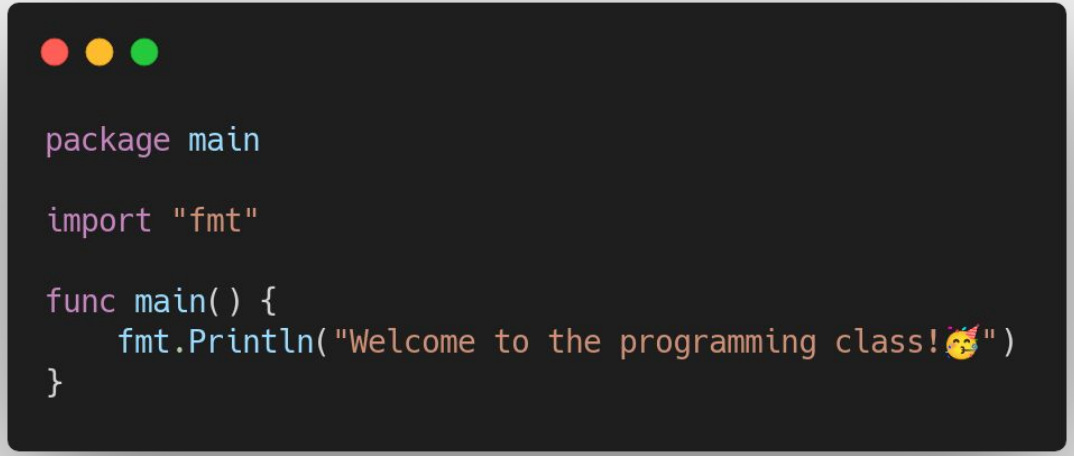
Welcome!



```go
package main

import "fmt"

func main() {
    fmt.Println("Welcome to the programming class!🥳")
}
```

Welcome!

- The course is in English.
- We also speak Latvian, Russian and German languages.
- **There are no stupid questions! Ask anything any time.**
- During the lectures
  - Keep your **camera on**
  - Keep your **microphone off** while not speaking

Pavel Zaichenkov

Occupation: **Software Engineer**

Education: **PhD in Computer Science**

Hobbies: **guitar playing, snowboarding, acrobatics**

1 fun fact about myself: **I can create a guitar arrangement almost of any song.**

If you had to perform on a Talent Show, what would your act be? **Playing the guitar while jumping on a trampoline.**

Jaroslavs Samcuks

Occupation: **Software Engineer**

Education: **MSc in Electronics and Communication**

Hobbies: **snowboarding, software engineering, teaching**

1 fun fact about myself: **I was refused to get admitted to a musical school.**

If you had to perform on a Talent Show, what would your act be? **High-speed crashing into obstacles.**

Course Information

2+1

teachers

3

years program

4

lessons per week
during the first year

Course Structure

- Lectures
  - will be recorded
- Practical Assignments + Homework
  - 2 groups of students
- Exams
  - 2 mid-term exams and 1 final exam (during the first semester)
- Lightning Talks

Lightning Talks

- A technical ~5 minute presentation on a selected topic
- Everyone should deliver a presentation during this semester
- No evaluation
- Opportunity for practicing presentation and research skills

Grading

- Homework and class assignments = 30%
- Midterm tests = 30%
- Final exam = 30%
- Lighting talks = 10%

Resources

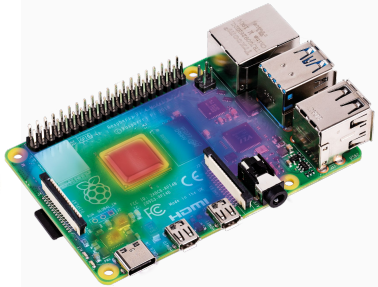
- Course page: https://prog-1.github.io/syllabus/
  - All course information will be posted there.
  - Check out the page for the course outline with dates and scheduled tests and exams.
- Chat in MS Teams
- Our contacts:
  - Jaroslavs
    - Email: yarcat@gmail.com
    - Telegram: @j_yarcat
    - Github: @yarcat
  - Pavel
    - Email: zaichenkov@gmail.com
    - Telegram: @zaichenkov
    - Github: @zayac
- Anonymous feedback form: https://forms.gle/wnz34UsC3iFsEAgp8

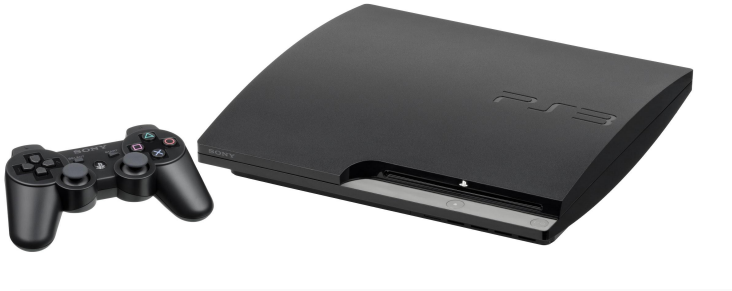
Introduction to Programming

1. What is a computer?
2. Hardware vs Software
3. How a computer executes a program?
4. Programming languages

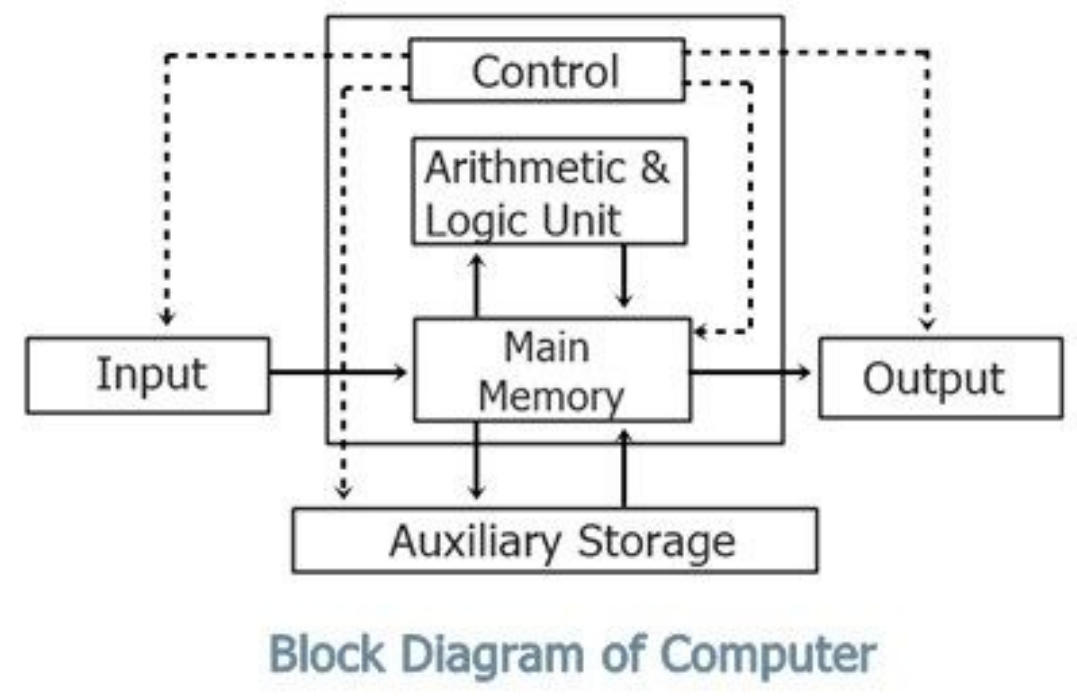
What computer types do you know?

What is a computer?





Hardware



Block Diagram of Computer

Hardware

Processor (CPU)

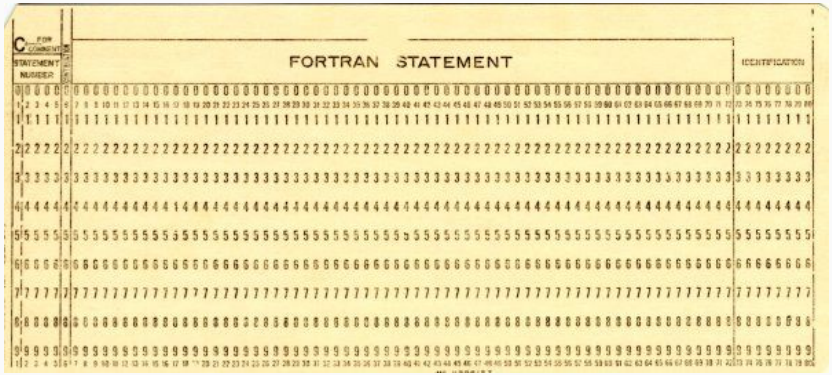
Memory (RAM)

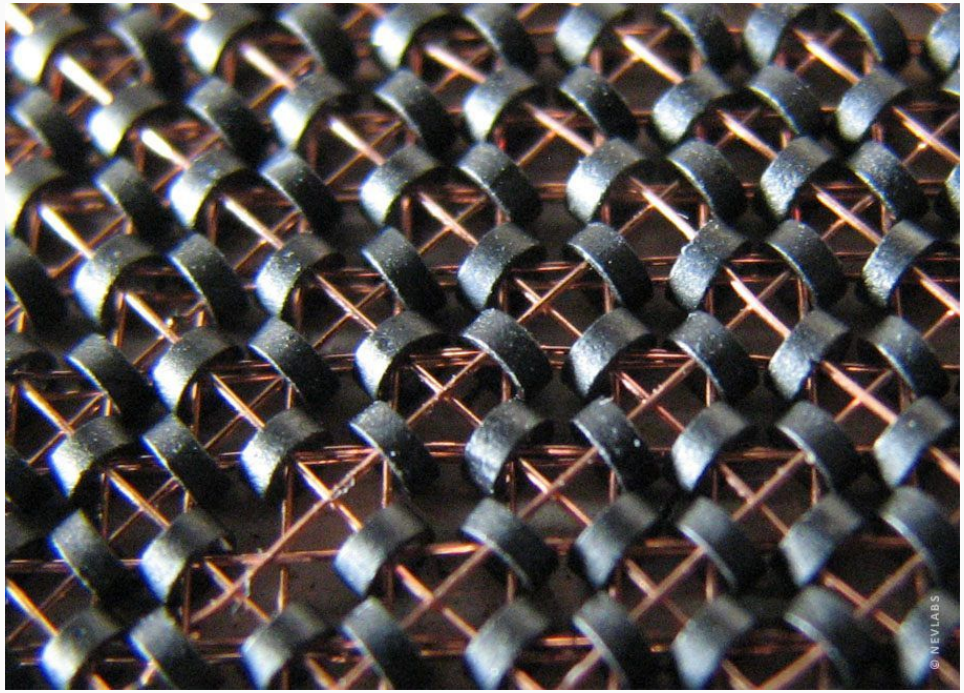
Hard Drive (HDD)

Solid Disk Drive (SSD)

Hardware


TDK
DC-6250
FUJIFILM
DG4-150


FORTRAN STATEMENT
STATEMENT NUMBER
IDENTIFICATION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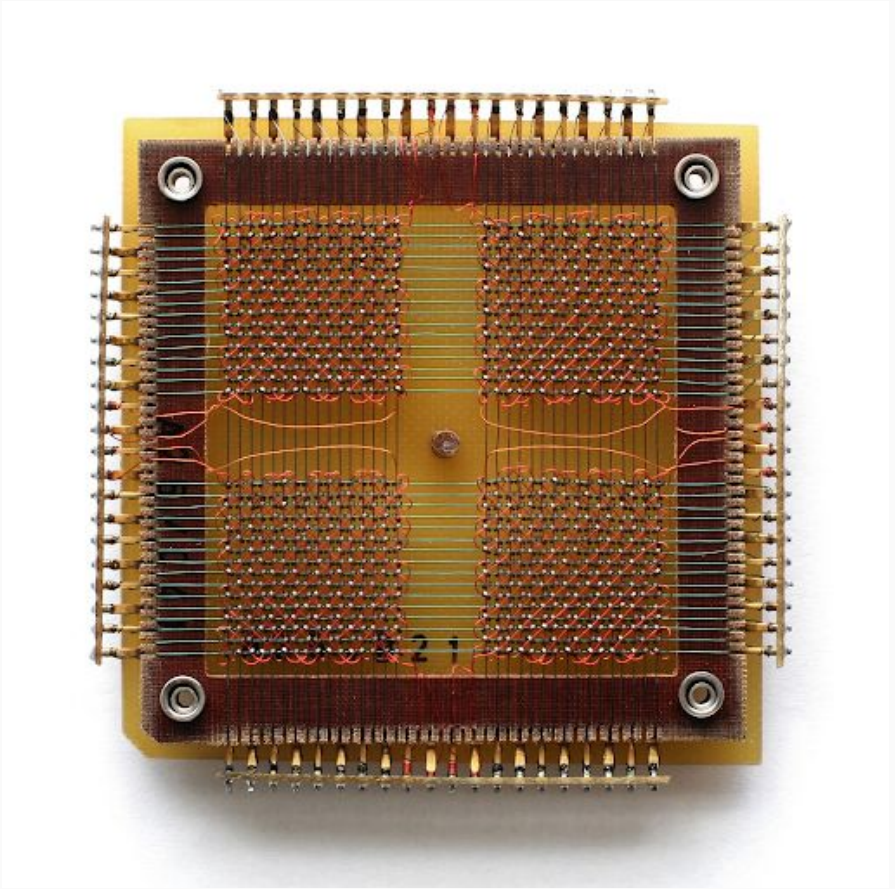


Program Execution

Processor (CPU)

fetches and executes instructions from memory

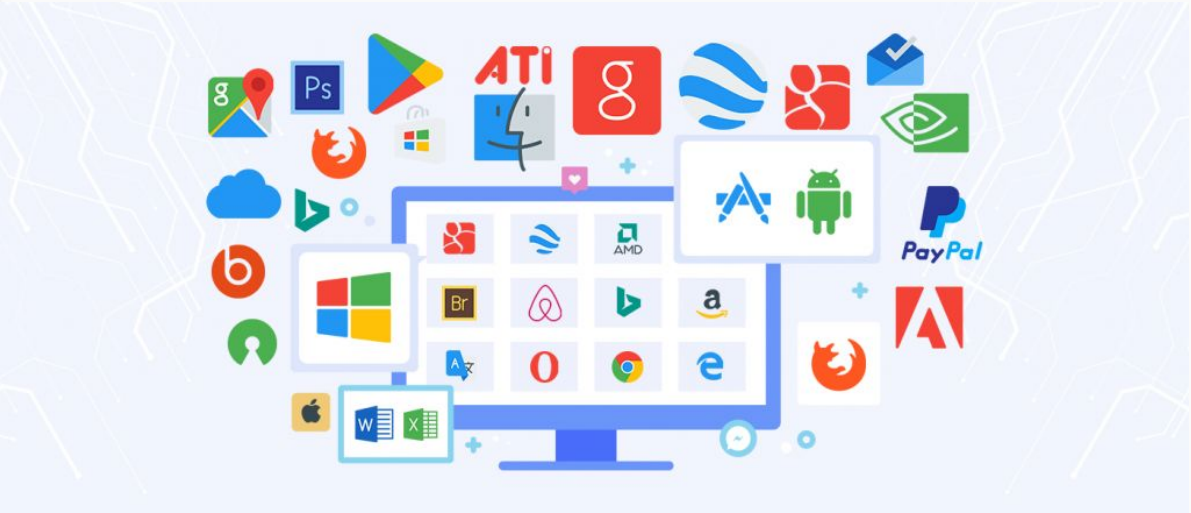
Memory (RAM)

0110 (instruction 1)
1011 (instruction 2)
1110 (instruction 3)
0101 (instruction 4)
...

Application / Software Program / Executable

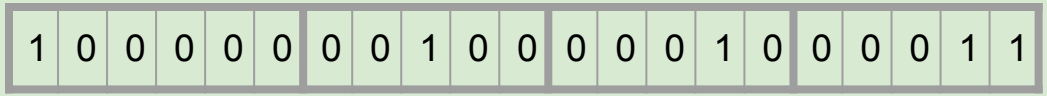
series of CPU instructions

Software



Programming Languages

ADD instruction in machine code:



Reg[4] ← Reg[2] + Reg[3]

Assembler

We'd rather write in *assembly language (low-level language)*

ADD(R2, R3, R4)

Compiler

or better yet *a high-level language (e.g. C++, Python, Go)*

a = b + c;

Role of a Software Engineer

- To formulate a plan for a computer/CPU to reach a goal
- To translate the plan into a program that the computer/CPU can execute

Important

- The computer/CPU only executes the instructions, doesn't "think" for itself.
- The computer/CPU doesn't produce any information. It only changes a representation.