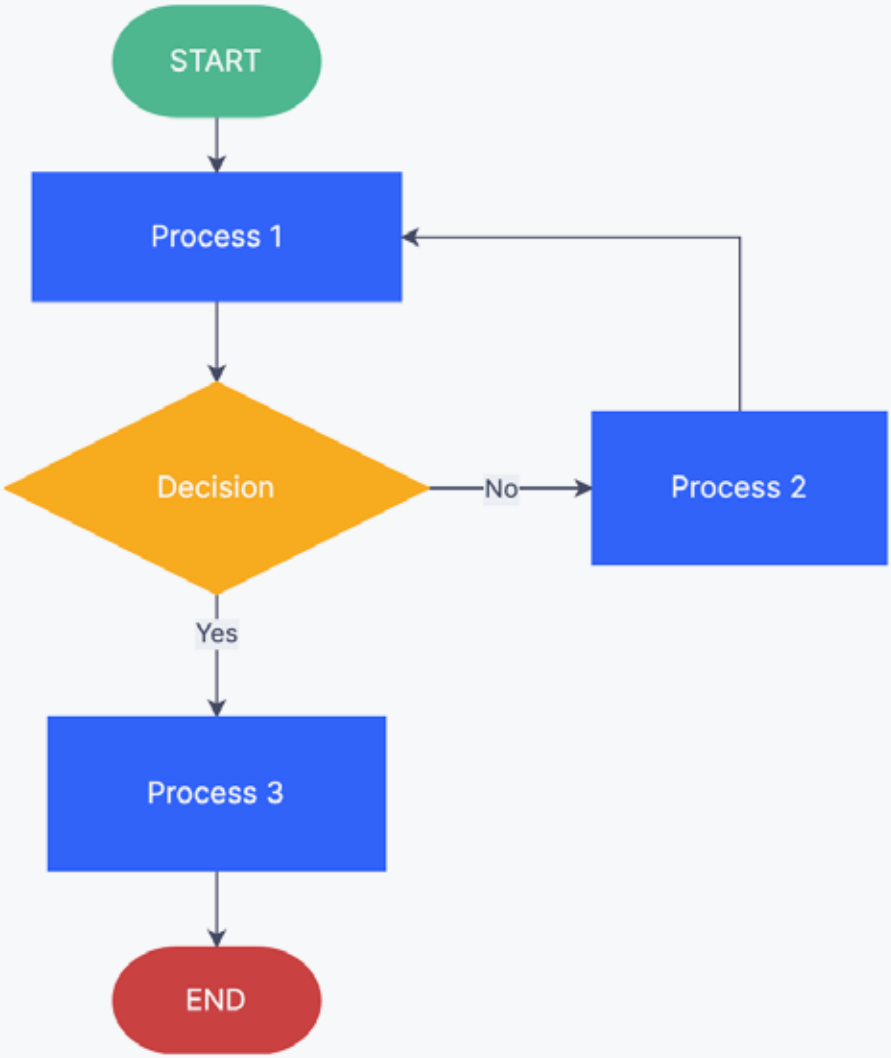
3

OUTPUT:
After processing the input data, the program produces output, which can be in the form of displaying information, generating files, sending data over a network, or interacting with other programs or devices.4. Control Flow: Programs include control structures that determine the flow of execution, such as loops, conditionals, and functions. These structures control the order in which instructions are executed, based on certain conditions or rules.



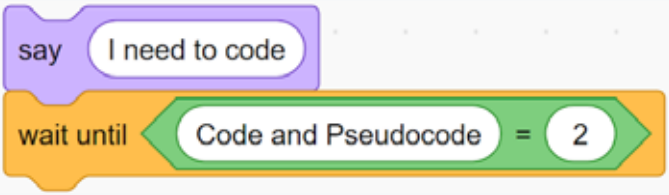
Computer programs are typically written by software developers or programmers using programming languages such as Python, Java, C++ or JavaScript. These languages provide a syntax and set of rules for writing code that can be understood by the computer.

Once a program is written, it needs to be translated into machine-readable instructions using a process called compilation or interpretation, depending on the programming language and environment. The resulting executable file or script can then be run on a computer or other compatible devices.



In summary, a computer program is a set of instructions or code that directs a computer to perform specific tasks or functions, enabling the computer to solve problems, automate processes, and provide a wide range of applications and services.

CODE AND PSEUDO-CODE



Pseudocode is a high-level, informal description of a computer program's logic or algorithm. It is a way of representing the steps and structure of a program using plain language or a combination of natural language and programming language-like constructs. Pseudocode is not tied to any specific programming language syntax and is primarily used for planning, communication, and understanding the program's logic before writing actual code.

Pseudocode Example for making a cup of tea

Gather a kettle, a cup, a teabag, a spoon, milk and sugar.

Plug in the kettle.

Put the teabag in the cup.

Put water into the kettle.

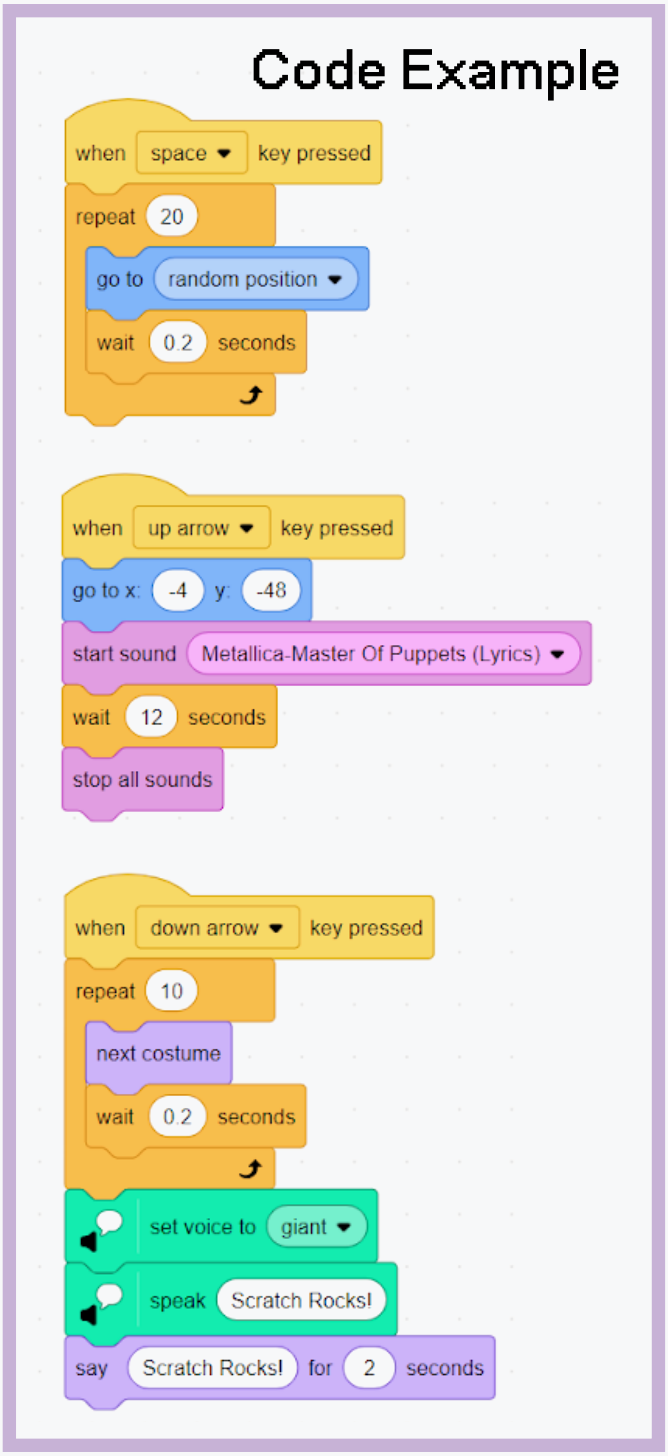
Wait for the kettle to boil.

Add hot water to the cup.

Remove the teabag with the spoon.

Add milk and/or sugar.

Serve!



Here are some key characteristics and uses of pseudocode:

1

Readability and Clarity:
Pseudocode aims to be easily understandable by both programmers and non-programmers. It uses plain language, simple constructs, and common programming concepts to describe the algorithm's logic without getting into the specific details of programming syntax.

2

Algorithmic Design and Planning:
Pseudocode is commonly used in the early stages of program development to plan and design the algorithm or logic flow. It helps programmers organize their thoughts, break down the problem into manageable steps, and decide on the structure and flow of the program.

3

Communication and Collaboration:
Pseudocode serves as a communication tool among developers, team members, or stakeholders who may not have expertise in a specific programming language. It allows for easier collaboration, discussion, and review of the program's logic and functionality.

4

Flexibility and Language Independence:
Pseudocode is not tied to any specific programming language, allowing programmers to focus on the logic rather than the syntax. It can be easily translated into actual code in any programming language of choice.

On the other hand, code refers to the actual implementation of a program using a specific programming language. It consists of syntax and constructs that adhere to the rules and requirements of the chosen language. Unlike pseudocode, code is written with the intention of being executed by a computer and translated into machine-readable instructions.

In computer science and software development, code is defined as the machine-readable language that is programmed to give instructions to computer software.

Here are some differences between pseudocode and code:

Formality:
Pseudocode is less formal than code and does not adhere to specific programming language rules or syntax. It provides a high-level, abstract representation of the program's logic. In contrast, code follows the strict syntax and structure of a programming language.

Algorithmic Design and Planning:
Pseudocode is not executable, while code is written to be executed by a computer. Pseudocode is used for planning and understanding, while code is the actual implementation that can be compiled or interpreted to produce a functioning program.

Communication and Collaboration:
Pseudocode aims for readability and understanding by a broader audience, including non-programmers. Code, on the other hand, is written primarily for other programmers and the computer, focusing on precise syntax and constructs required by the programming language.

Flexibility and Language Independence:
Pseudocode provides a higher-level overview of the program's logic, focusing on the key steps and structure. Code, in contrast, contains the specific details and instructions required for the computer to execute the program accurately.

In summary, pseudocode is an informal, language-independent representation of a program's logic or algorithm, used for planning and communication purposes. It is distinct from actual code, which is the implementation of the program using a specific programming language, adhering to syntax and constructs required for execution.