

 visual programming



An Introduction



Bachelor of Information Systems
Institut Teknologi Del



Learning Objective(s)

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This material should address the following question(s).

- What is a computer?
- Machine language vs. language understood by humans?

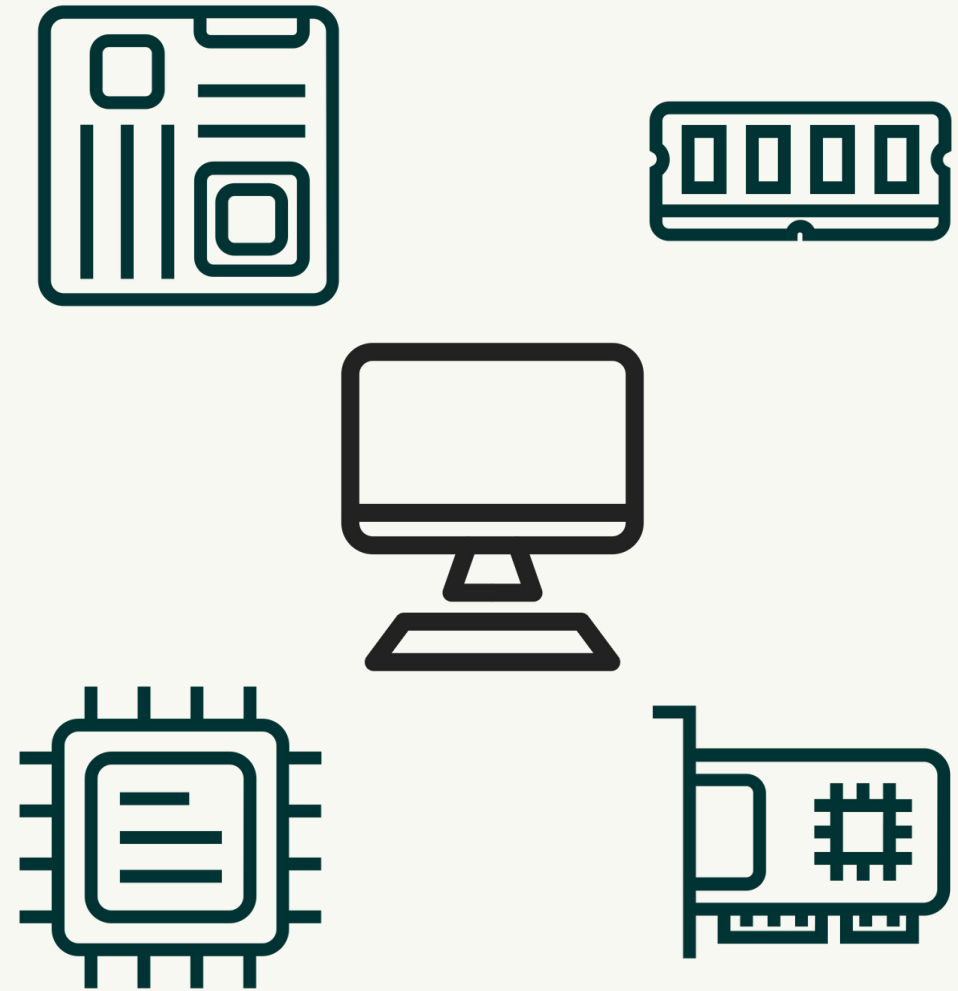
Discussion Point

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What Is A **Computer**?

Computer

- A computer is a tool, invented to help us doing the dirty job.
 - It consists of a bunch of PCBs, ICs, wires, etc.
- A computer understands and executes **instructions**.
 - Instructions are bundled in a package called a **program**.
 - Written in machine language 0s and 1s (binary).



Motivations

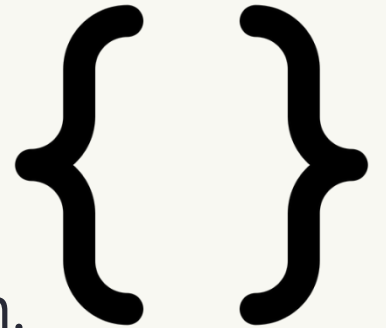
- A **problem** or a challenge is something that is inefficient, costly, or blocking.
- **Solutions** are developed in many forms to solve the problems.

- **Examples:**

- Finding the smallest number.
- Weather forecasting.
- DNA sequencing.

Programming

- To make a computer **carrying out a task**:
 - A precise sequence of instructions has to be developed.
 - The instructions follow a specific flow of algorithm.
- So, what is programming?
 - It is a **process of developing a solution** to a given problem.
 - It starts from understanding the problem, designing the algorithm, and translating the algorithm into instructions.

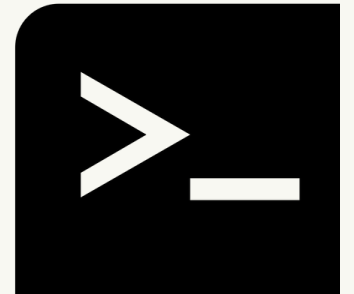


Solution



Program

- A **program** is a packed instructions in binaries.
 - It is executed by a computer.
 - It is a physical form of an algorithm.
- Without a program, computer is worthless.
- In a broader sense, a program is also called as a software.
 - A software may consists of one or more programs.
 - A software should have an adequate set of documentation.



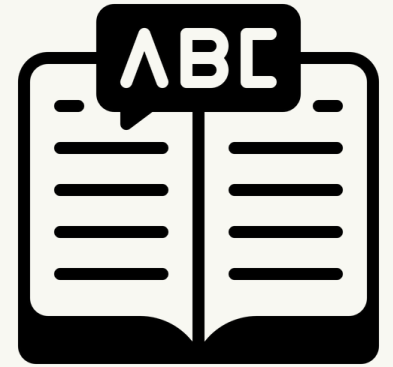
Discussion Point

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Machine Language vs.
Language Understood by **Human**

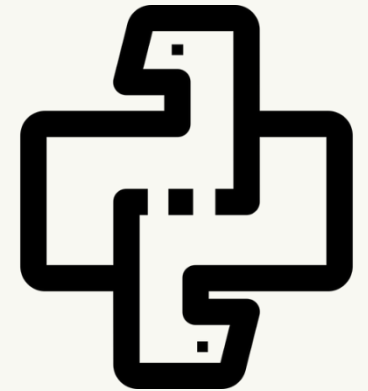
Programming Language (PL)

- A computer understands **machine** instructions.
- Writing machine instructions are ...
 - possible, sort of.
 - takes a lot of time.
 - prone to error.
 - impossible for complex algorithm.
- A more human-friendly instruction set is needed.



Programming Language (PL)

- A **programming language** is a set of computer instructions used to write computer programs.
 - The syntax is close to human language, e.g. English.
- There are tons of programming languages out there.
 - Some are multi-purpose, while the other are designed for specific needs.



Programming Language: Source Code

- Having a solid algorithm, a programmer could then write it down in a specific programming language.
 - The algorithm is written in lines of code (codes).
 - And the physical document is called as source code.
- A **programmer** is a person who analyze the problem, designing the solution, and writes the instructions down into source codes (coding).



HelloWorld.java

```
class HelloWorld {  
    public static void main(String[] _args) {  
        System.out.println("Hello, World!");  
    }  
}
```

Final Thoughts.



Conclusion

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1. Computer is here to serve us.
 - Unfortunately, they do not know “what we want”.
2. Programming is basically writing instructions understood by computers.
 - It is the way to tell them “what we want”.

References



Wassberg, J. (2020). Computer Programming for Absolute Beginners. Packt.



– EOF –



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