

SysBas

Javascript

Teensy

SuperCollider

Max

# Huisregels

We beoordelen geen opdrachten per mail

Altijd 3 weken de tijd per opdracht

Anders in de herkansingsweek (januari - juni)

# Huisregels

Geen laptop tijdens theorie

Geen telefoons tijdens theorie

# Huisregels

Vraag alles wat je wil vragen

Laat weten als je vastloopt

Gebruik onze hulpbronnen - Syllabus!

# Huisregels

AI

promptvermelding

fraude / plagiaat

# SysBas 1A

Computerhistorie

Computergebruik

Programmeerbasis

# SysBas 1A



## Computerhistorie

Waar komt de computer vandaan?

Hoe is de computer geëvolueerd

Hoe werkt de computer?



# SysBas 1A

## Computergebruik

Hoe beheer je jouw computer?

Hoe werk je snel met jouw computer?

Hoe blijf je de baas over jouw computer?



# SysBas 1A

## Programmeerbasis

Syntax

Logica

Inzicht

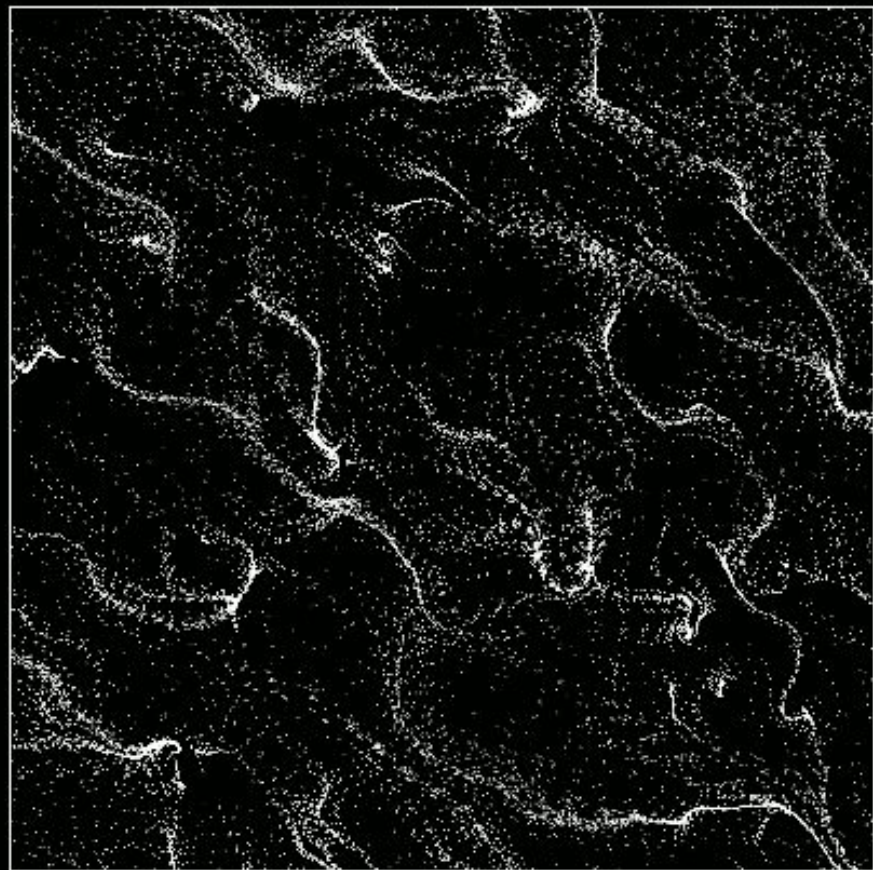
# SysBas 1A

Programmeerbasis

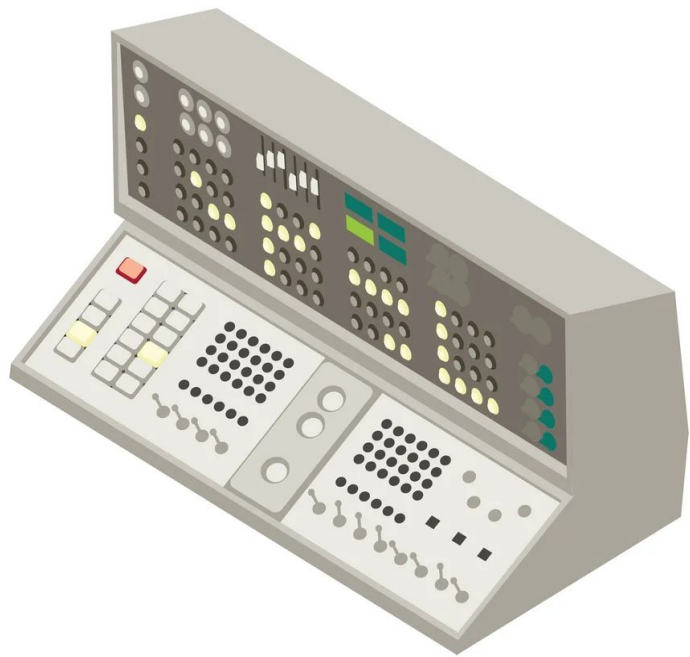
Algoritmische compositie

Visuele feedback

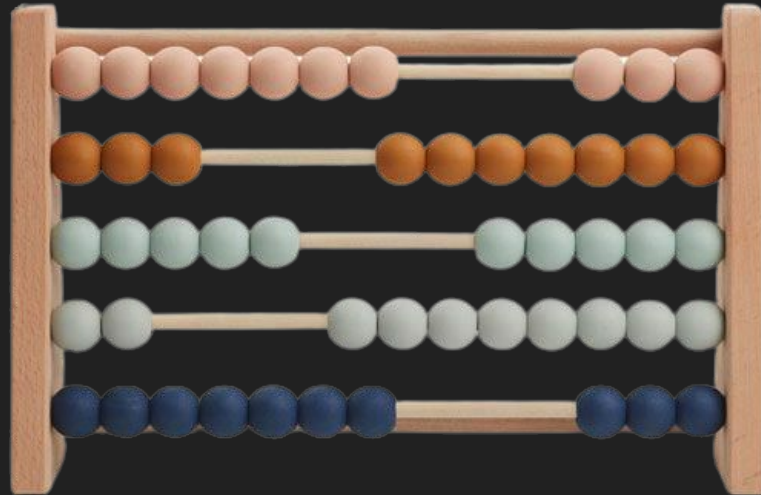
Geluid



# Computerhistorie



Computer = rekenaar

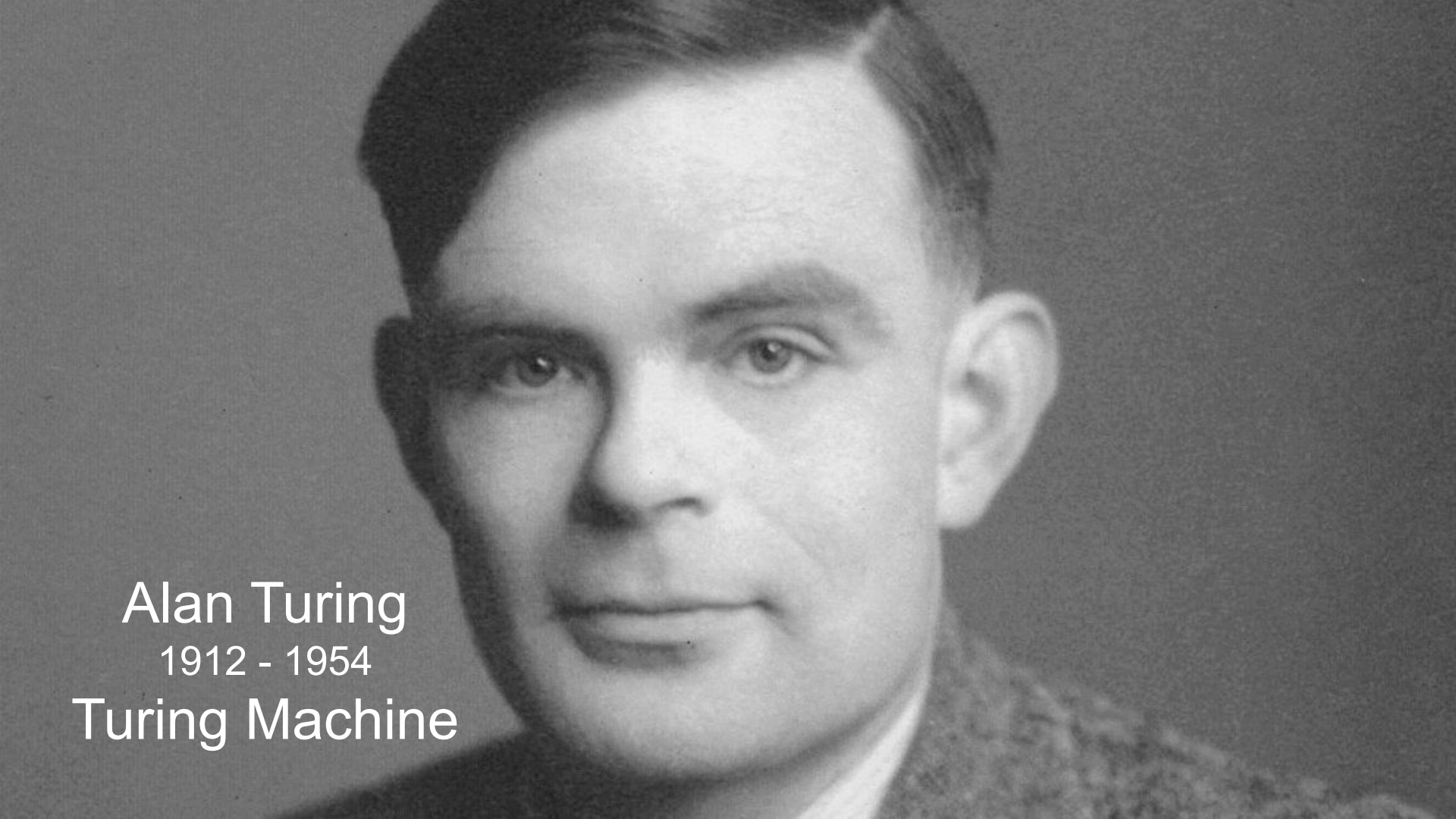


A black and white portrait of Katherine Johnson, an elderly woman with short, dark, wavy hair, wearing large, dark-rimmed glasses and a dark jacket. She is looking directly at the camera with a slight smile. The background is a plain, light-colored wall.

Katherine Johnson

1918 - 2020

NASA Computer



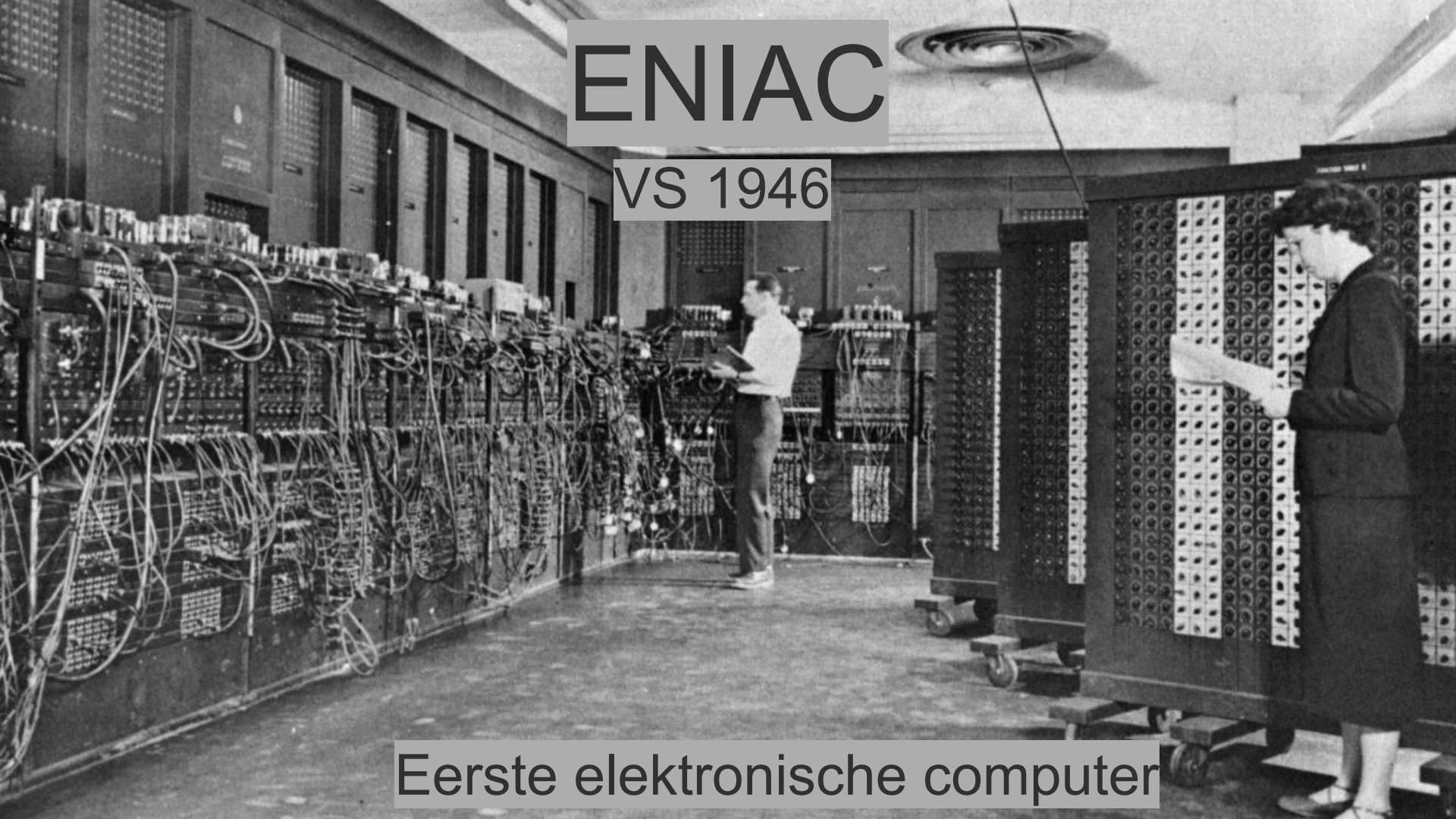
Alan Turing

1912 - 1954

Turing Machine

# ENIAC

VS 1946



Eerste elektronische computer



# ENIAC

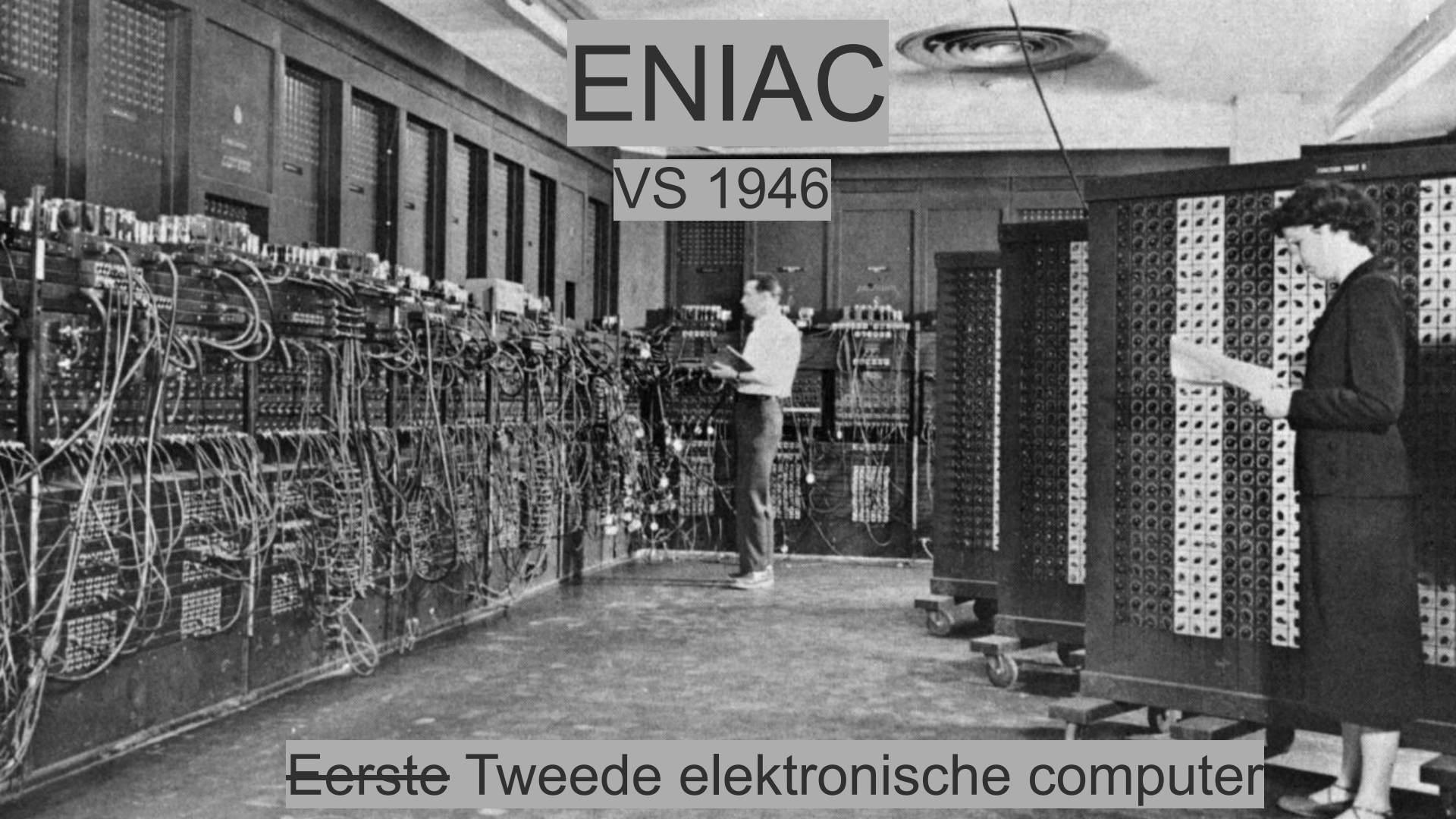


Eerste elektronische computer

# ENIAC

VS 1946

~~Eerste~~ Tweede elektronische computer



# Colossus

VK 1943

Eerste elektronische computer



# CSIRAC

1949

eerste computer die muziek speelde





CSIRAC



CSIRAC

eerste computer die muziek speelde

# Daphne Oram Oramics

1959



# Oramics

1959



# THE C64

Commodore 64

1982

“a true music synthesizer”



# Commodore 64



# Laurie Spiegel

## Music Mouse

1986



# Laurie Spiegel

## Music Mouse

Press HELP key to activate menus.

Music Mouse - An Intelligent Instrument

Voices:	1 2 3 4
NIDI Chan:	1 2 3 4
Harmonic Model:	Diatonic
Treatment:	Chord
Transposition:	0
Interval of Transp:	4
Pattern:	1 = ON
House Movement:	Parallel
Pattern Movement:	Parallel
Articulation:	Legato
Loudness:	100
Sound:	1
Velocity:	100
ModWheel:	3
BreakControl:	45
FootControl:	68
AfterTouch:	64
Portamento:	0
Display Mode:	Output
Group:	OFF
Tempo 1:	= 92
Tempo 2:	100
NIDI-Output:	ON



# Rekenkracht

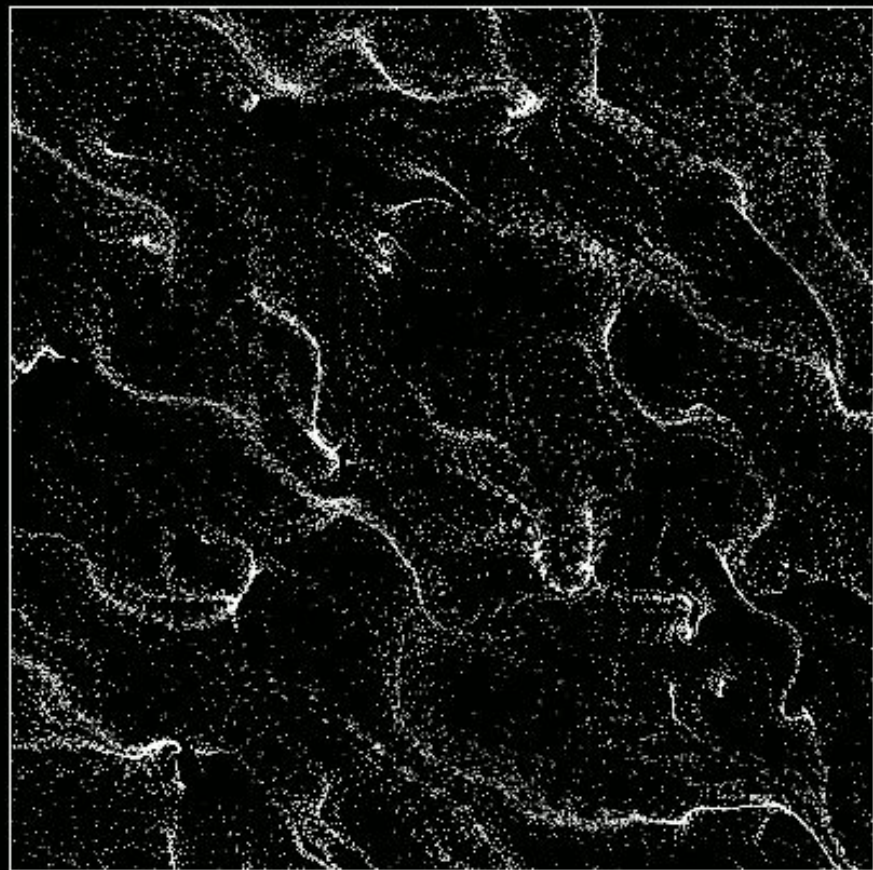
Een gemiddelde smartphone heeft zo'n 1,048,576x meer RAM geheugen dan de Apollo boordcomputer



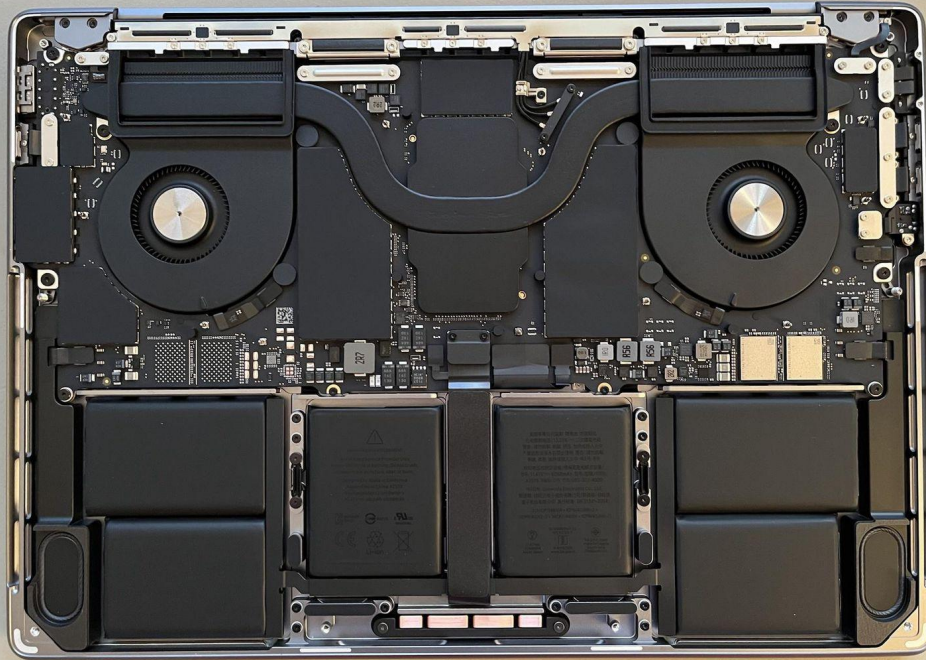
# Practicum

# Terminal gebruiken

korte toelichting



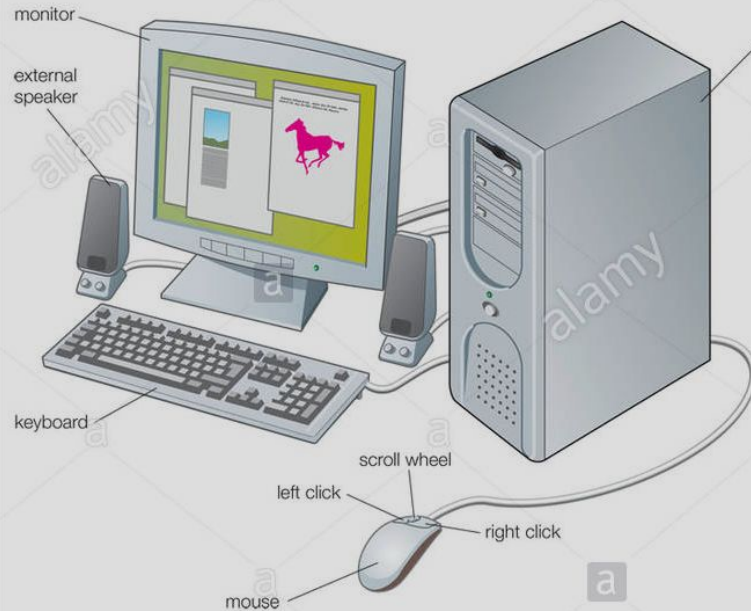
# Wat zit er in een computer?



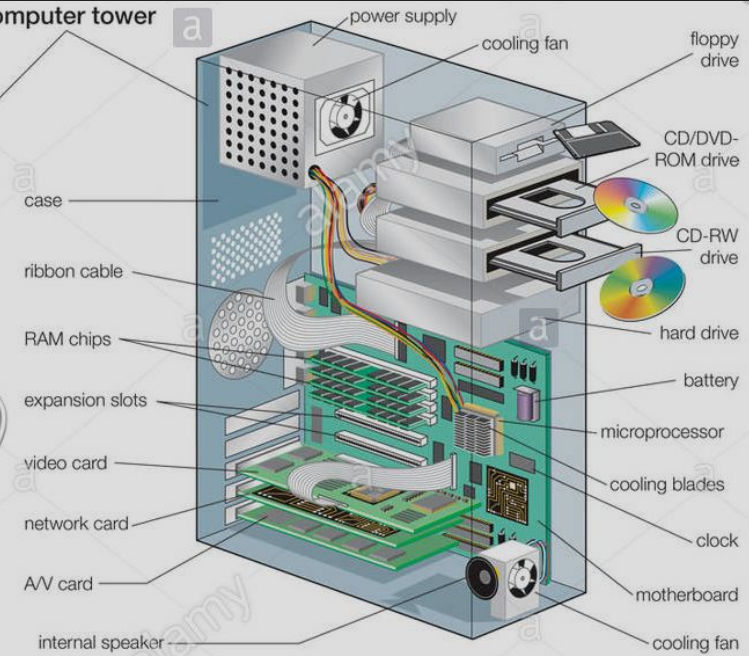


# Wat zit er in een computer?

Personal computer system



computer tower



# Computerwerking



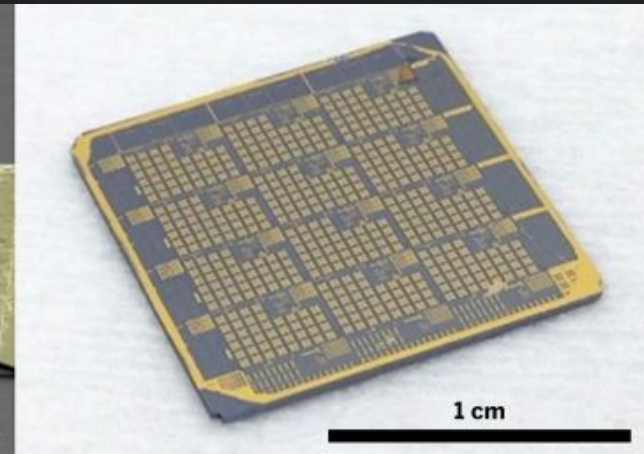
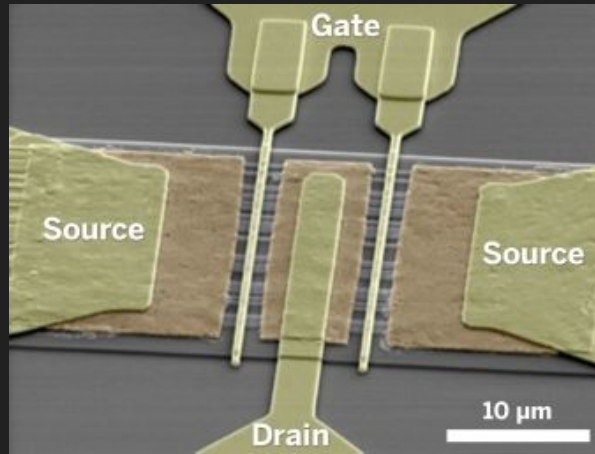
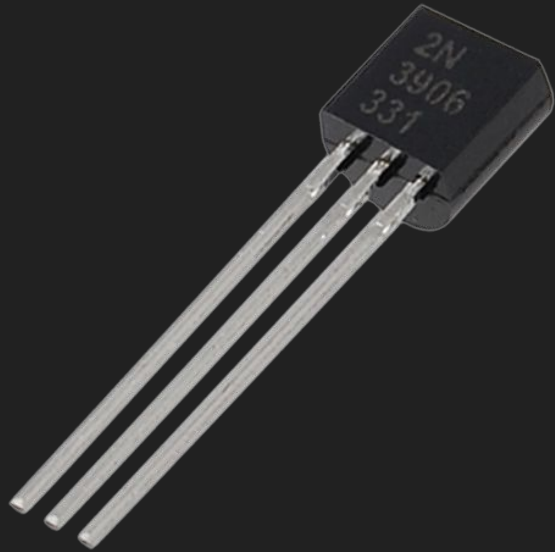
Silicium

Si

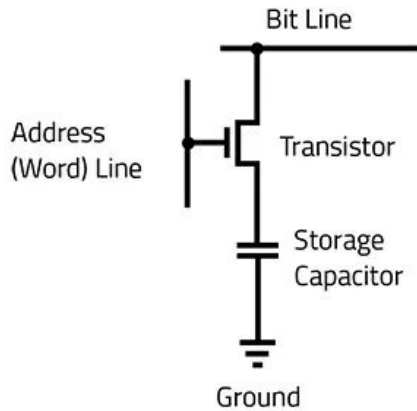
basis van halfgeleiders en chips

# Transistor

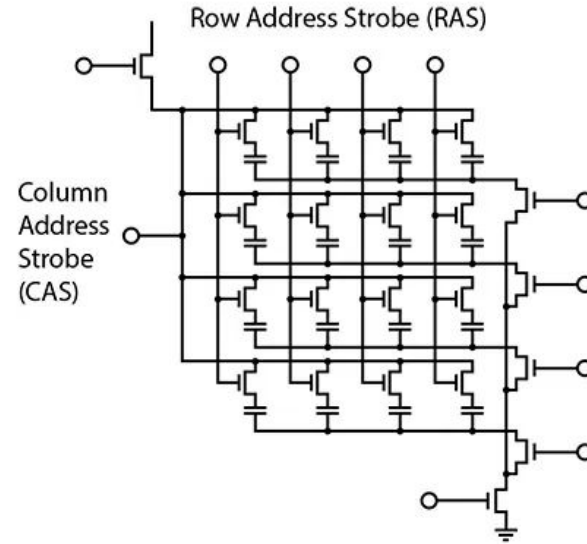
Schakelaar / versterker



# Transistor



Single Memory Cell



Memory Cell Array

# Gordon Moore

1929 - 2023

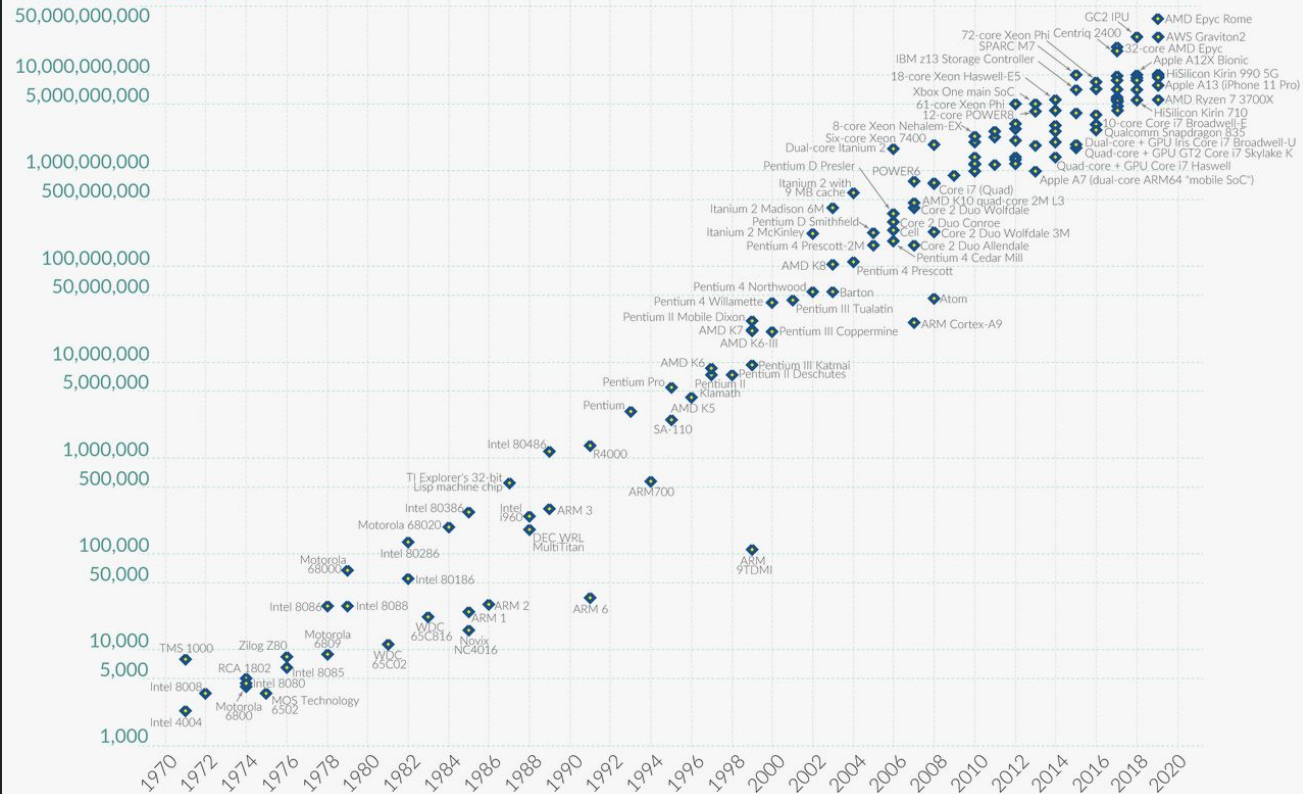
## Moore's Law

### Moore's Law: The number of transistors on microchips doubles every two years

Moore's law describes the empirical regularity that the number of transistors on integrated circuits doubles approximately every two years. This advancement is important for other aspects of technological progress in computing – such as processing speed or the price of computers.

Our World  
in Data

#### Transistor count



Data source: Wikipedia ([wikipedia.org/wiki/Transistor\\_count](https://wikipedia.org/wiki/Transistor_count))

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser.

A microscopic view of a CPU die, showing a complex grid of blue and yellow patterns representing the intricate circuitry and transistors. The die is rectangular and filled with a dense array of small, repeating structures.

CPU

28.000.000.000 transistors



CPU

Kan alles uitrekenen

# RAM

A close-up photograph of a green RAM module mounted on a circuit board. The module features several black integrated circuits (chips) and various surface components like capacitors and resistors. The background is a soft, out-of-focus blue bokeh, suggesting a digital or network environment.

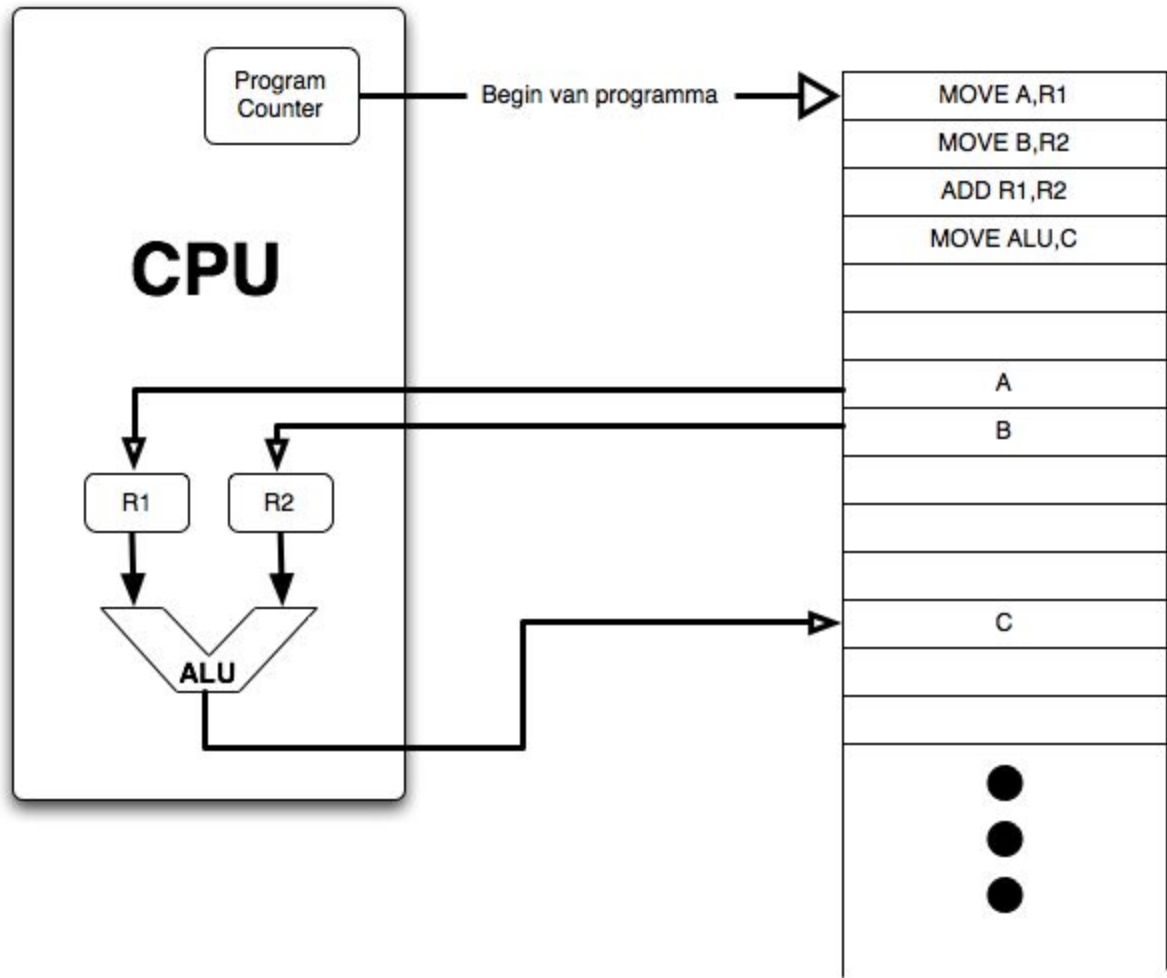
Kan alles (tijdelijk) opslaan



# CPU + RAM



Kunnen alles uitvoeren



A person's hands are holding a blue and orange graphics card. The card features two large fans and a PCIe connector at the bottom. The background is dark blue.

# GPU

Berekent heel veel hetzelfde tegelijk

## Graphics

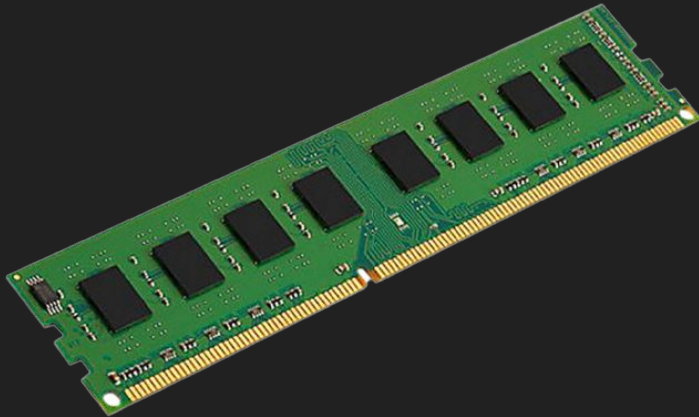
## AI

# Geheugen en Opslag

Geheugen  
RAM  
Tijdelijk

vs.  
vs.  
vs.

opslag  
opslaggeheugen  
permanent



# Practicum

# P5.js voorbeelden

csdosc gebruiken