

**CIVIFORM**

# **CODING E ROBOTICA**

## **PER L'INNOVAZIONE SOCIALE**

Cividale, gennaio-febbraio 2022

# HARDWARE

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La parte fisica, tangibile, di un calcolatore.

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La parte fisica, tangibile, di un calcolatore.

Sostanzialmente immutabile, salvo rari casi.

# HARDWARE



# SOFTWARE

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Insieme dei programmi impiegati su un calcolatore.

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Installati dall'utente a seconda delle necessità.



# SOFTWARE



# FIRMWARE

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Programma integrato nel calcolatore.

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Programma integrato nel calcolatore.

Sovrintende la fase di avvio del calcolatore.

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Programma integrato nel calcolatore.

Sovrintende la fase di avvio del calcolatore.

Non modificabile dall'utente.

# FIRMWARE

● Phoenix - AwardBIOS v6.00PC, An Energy Star Ally  
✚ Copyright (C) 1984-2005, Phoenix Technologies, LTD



ASUS A8N-SLI Premium ACPI BIOS Revision 1011-001

Main Processor: AMD Athlon(tm) 64 Processor 4800+  
Memory Testing : 2897152K OK(Installed Memory: 2897152K)  
Memory information: DDR 400 Dual Channel, 128-bit

Chipset Model: nForce 4  
Primary IDE Master : PLEXTOR DVD PX-716AL 1.02  
Primary IDE Slave : None  
Secondary IDE Master : CD-W524E 1.0E  
Secondary IDE Slave : None

Press F1 to continue, DEL to enter SETUP  
12/07/2005-NF-CK804-A8NSLI-P-00

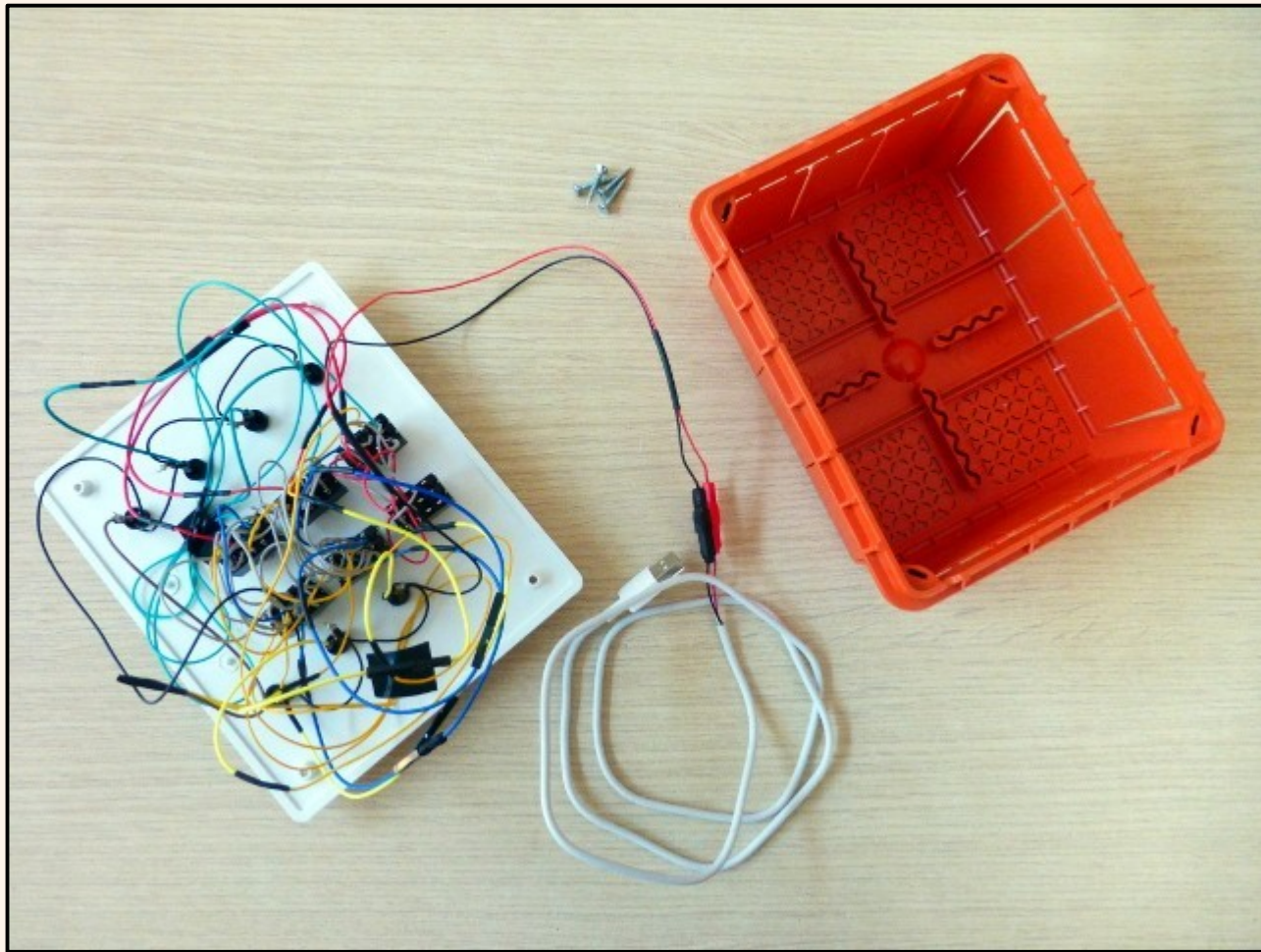
# FIRMWARE



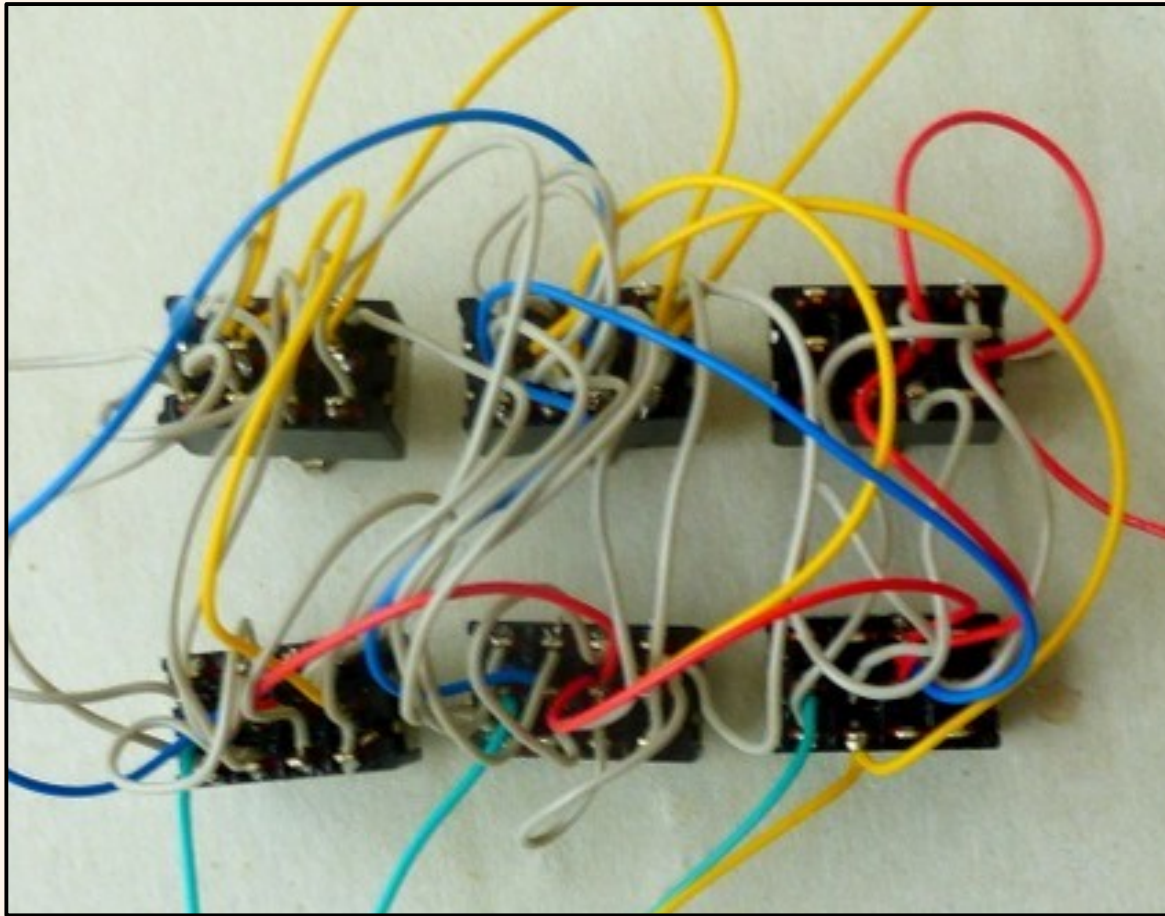
# CIRCUITI CHE CALCOLANO?



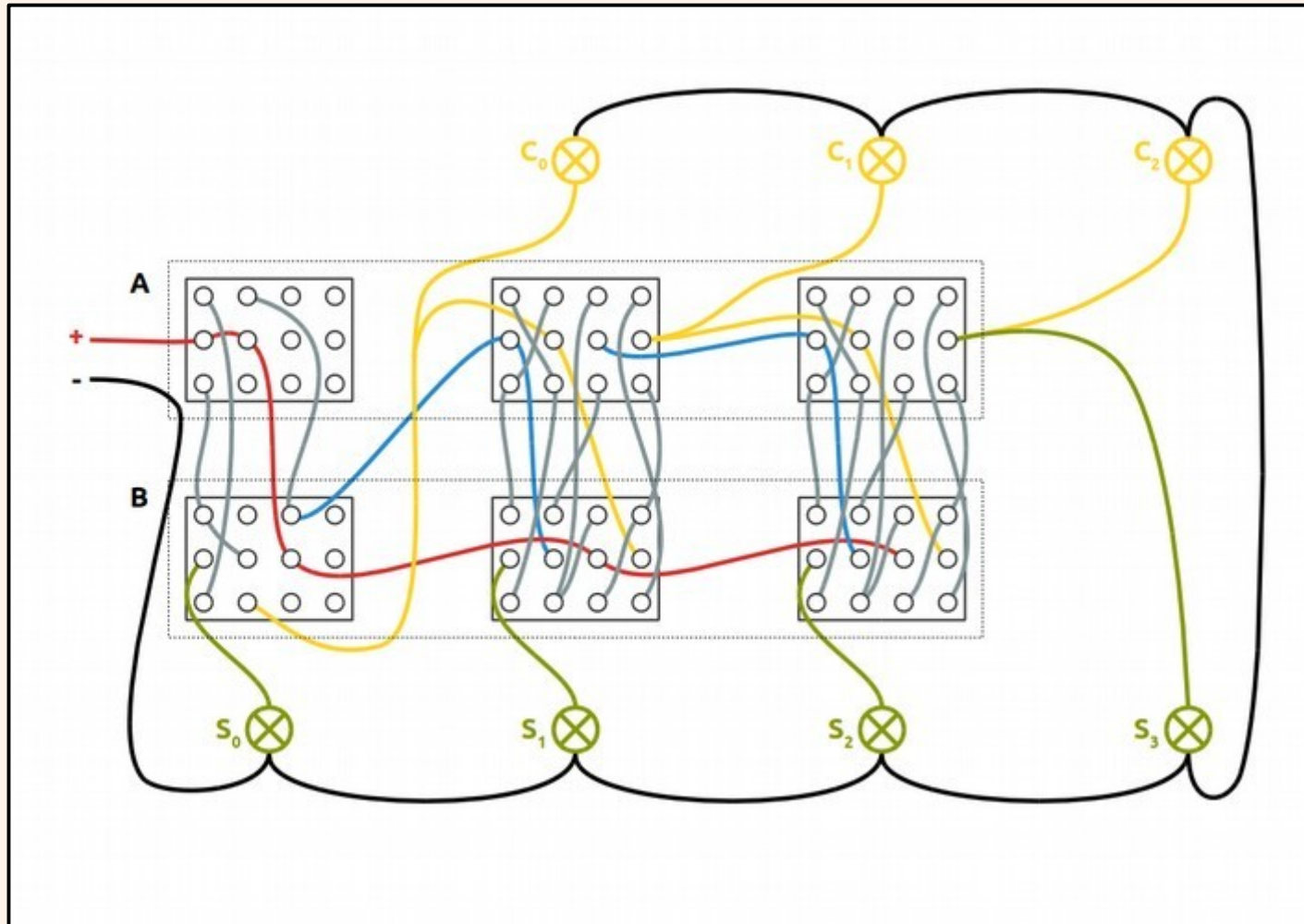
# CIRCUITI CHE CALCOLANO?



























































# CIRCUITI CHE CALCOLANO?



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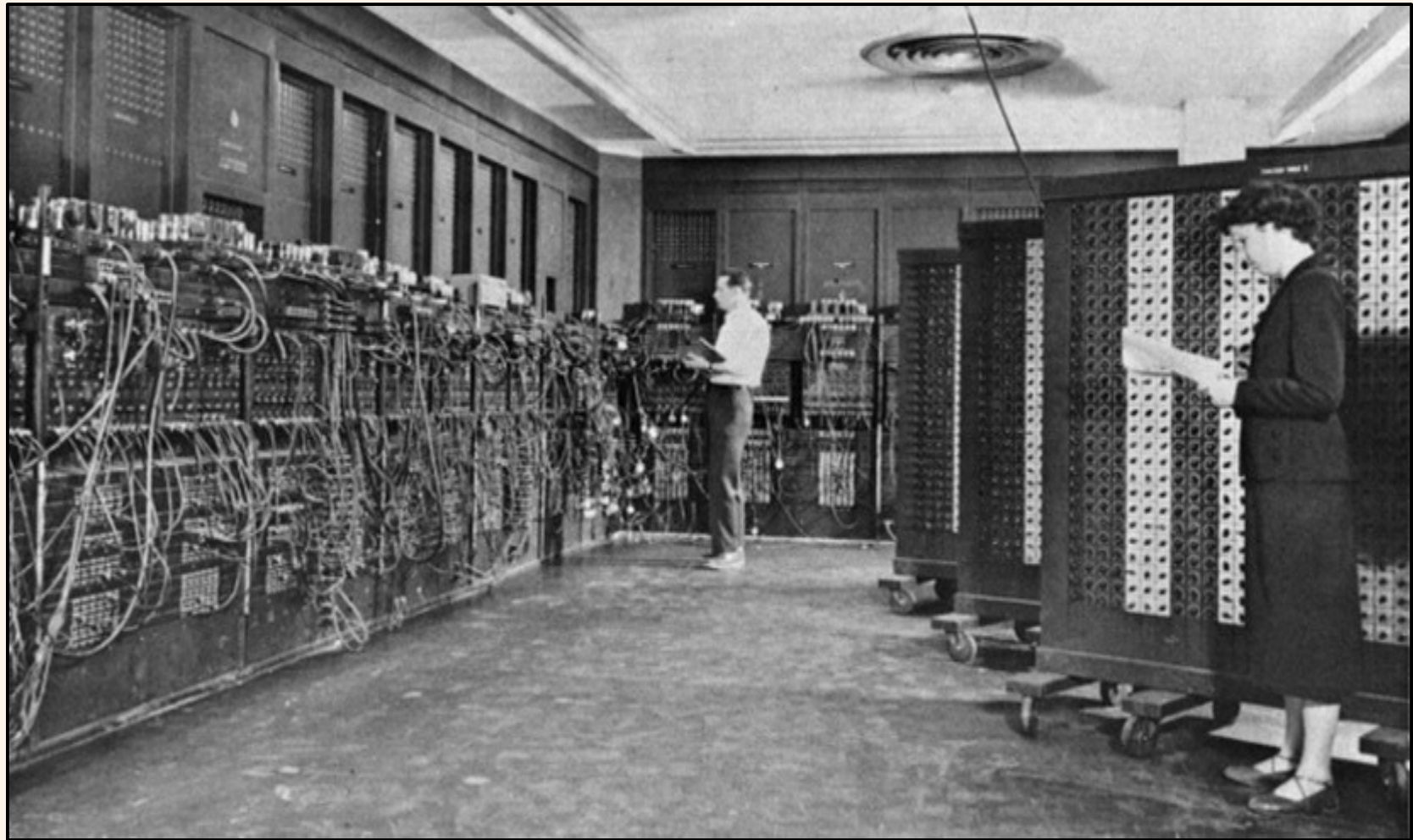


# CIRCUITI CHE CALCOLANO?

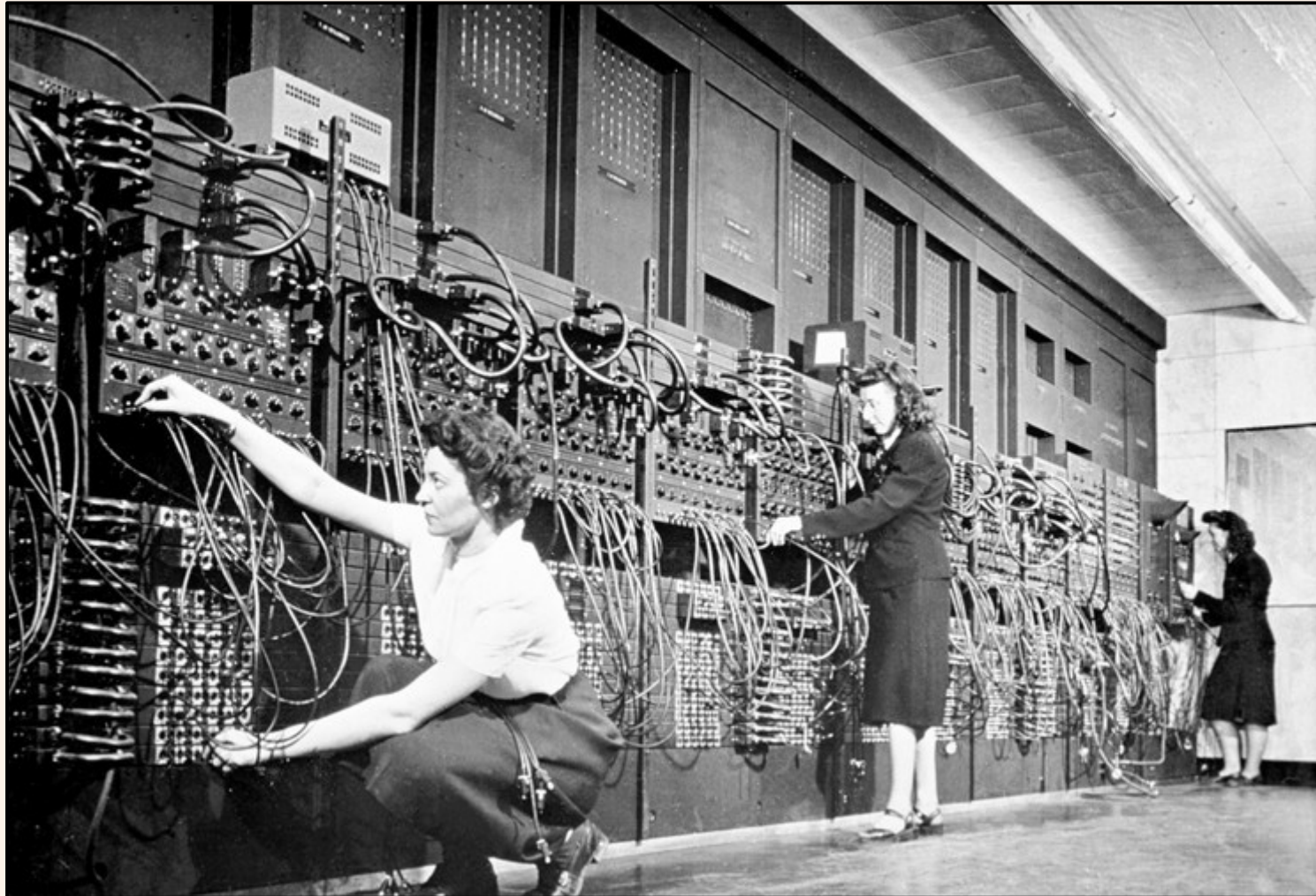
0	  	8	   
1	  	9	   
2	  	10	   
3	  	11	   
4	  	12	   
5	  	13	   
6	  	14	   
7	  	15	   



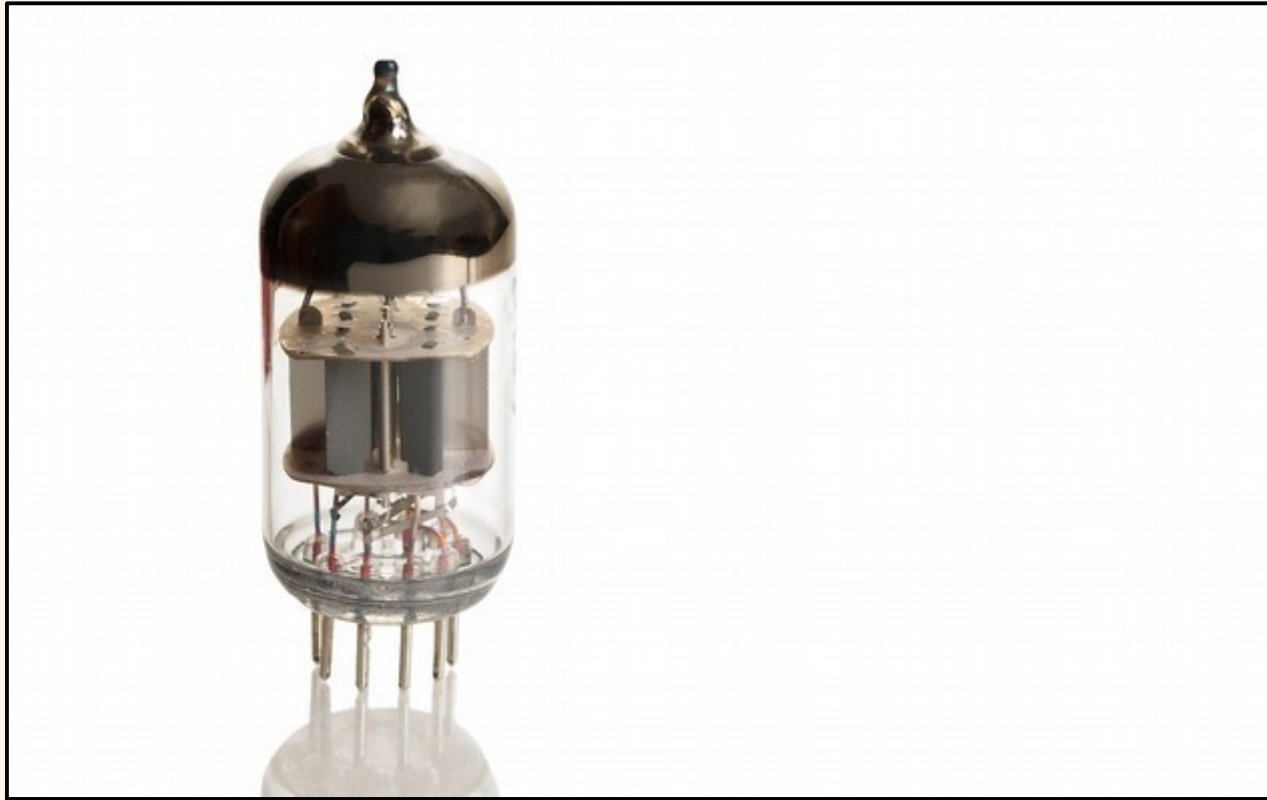
# ENIAC, 1947



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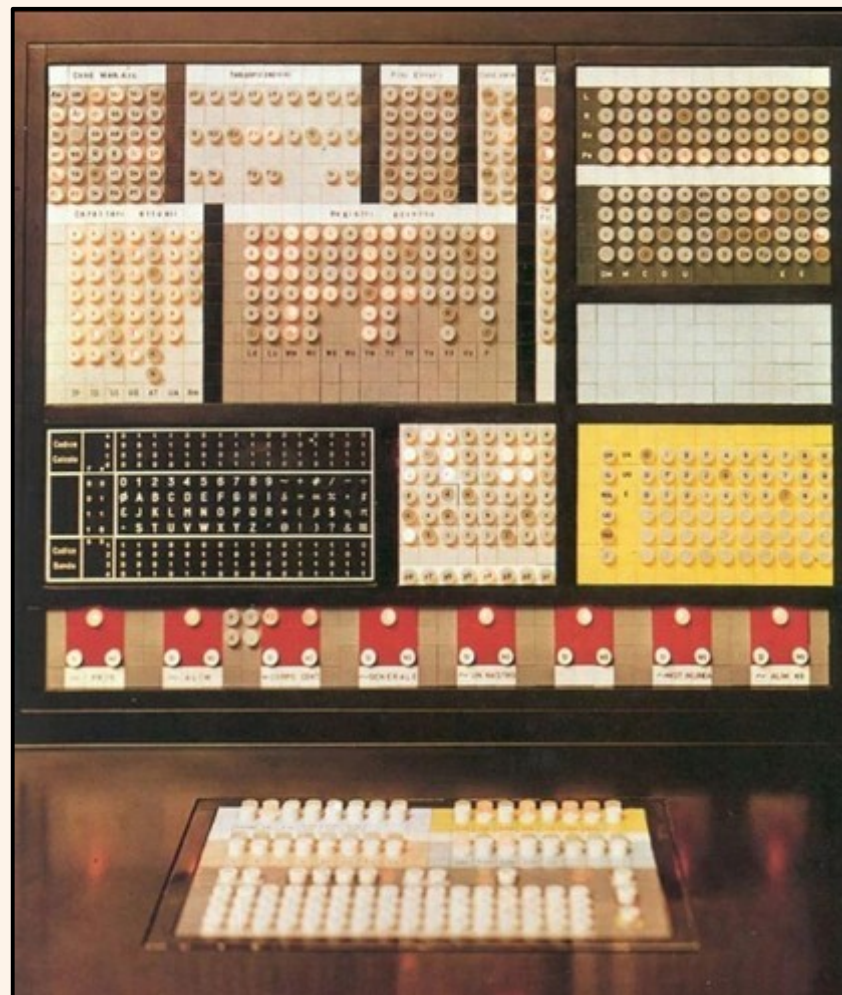


# ELEA 9003, 1959





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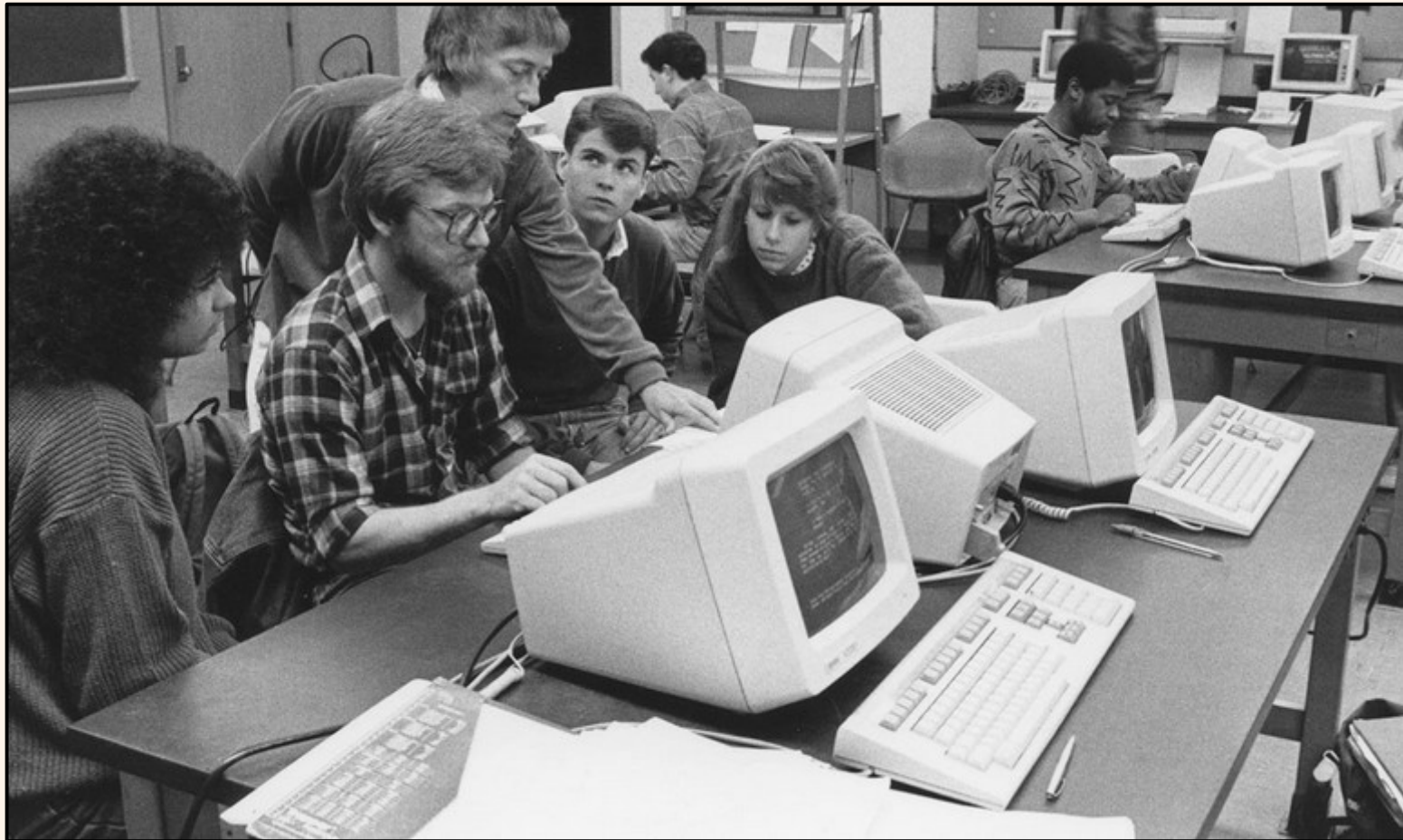
# ELEA 9003, 1959



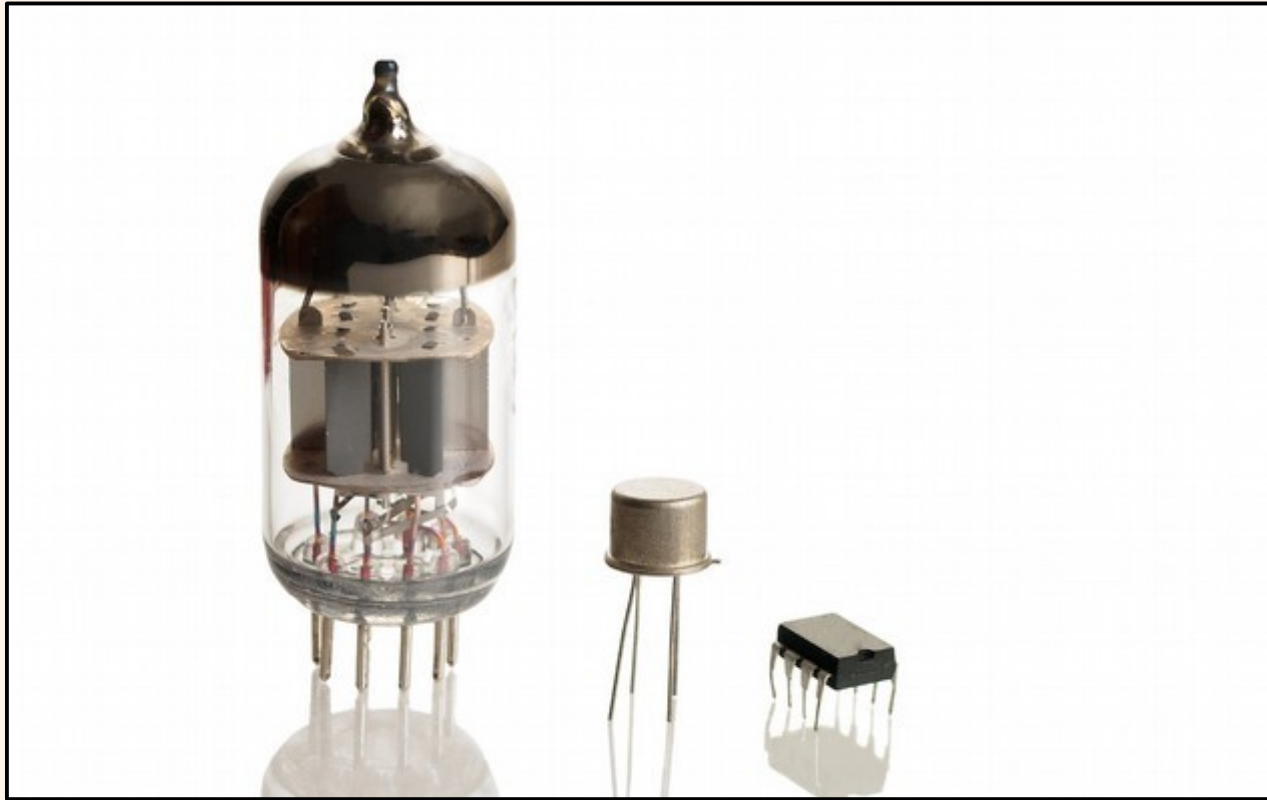
# PDP-11, 1970



# PDP-11, 1970



# PDP-11, 1970





# ALTAIR 8800, 1975

HOW TO "READ" FM TUNER SPECIFICATIONS

## Popular Electronics

WORLD'S LARGEST-SELLING ELECTRONICS MAGAZINE JANUARY 1975/75¢

**PROJECT BREAKTHROUGH!**

**World's First Minicomputer Kit  
to Rival Commercial Models...**

**"ALTAIR 8800" SAVE OVER \$1000**



**ALSO IN THIS ISSUE:**

- An Under-\$90 Scientific Calculator Project
- CCD's—TV Camera Tube Successor?
- Thyristor-Controlled Photoflashers



**TEST REPORTS:**

- Technics 200 Speaker System
- Pioneer RT-1011 Open-Reel Recorder
- Tram Diamond-40 CB AM Transceiver
- Edmund Scientific "Kirlian" Photo Kit
- Hewlett-Packard 5381 Frequency Counter

# ALTAIR 8800, 1975



# APPLE II, 1977





# COMMODORE VIC 20, 1980



# SINCLAIR ZX81, 1981



# COMMODORE 64, 1982



# SINCLAIR ZX SPECTRUM, 1982





# TOSHIBA MSX HX-10, 1984



# COMMODORE 128, 1985



# PC IBM, 1981



# 2020





# 2020



# 2020



# 2020



# 2020



# 2020



# 2020

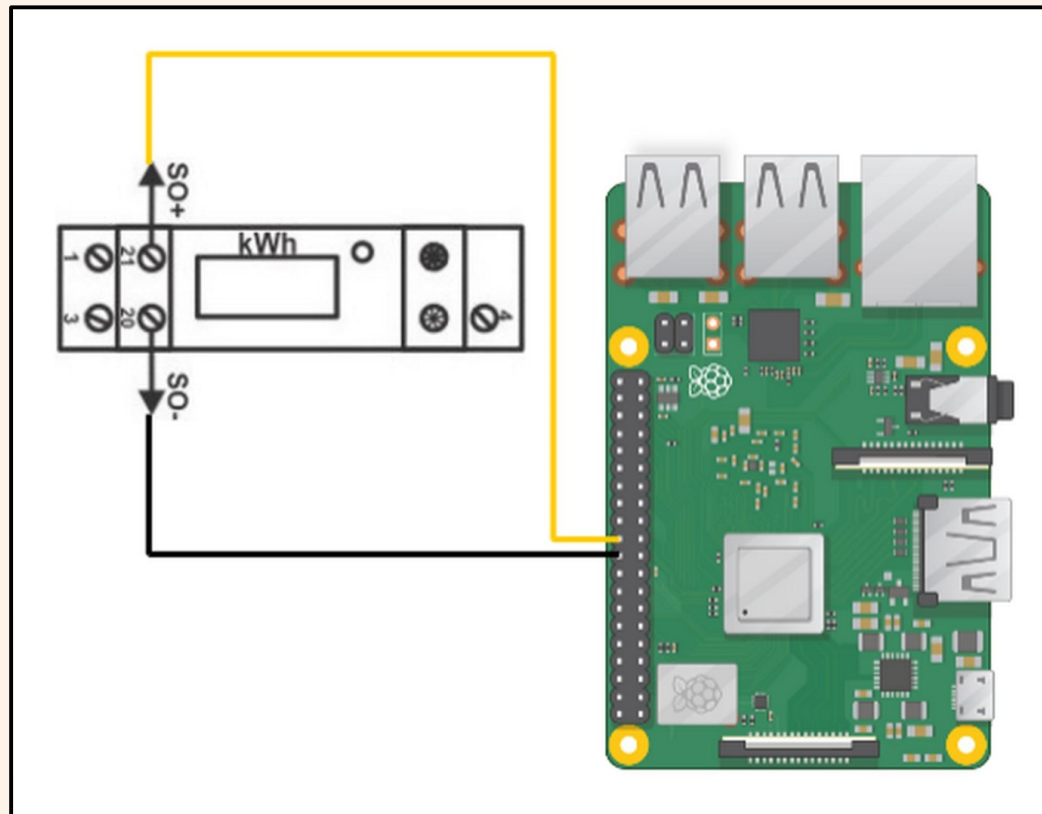


# 2020



Raspberry Pi (2012)

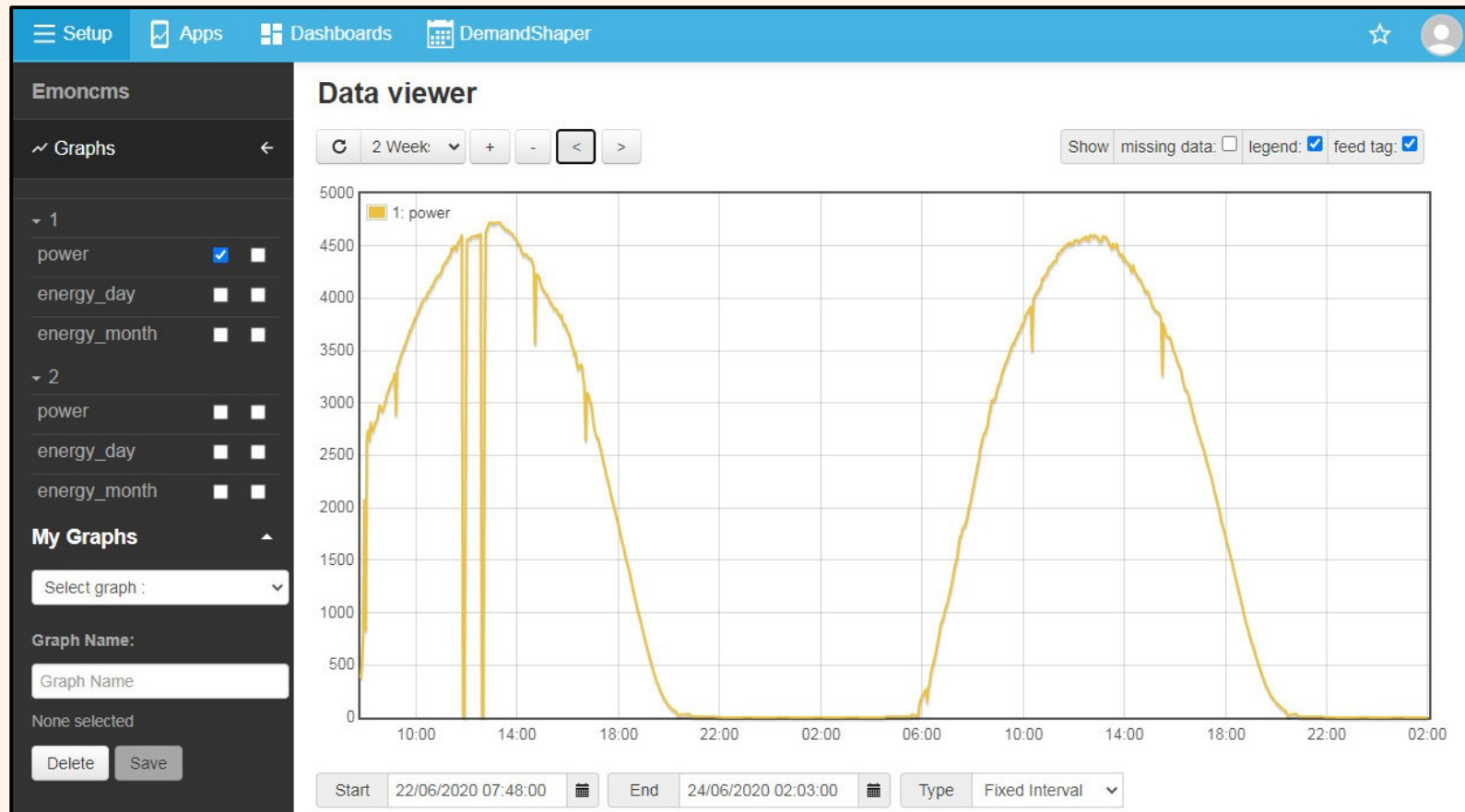
# 2020



Raspberry Pi (2012)



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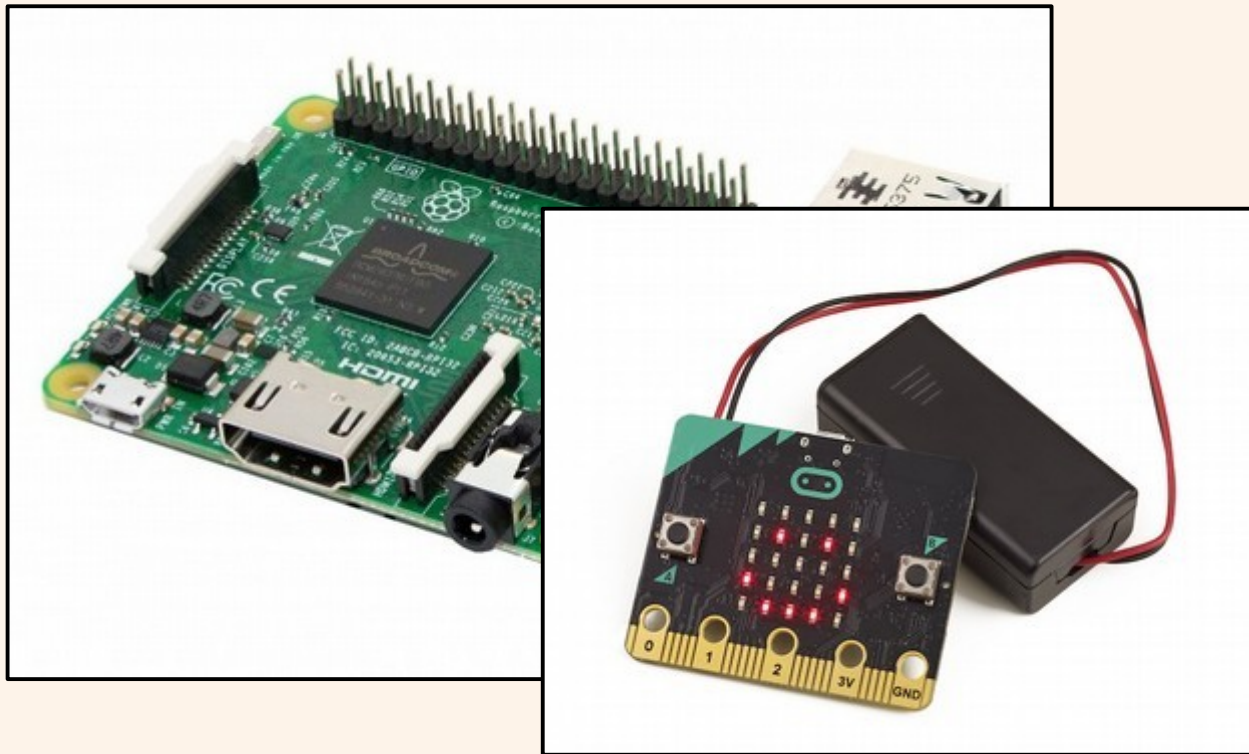
## Raspberry Pi (2012)

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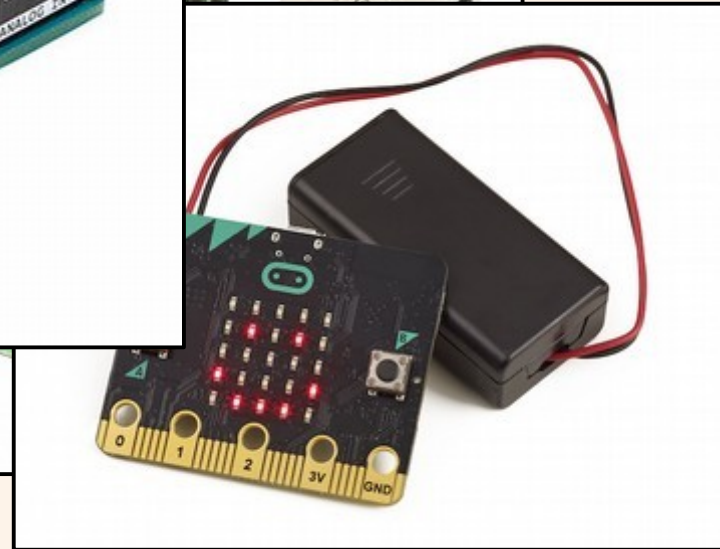
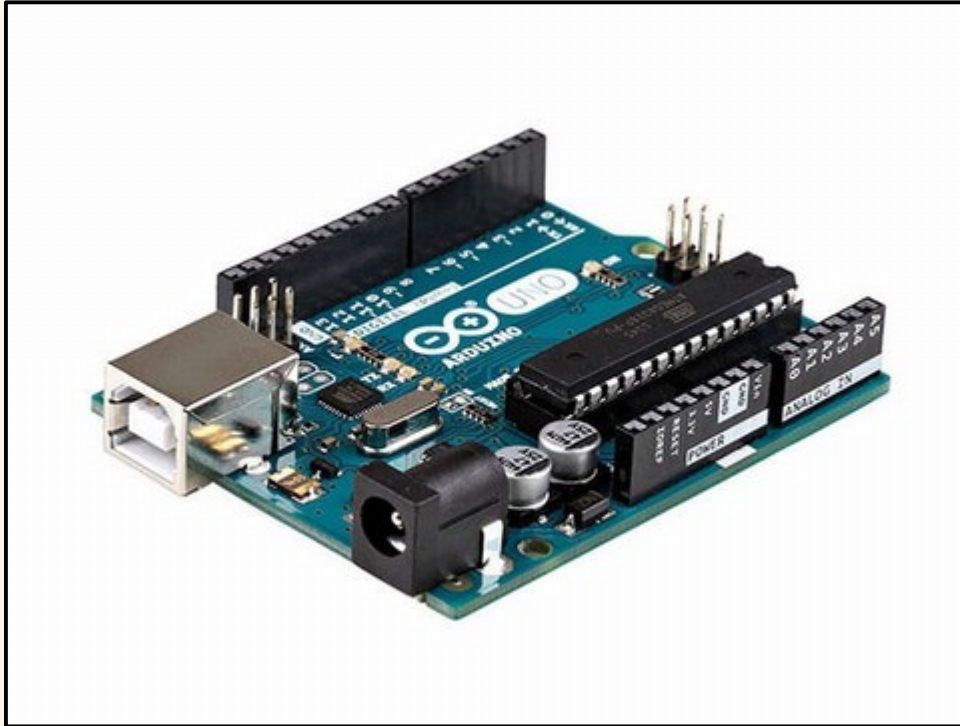
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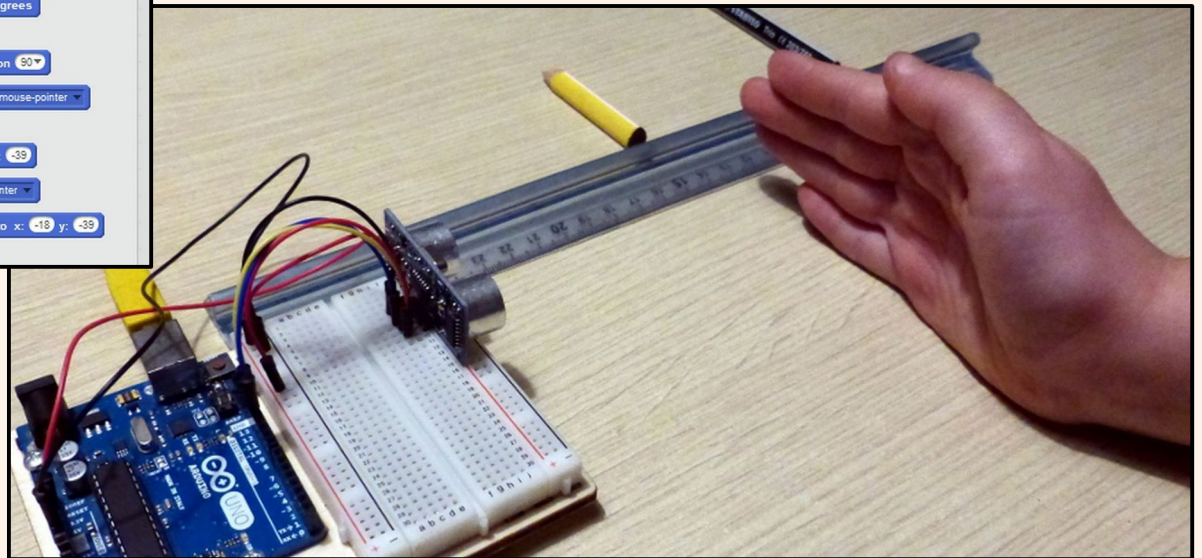
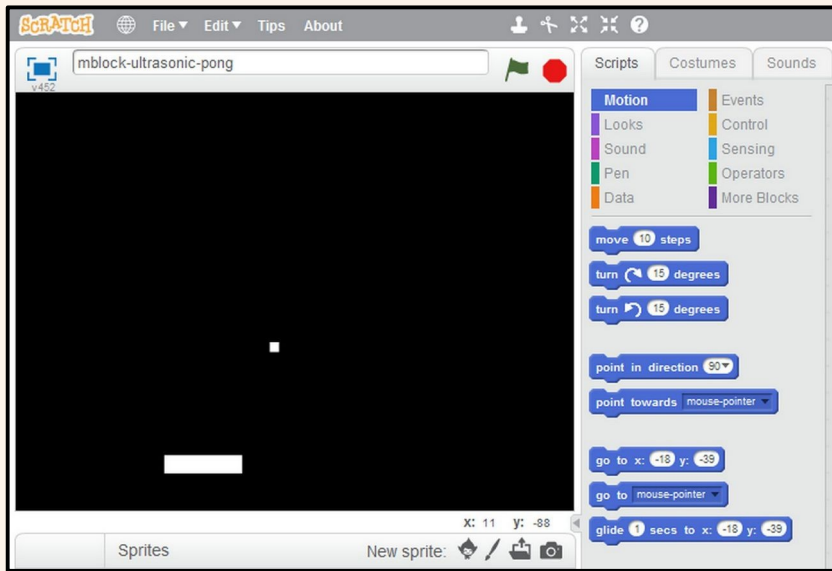
BBC Micro:Bit (2016)

# 2020



## Arduino (2005)

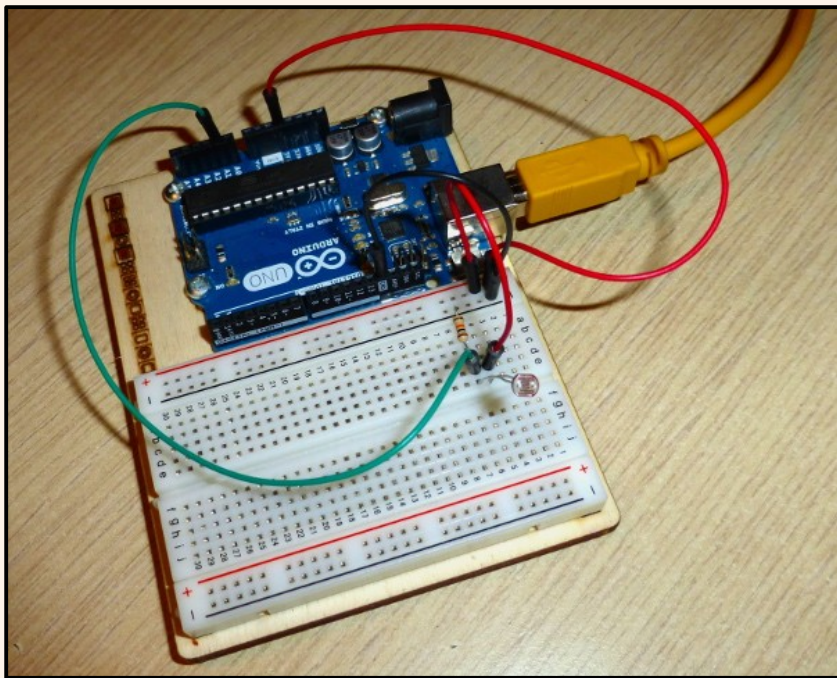
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## Arduino (2005)

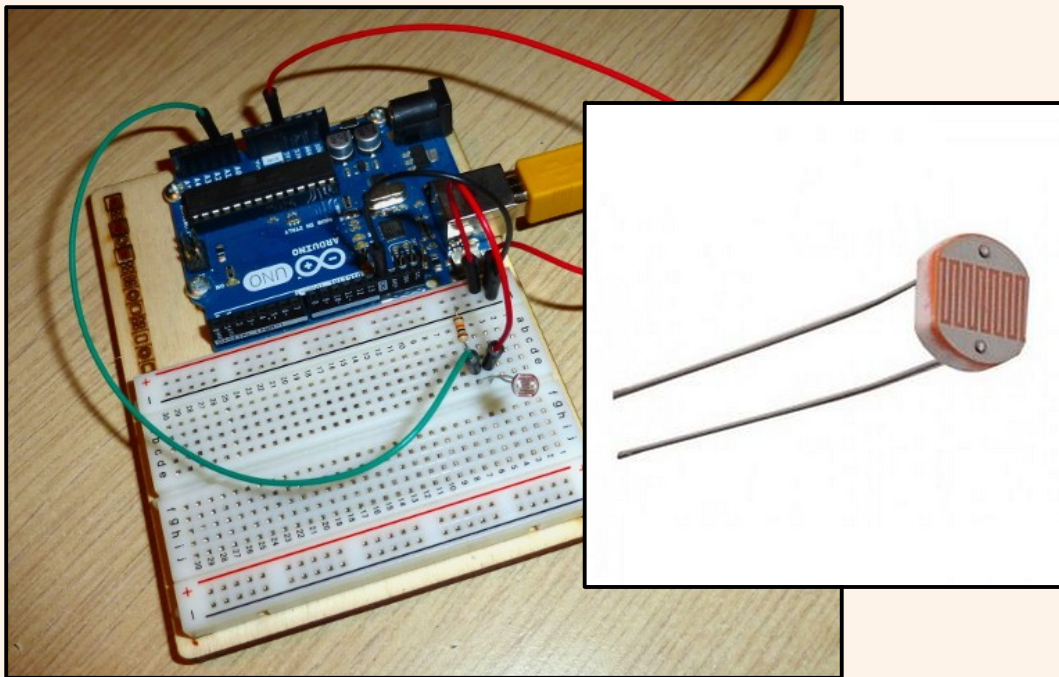


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Arduino (2005)

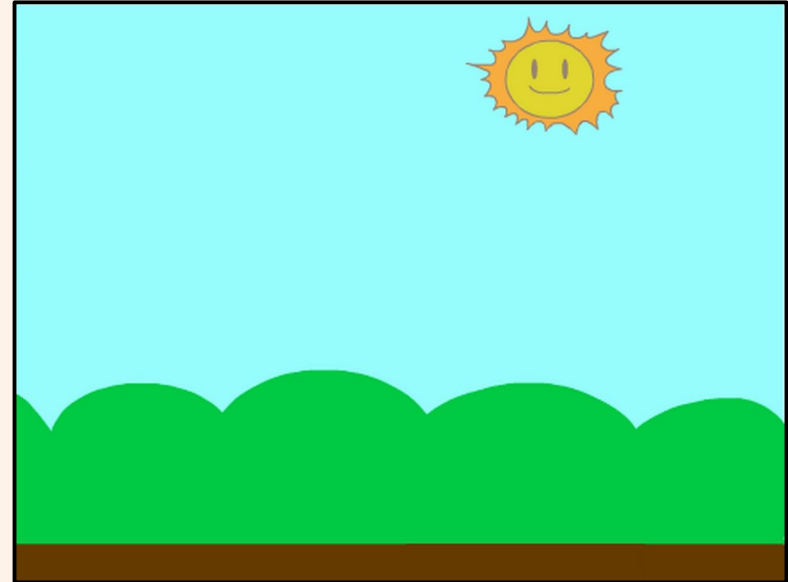
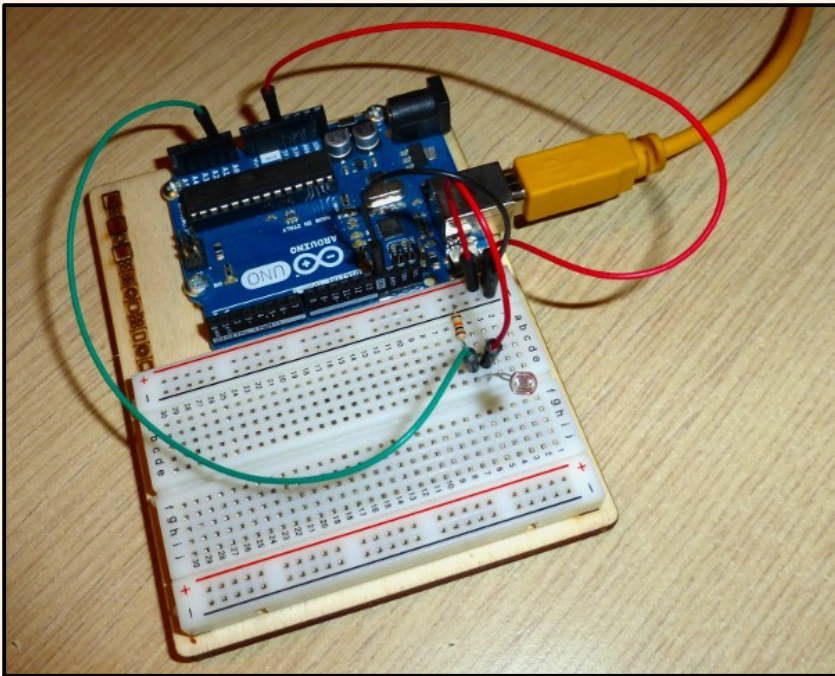
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Arduino (2005)

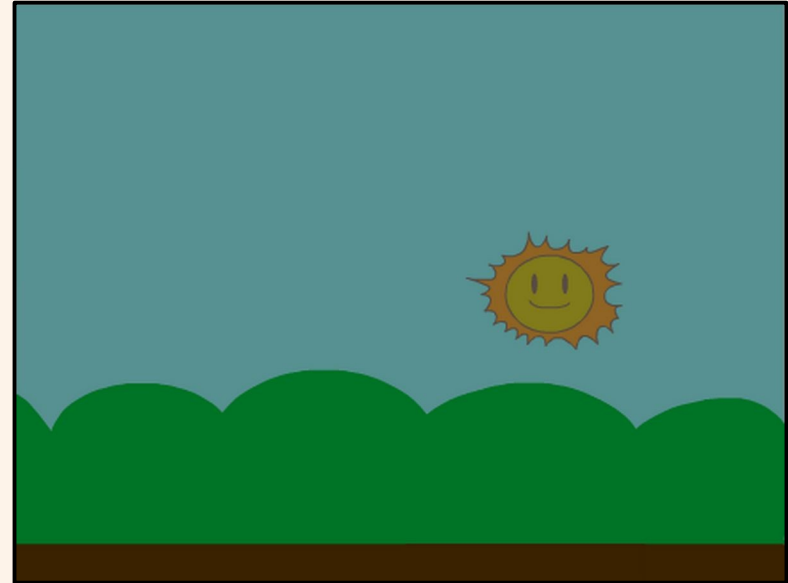
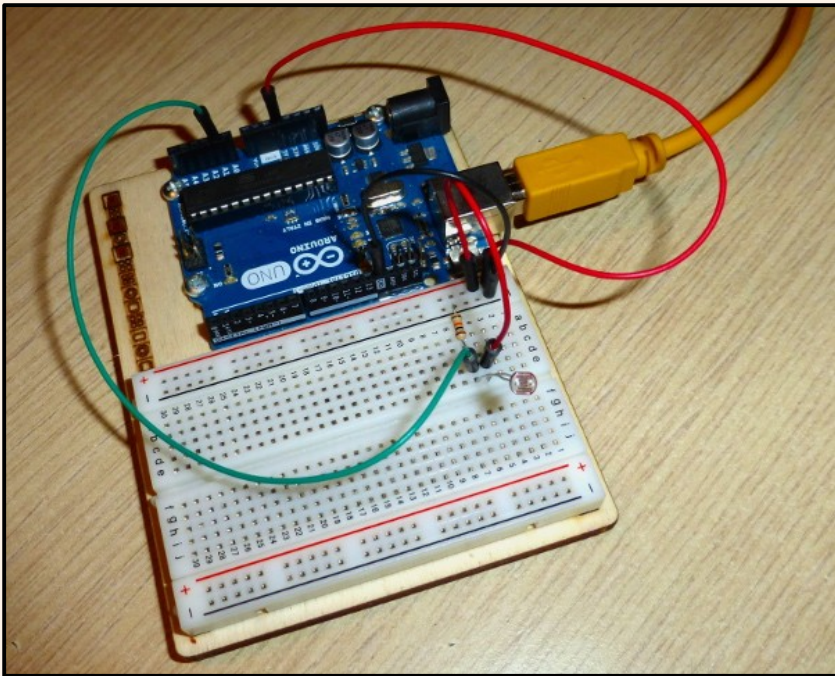


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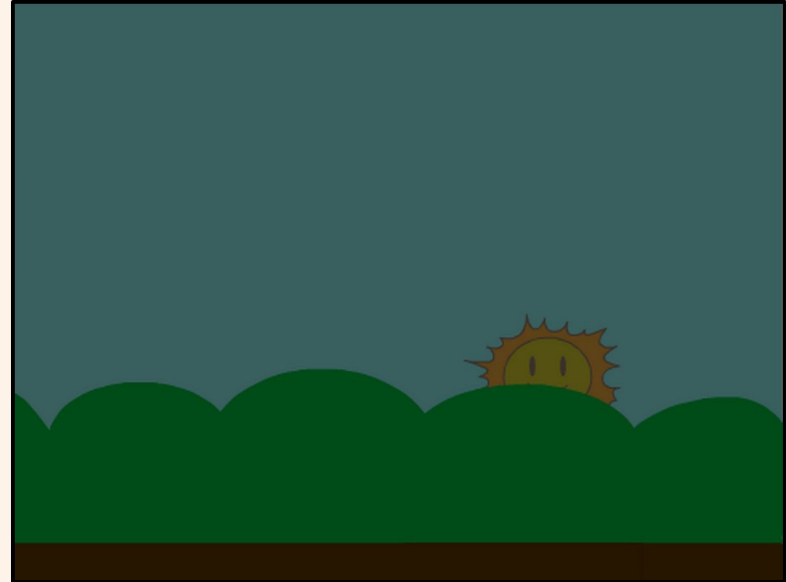
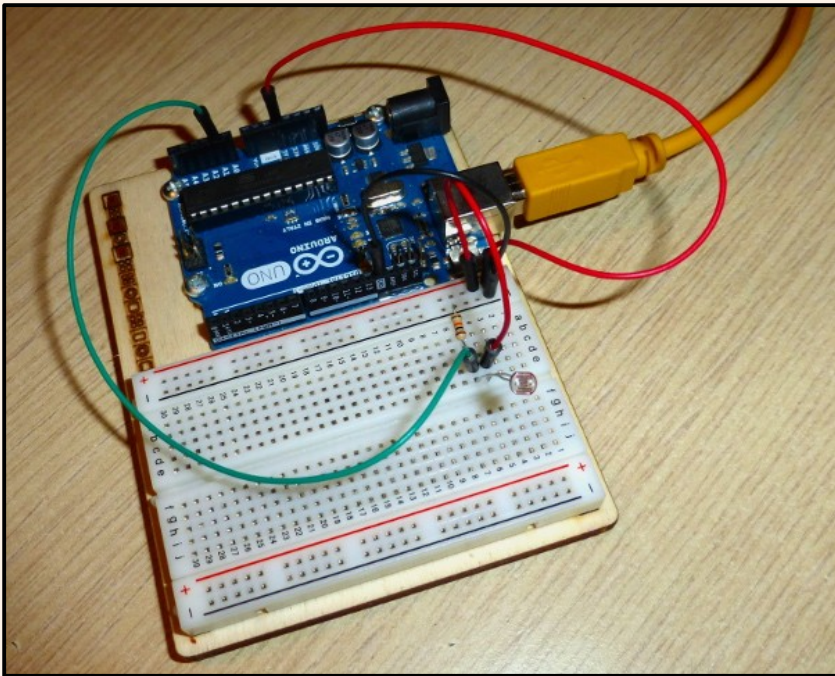
Arduino (2005)

# 2020



Arduino (2005)

# 2020



Arduino (2005)

# ARCHITETTURA



Unità centrale

# ARCHITETTURA



# ARCHITETTURA



Processore

The diagram shows a large, light blue rectangular area representing a system or architecture. Inside this area, in the top-left corner, is a smaller blue rectangle with a black border. This smaller rectangle is labeled 'Processore' in black text.

# PROCESSORE



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Detto anche **CPU** – Central Processing Unit.

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Si occupa dell'esecuzione dei programmi  
Effettua i calcoli logici e aritmetici.

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Detto anche **CPU** – Central Processing Unit.

Si occupa dell'esecuzione dei programmi  
Effettua i calcoli logici e aritmetici.

Sovrintende il funzionamento di tutti gli altri  
componenti del calcolatore.

# PROCESSORE



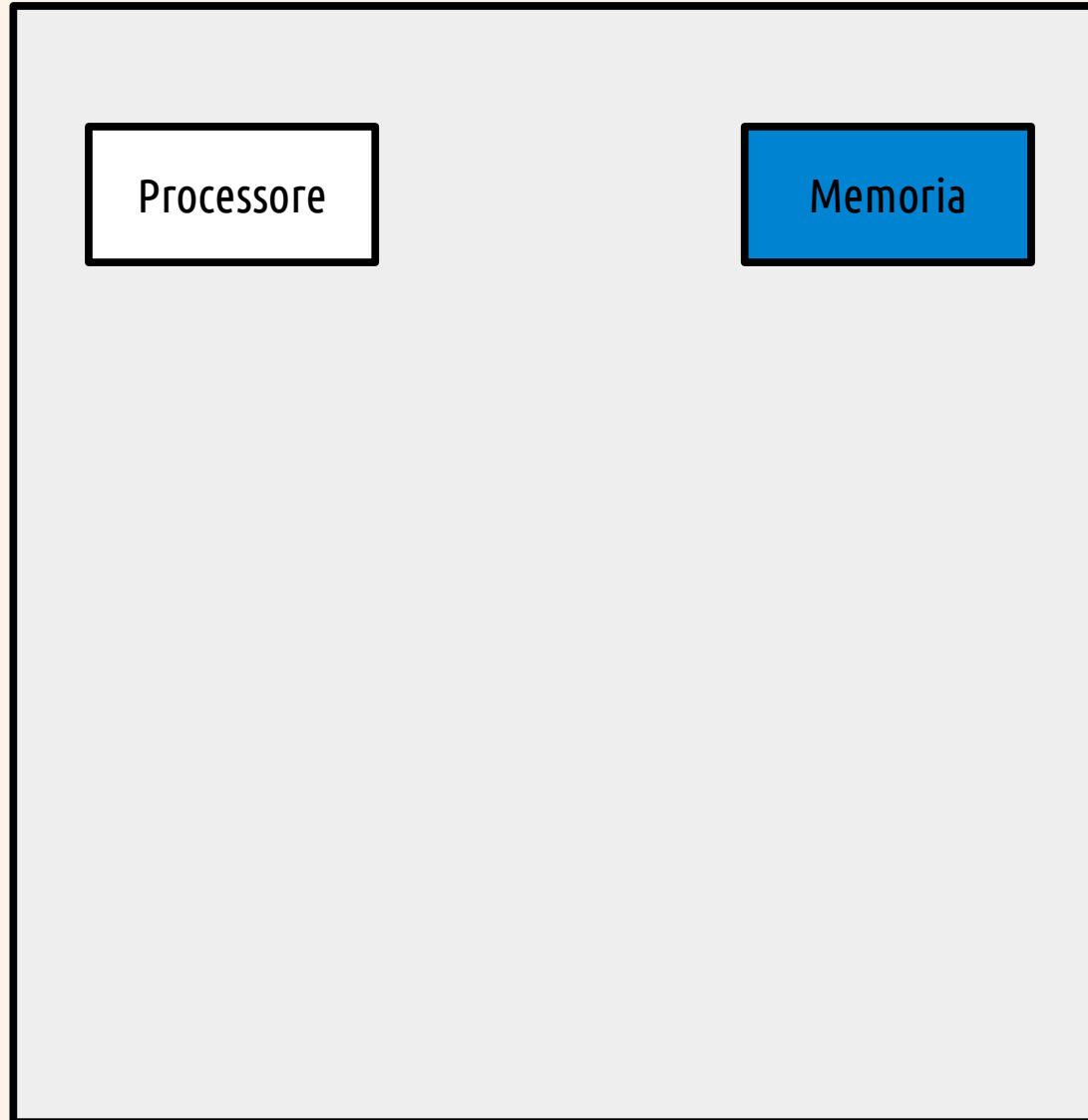
# ARCHITETTURA



Processore

The diagram consists of a large light blue rectangle with a black border. Inside the top-left corner of this rectangle is a smaller white rectangle with a black border. The word 'Processore' is written in black text inside the white rectangle.

# ARCHITETTURA





# MEMORIA

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Contiene le istruzioni che costituiscono i programmi da eseguire e i dati da elaborare.

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Disponibile in quantità limitata.

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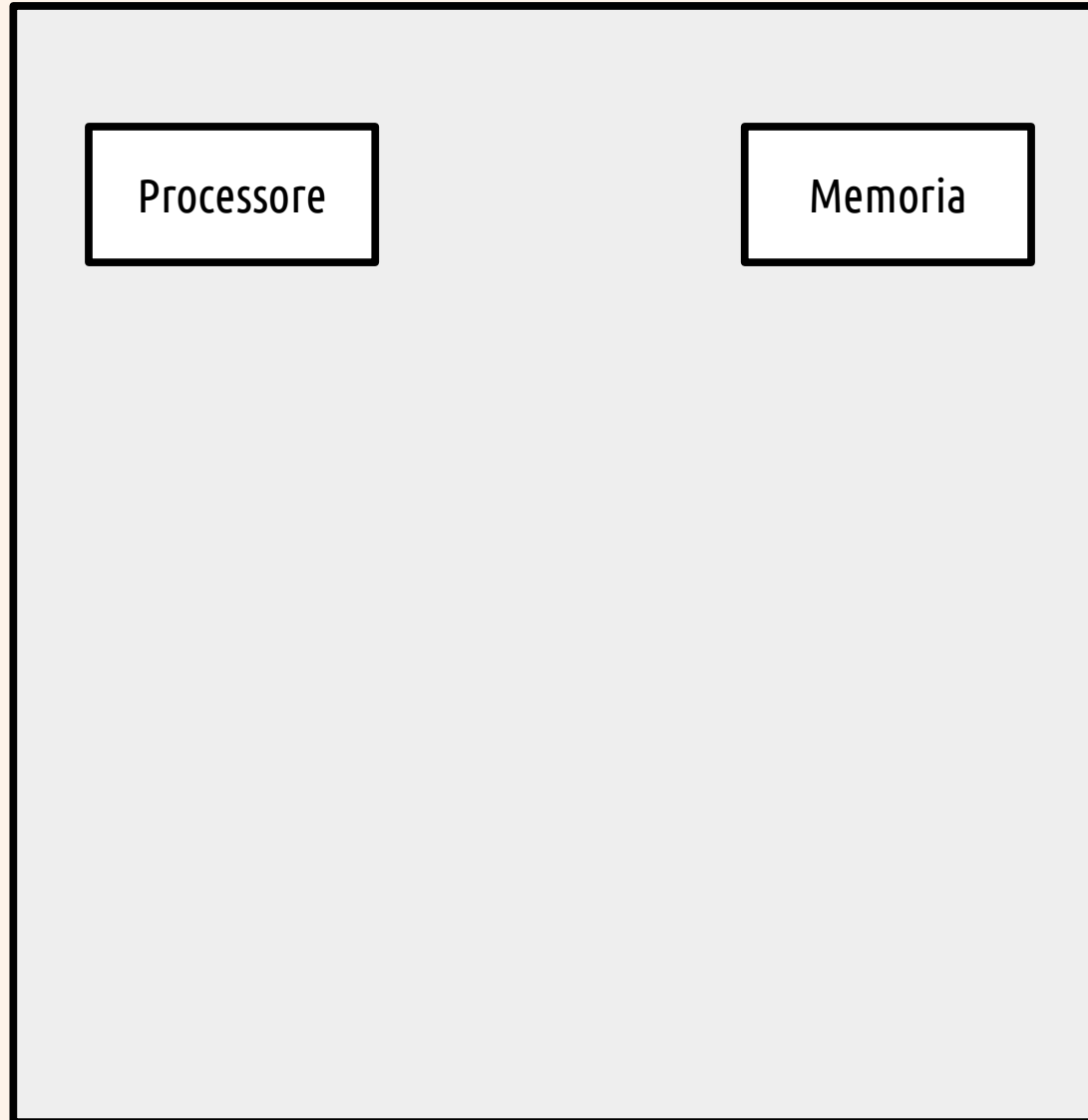
Perde il contenuto quando si spegne il calcolatore.

# MEMORIA

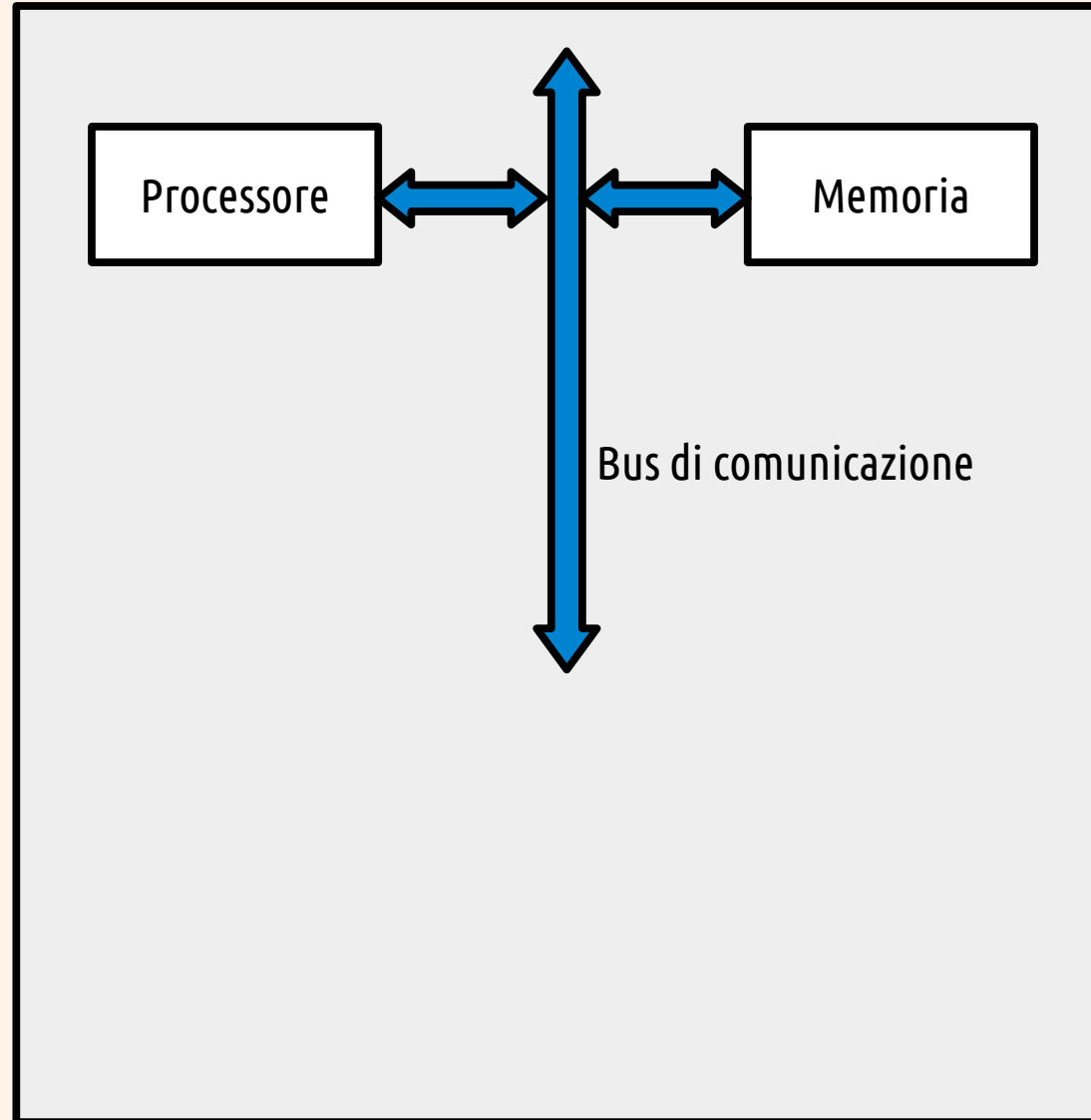




# ARCHITETTURA



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# SCHEDA MADRE

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Ospita i componenti principali.

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Fornisce l'infrastruttura di comunicazione.

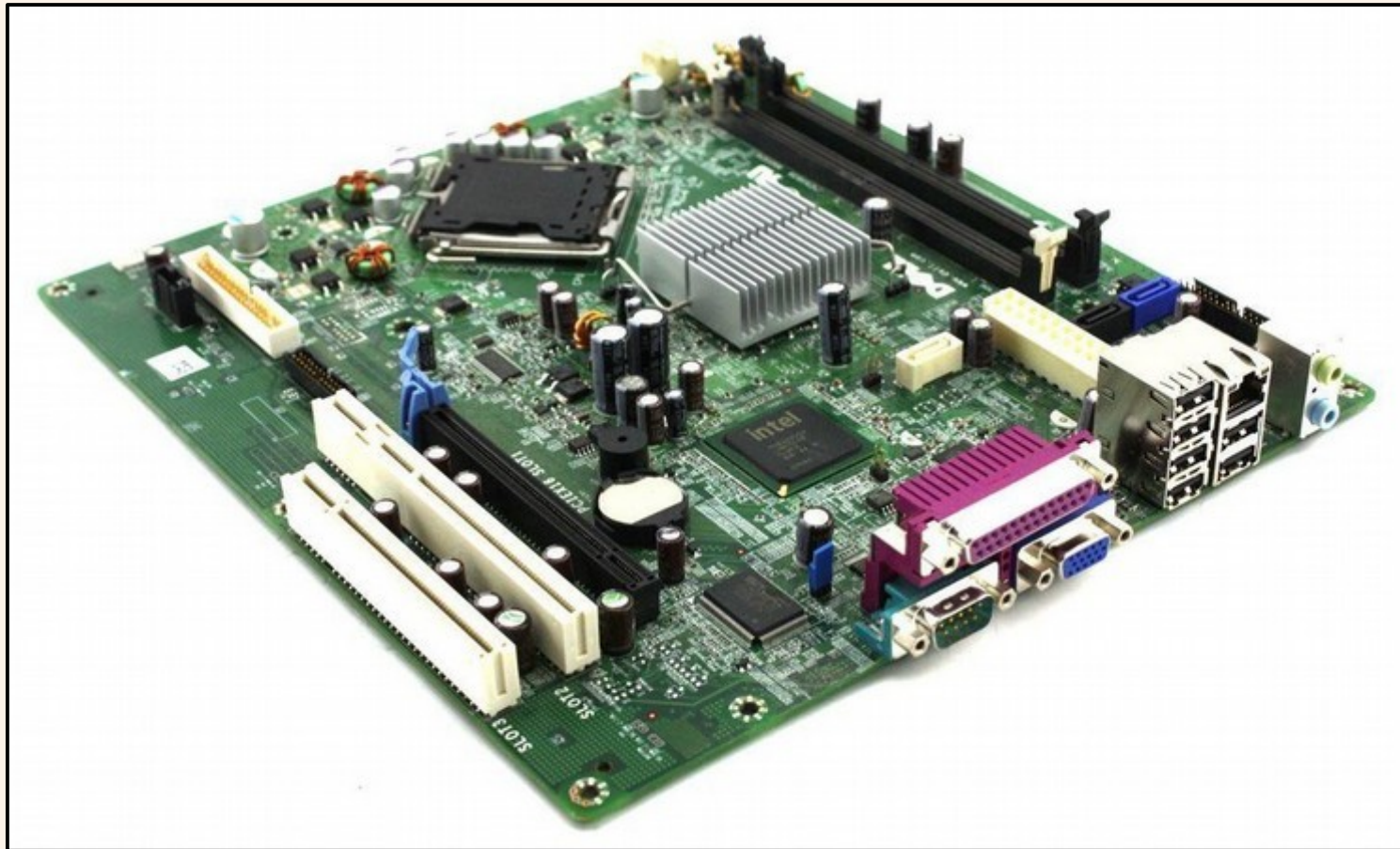
# SCHEDA MADRE

Ospita i componenti principali.

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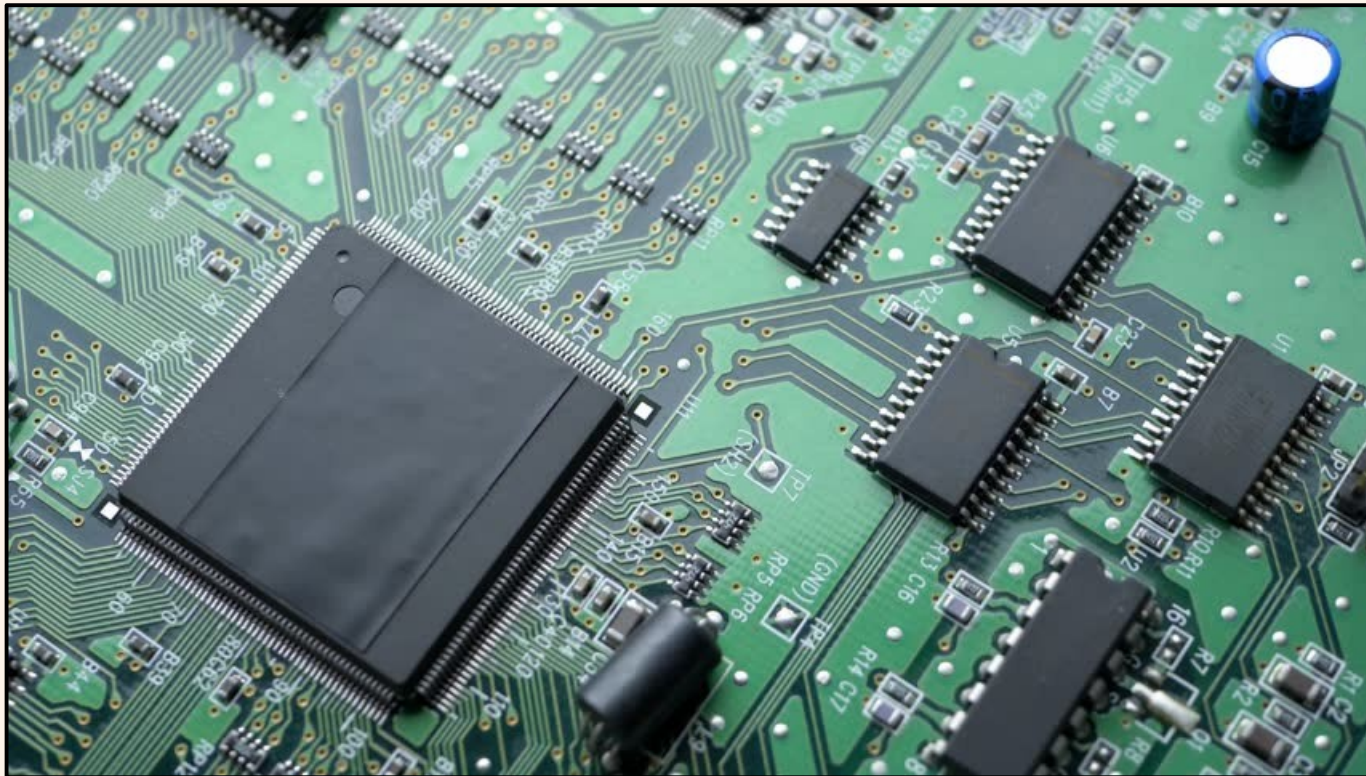
Offre punti di espansione del sistema.

# SCHEDA MADRE

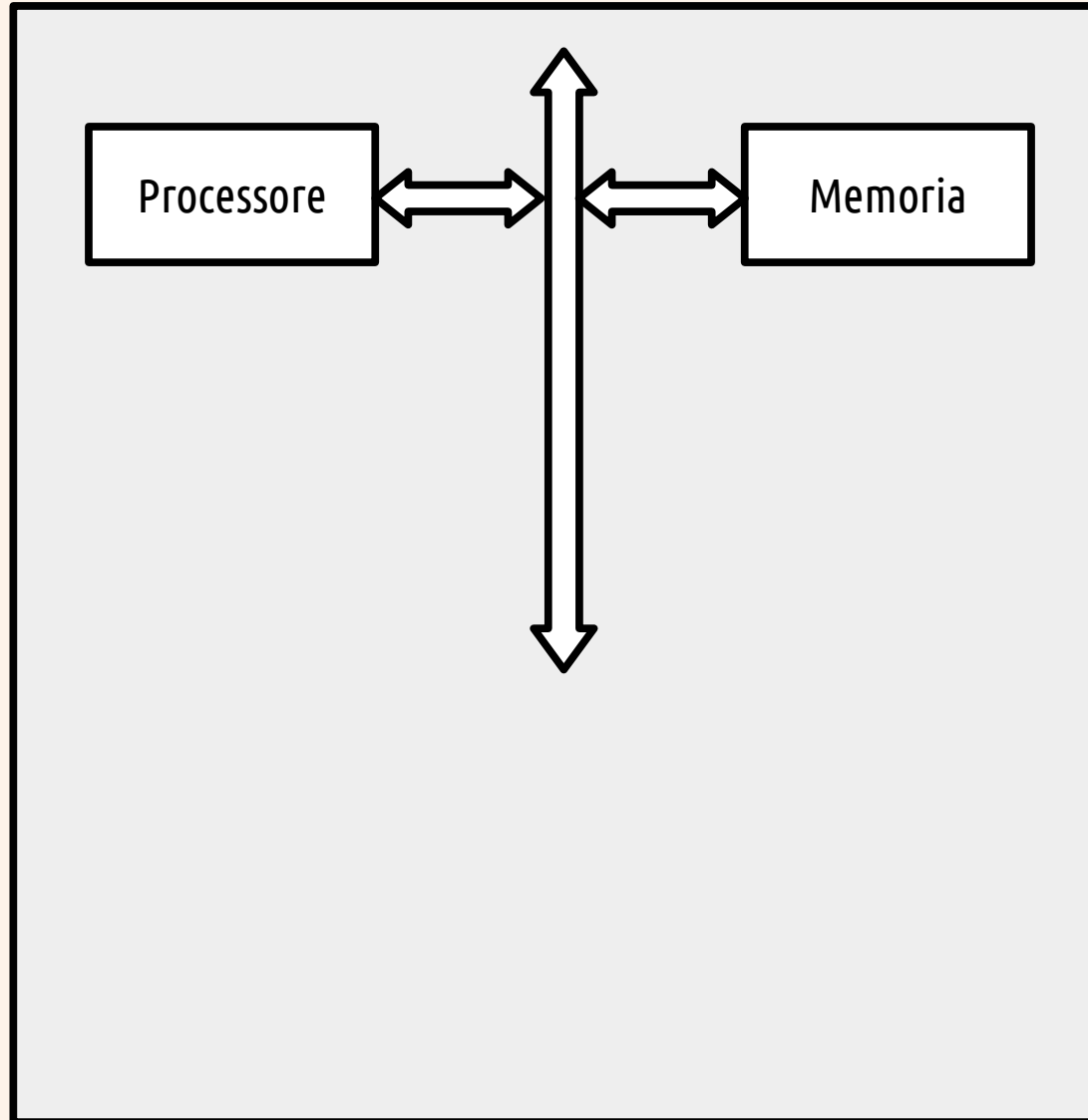




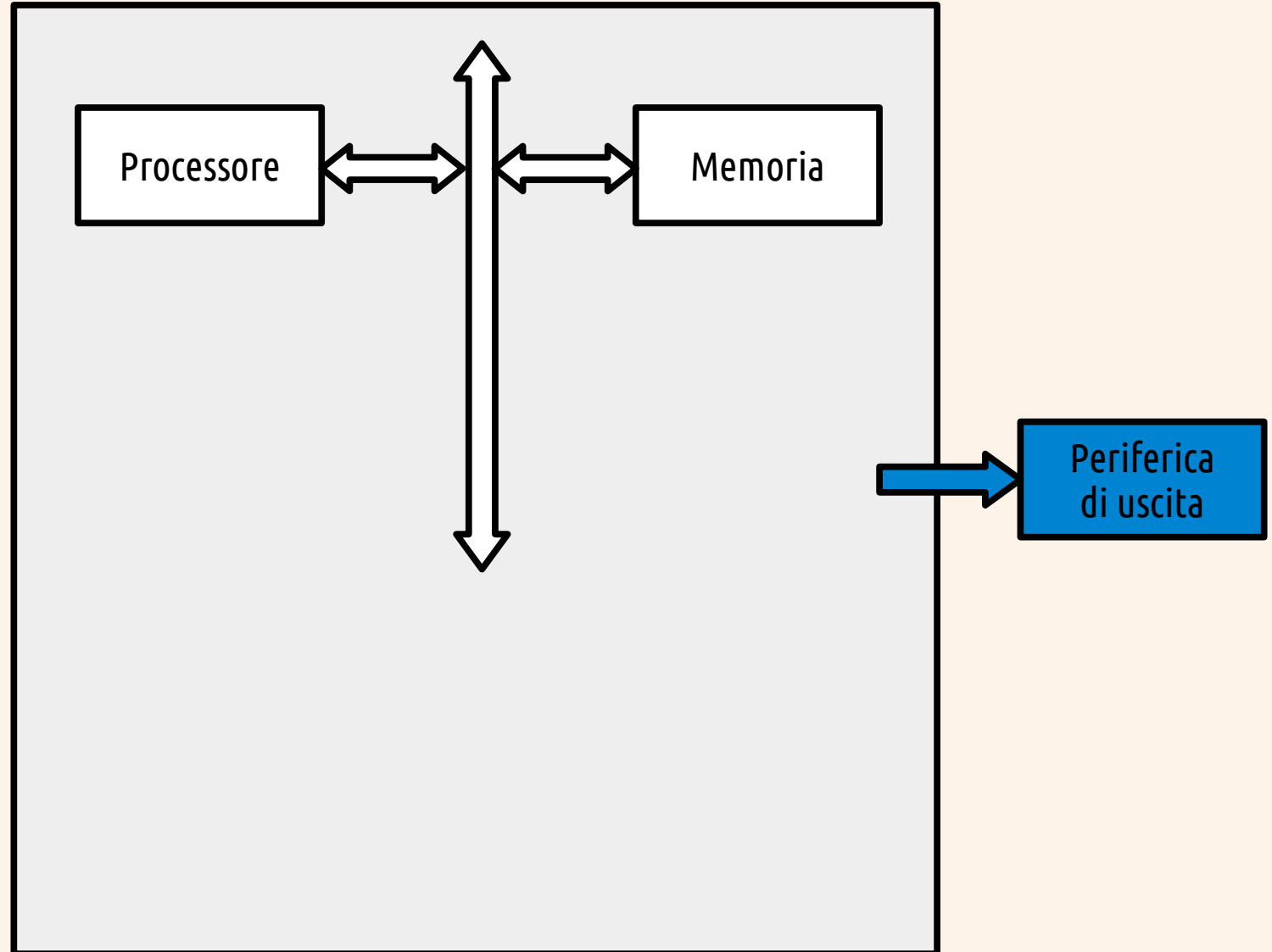
# BUS



# ARCHITETTURA



# ARCHITETTURA



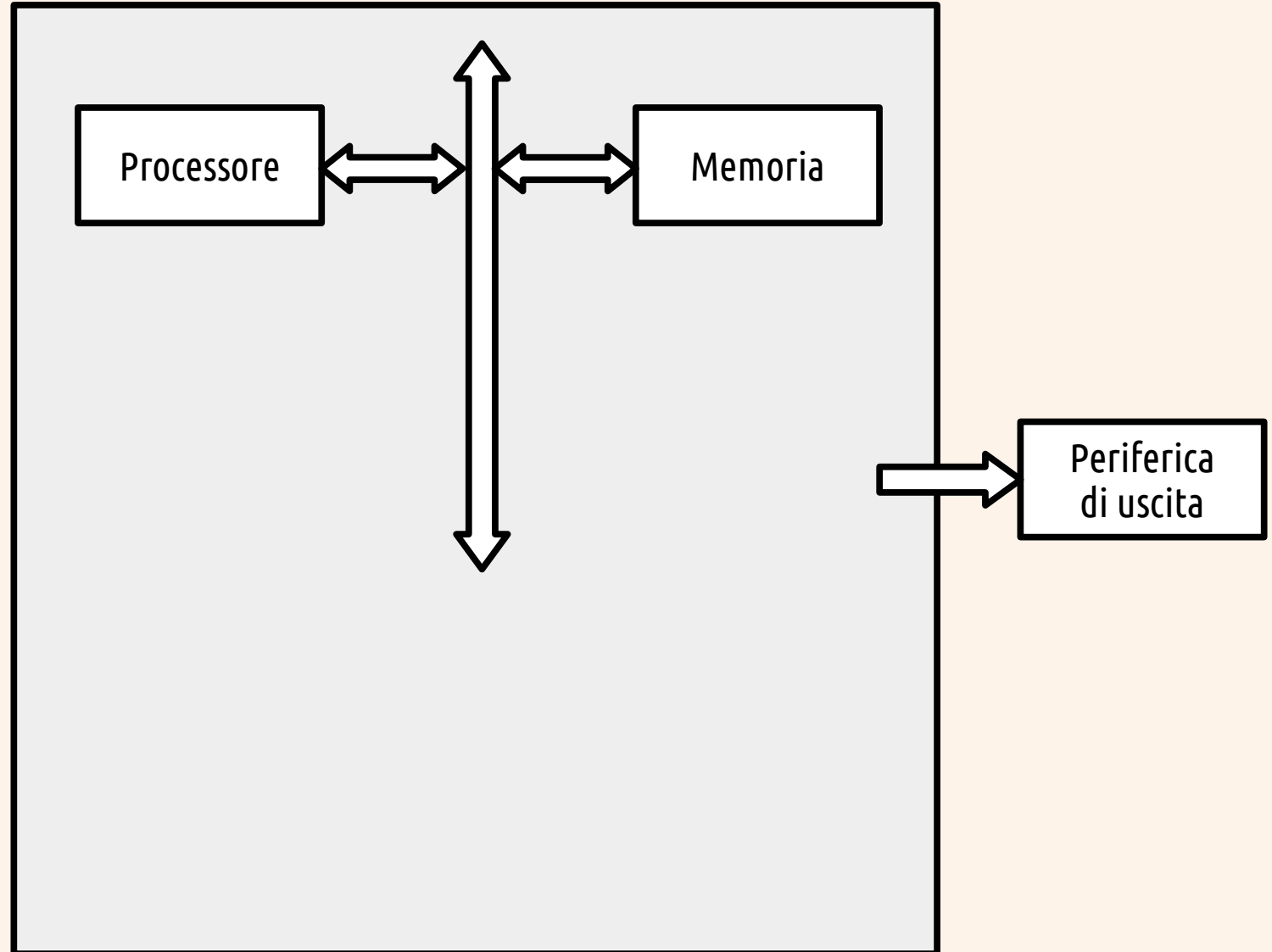
# PERIFERICA D'USCITA

Apparato per la **ricezione**  
di dati dall'unità centrale

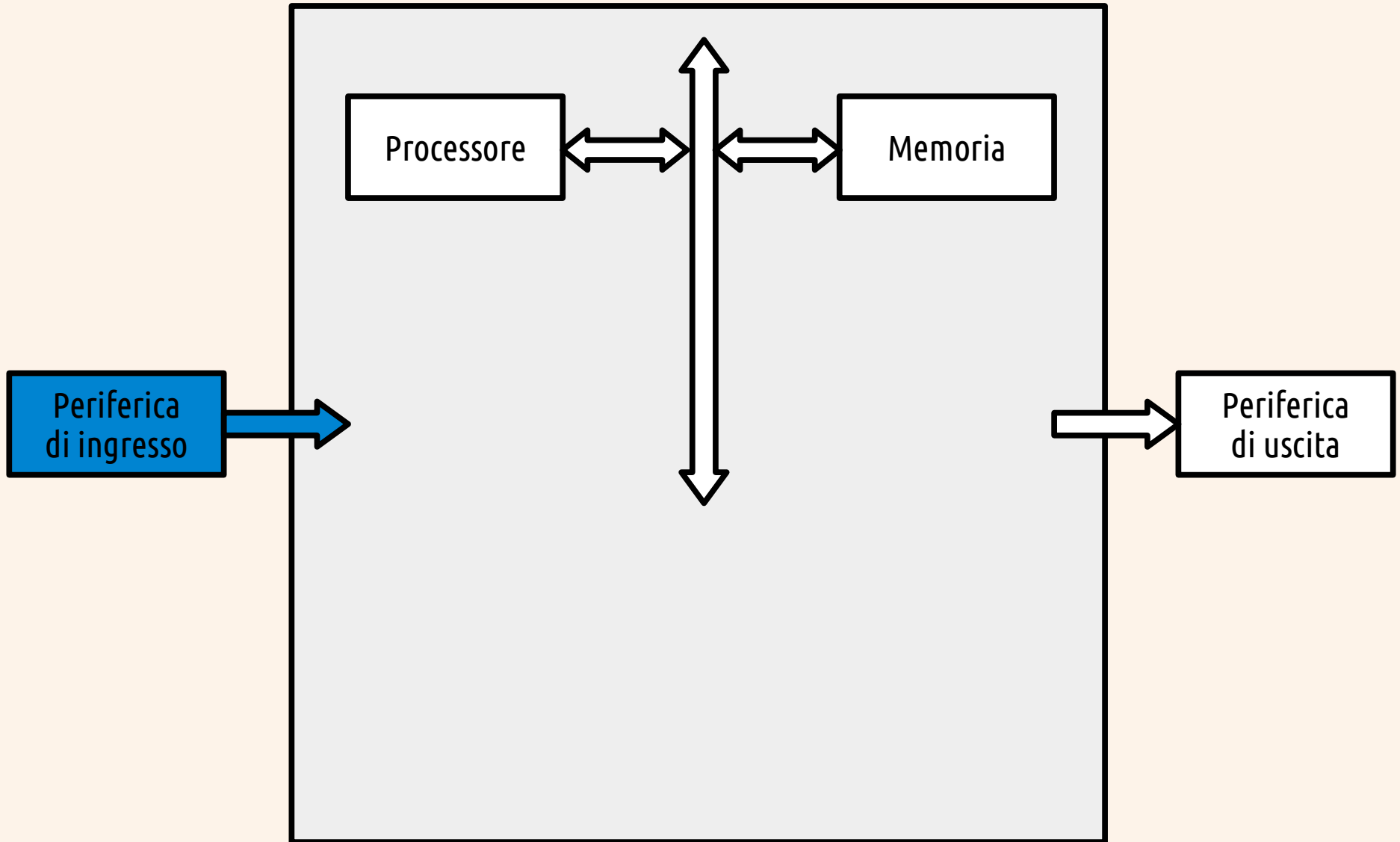
# PERIFERICA D'USCITA



# ARCHITETTURA



# ARCHITETTURA





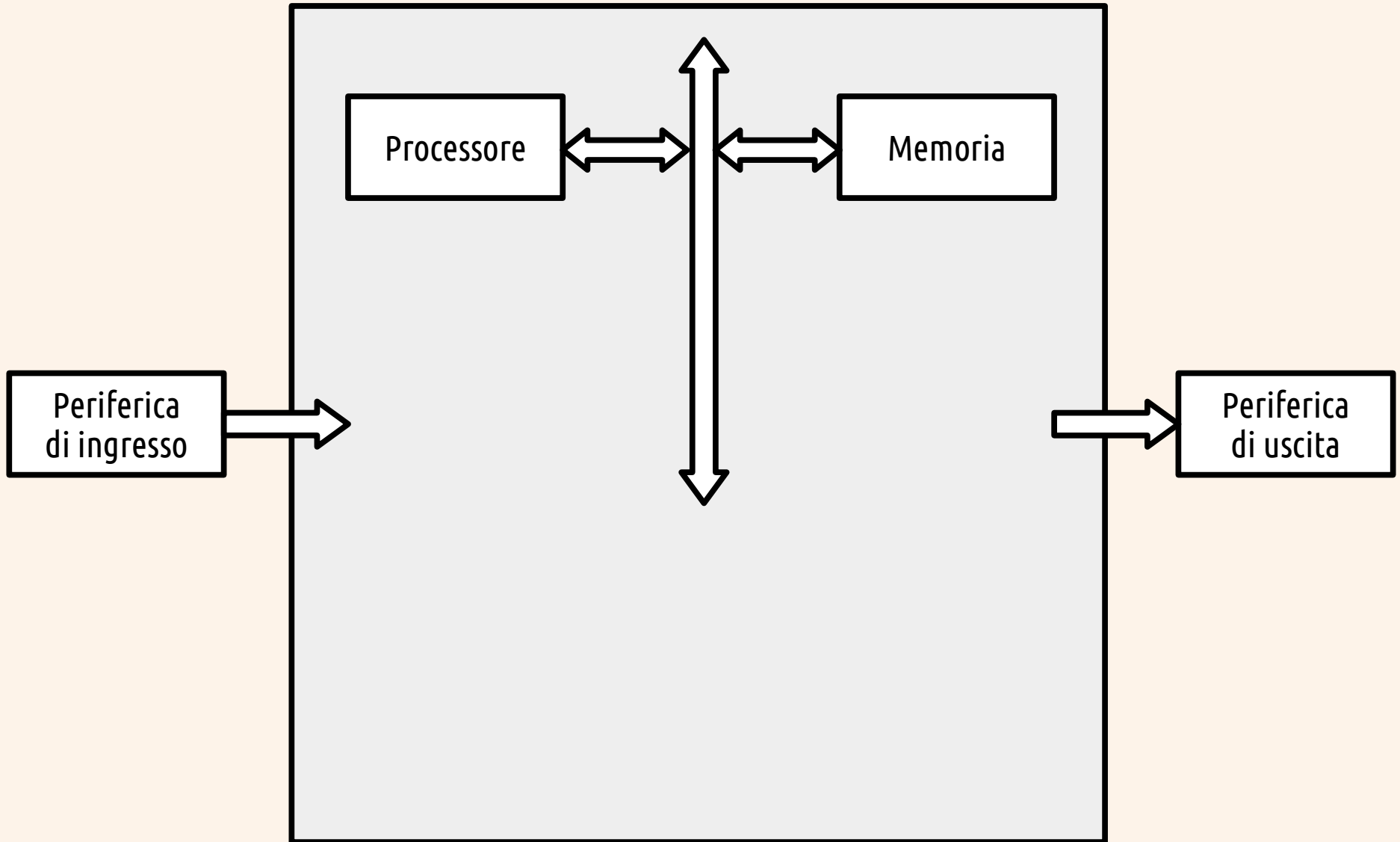
# PERIFERICA D'INGRESSO

Apparato per l'invio  
di dati all'unità centrale

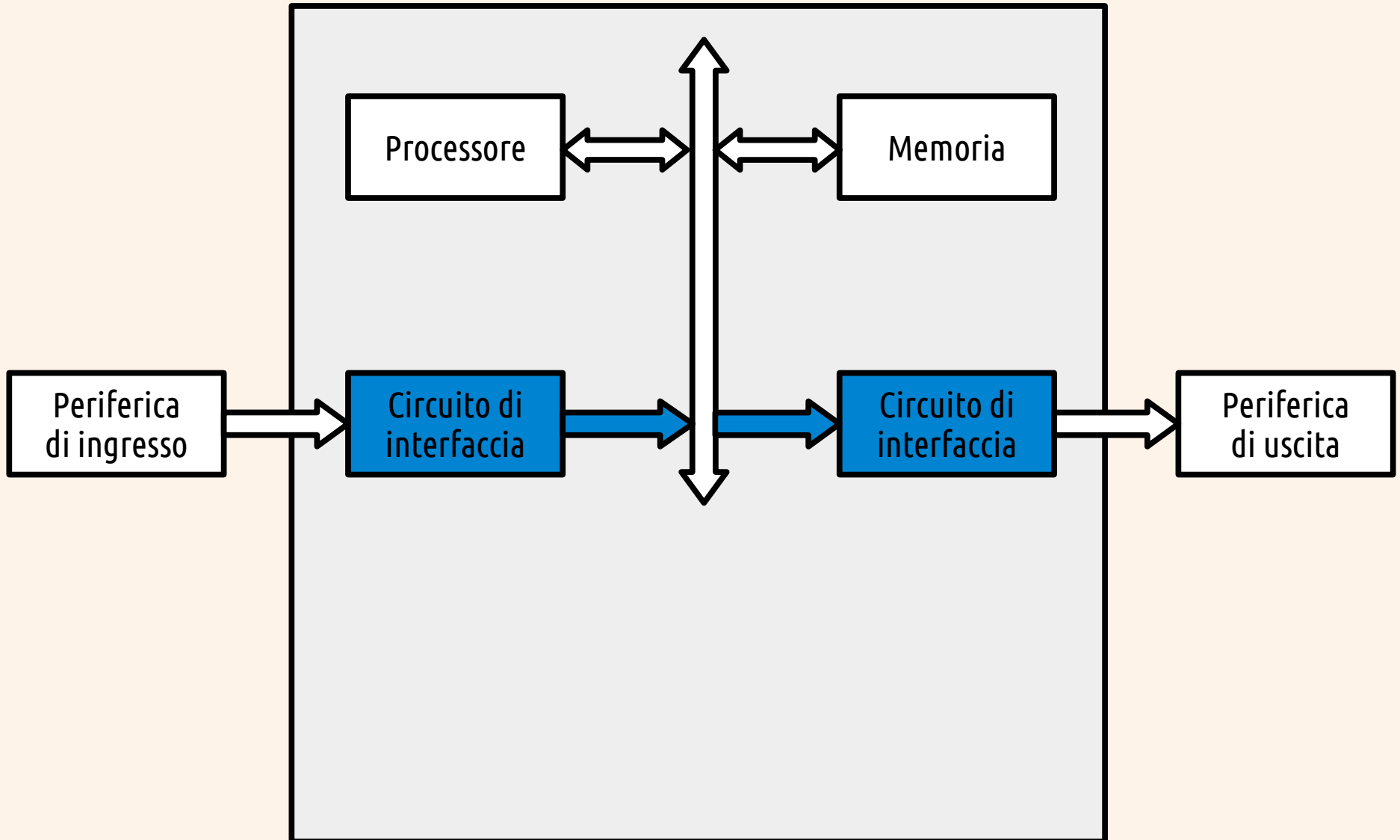
# PERIFERICA D'INGRESSO



# ARCHITETTURA



# ARCHITETTURA



# CIRCUITO DI INTERFACCIA

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Detto anche **controller**.

# CIRCUITO DI INTERFACCIA

Detto anche **controller**.

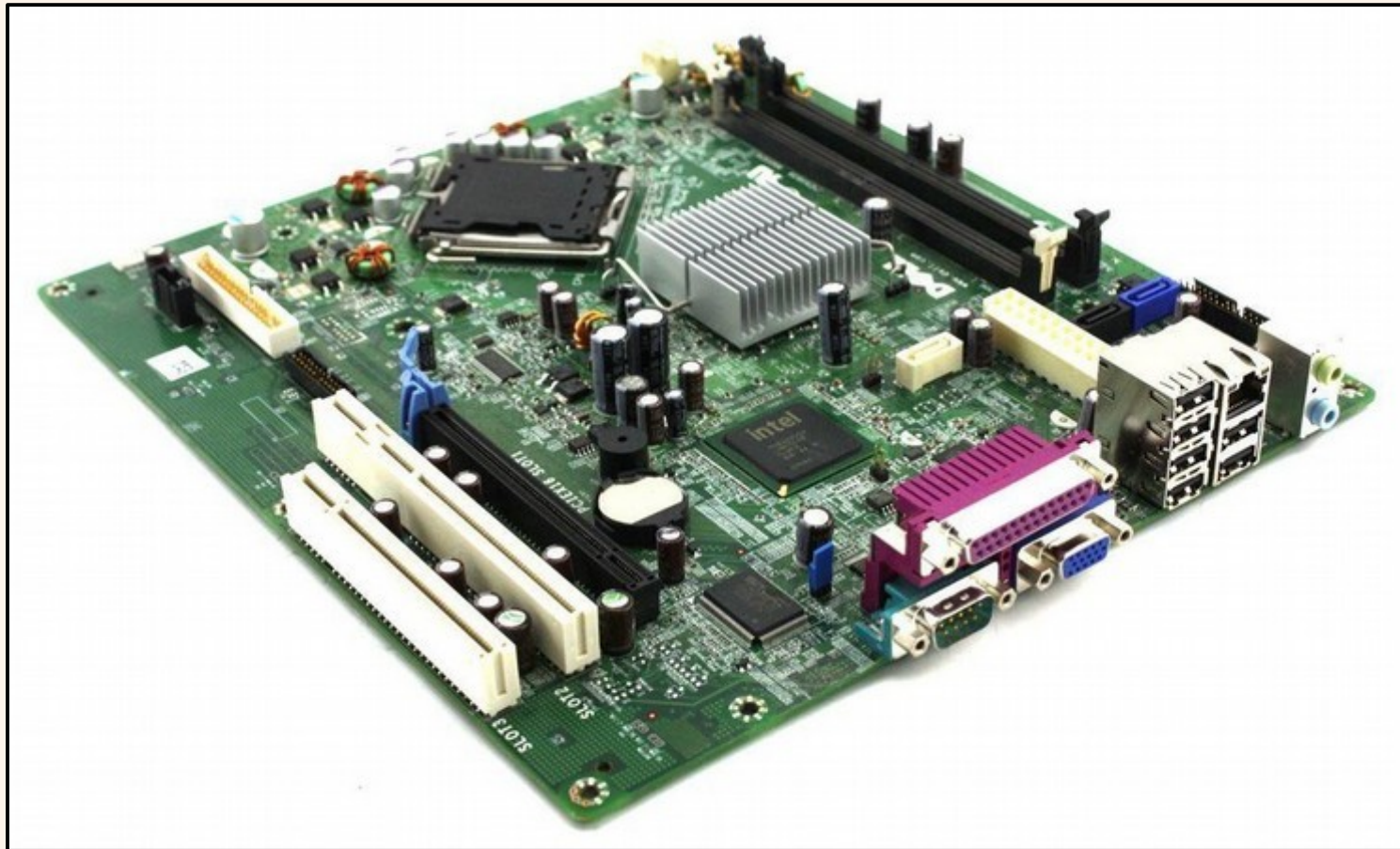
Consente il colloquio tra CPU e periferica  
Standard di riferimento: USB, HDMI, SATA, ...



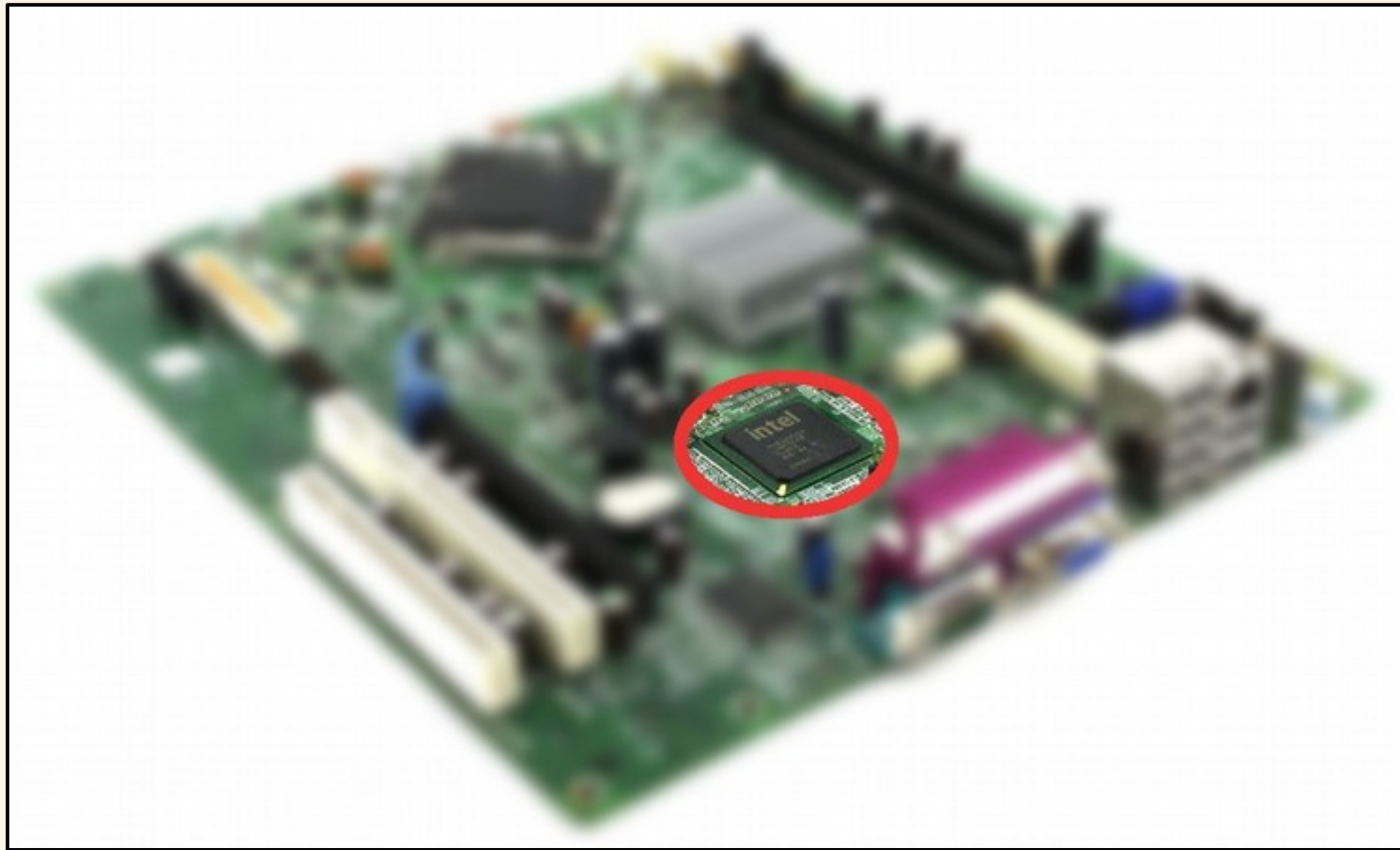
# CIRCUITO DI INTERFACCIA



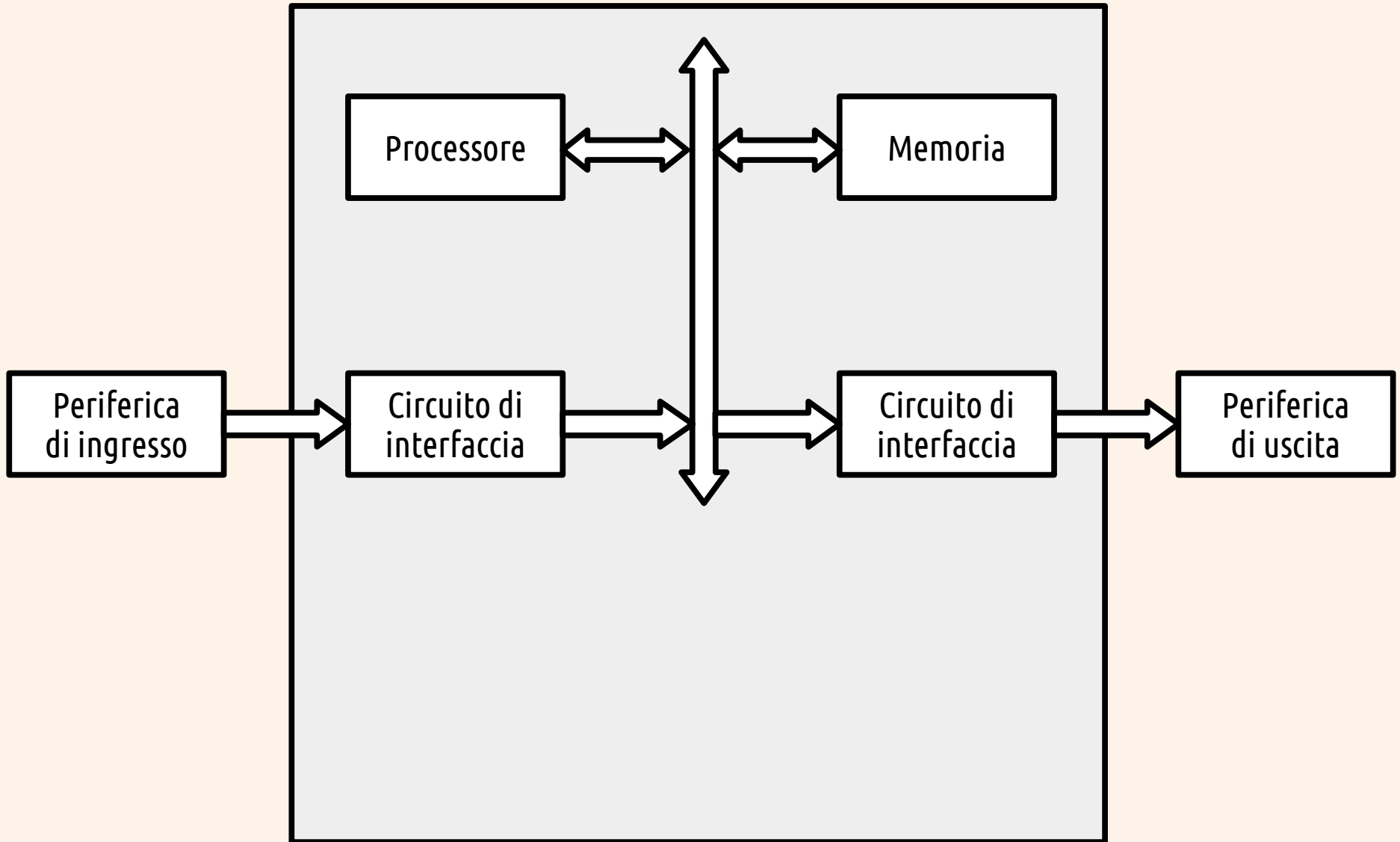
# CIRCUITO DI INTERFACCIA



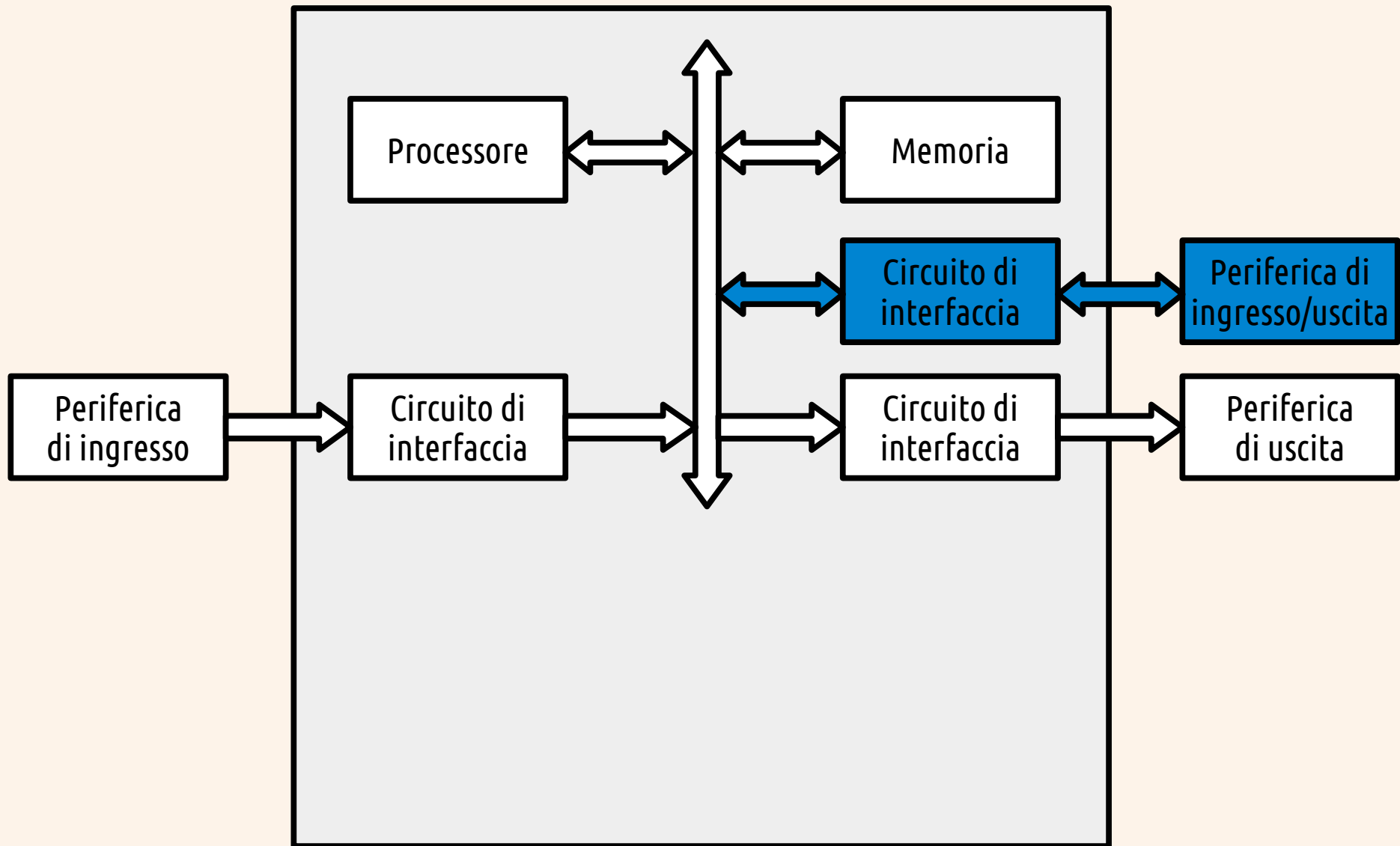
# CIRCUITO DI INTERFACCIA



# ARCHITETTURA



# ARCHITETTURA



# ALTRE PERIFERICHE



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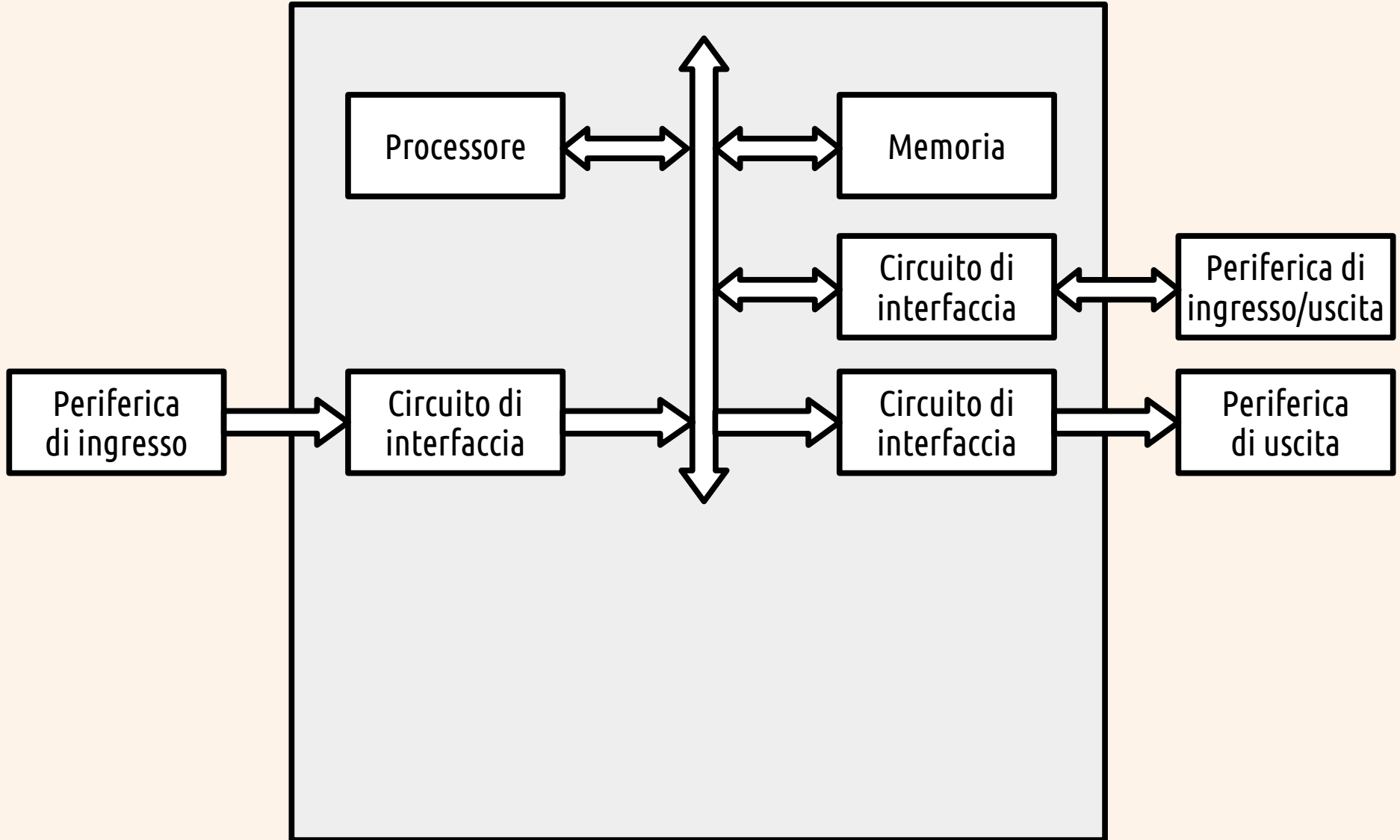




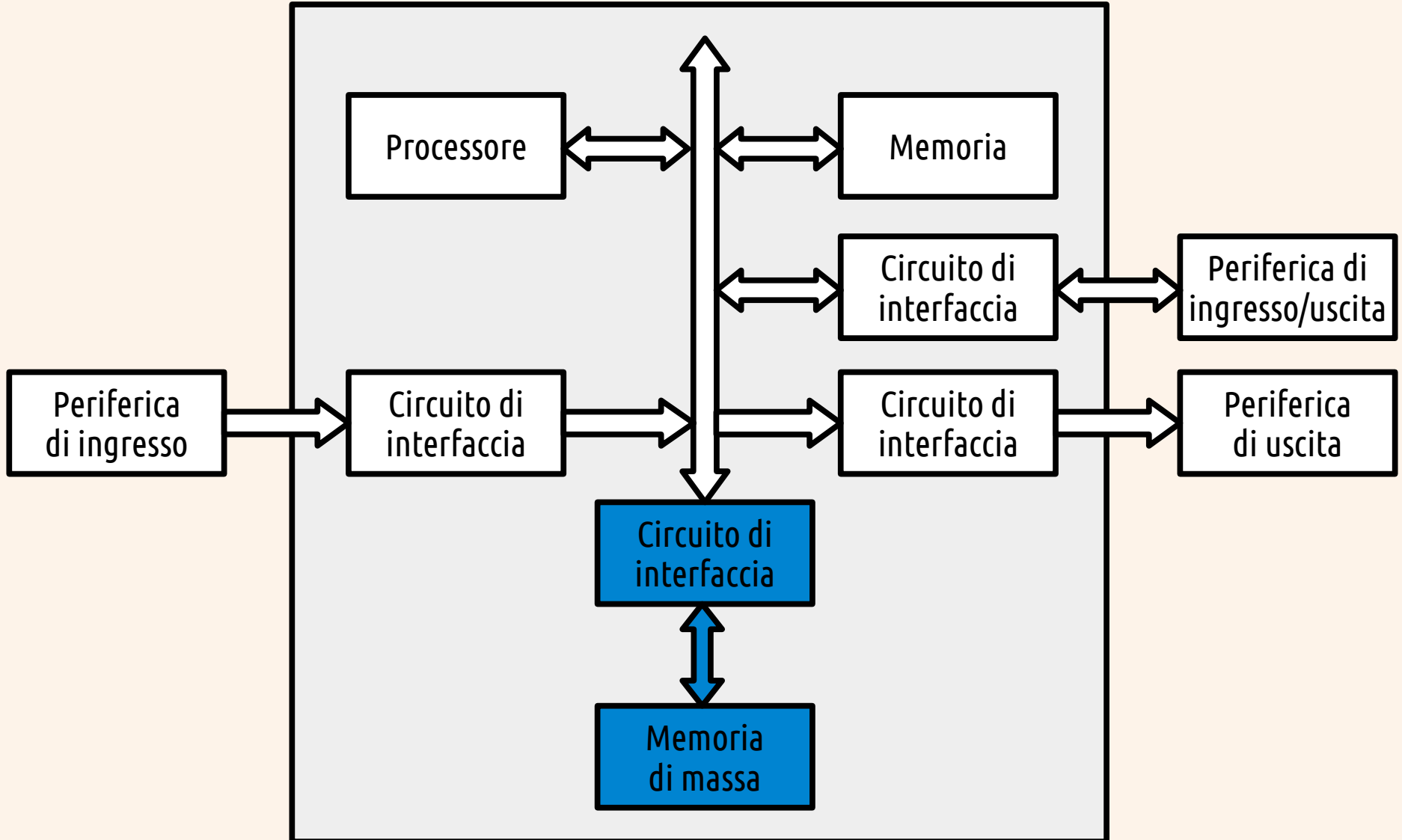
# ALTRE PERIFERICHE



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# MEMORIA DI MASSA

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Mantiene i dati anche a calcolatore spento.

# MEMORIA DI MASSA

Mantiene i dati anche a calcolatore spento.

Molto lenta rispetto alla memoria centrale.

# MEMORIA DI MASSA

Mantiene i dati anche a calcolatore spento.

Molto lenta rispetto alla memoria centrale.

Disponibile in quantità praticamente illimitata.

# MEMORIE DI MASSA





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# MEMORIE DI MASSA



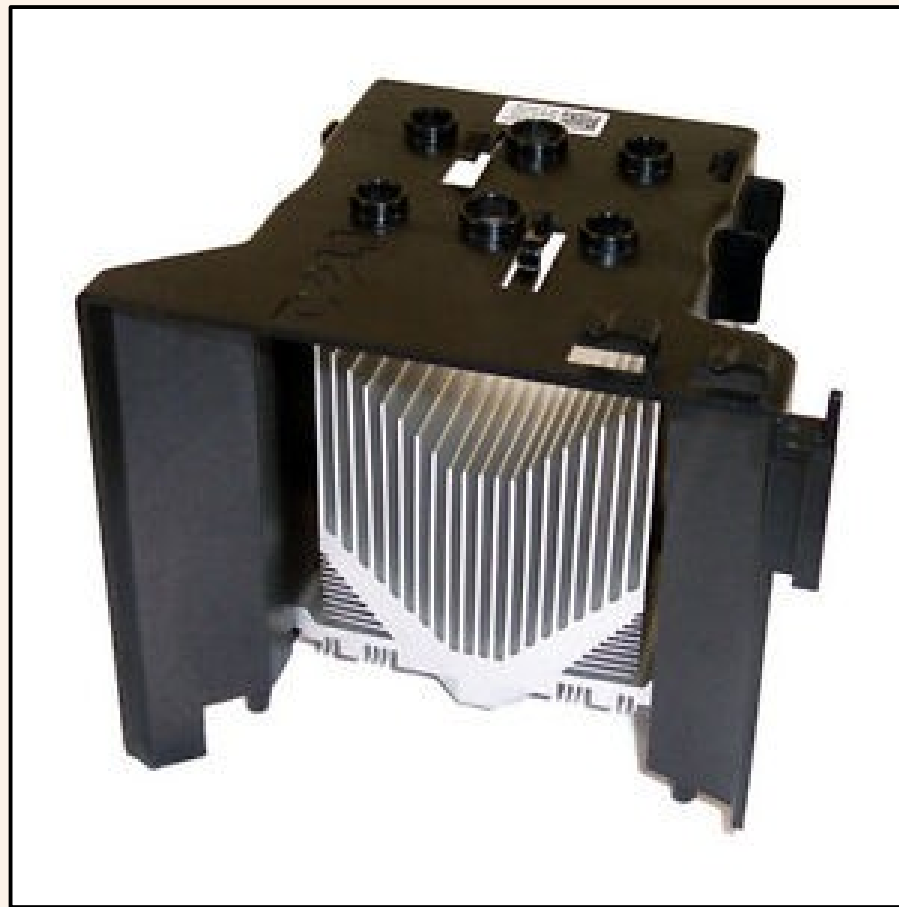
# MEMORIE DI MASSA



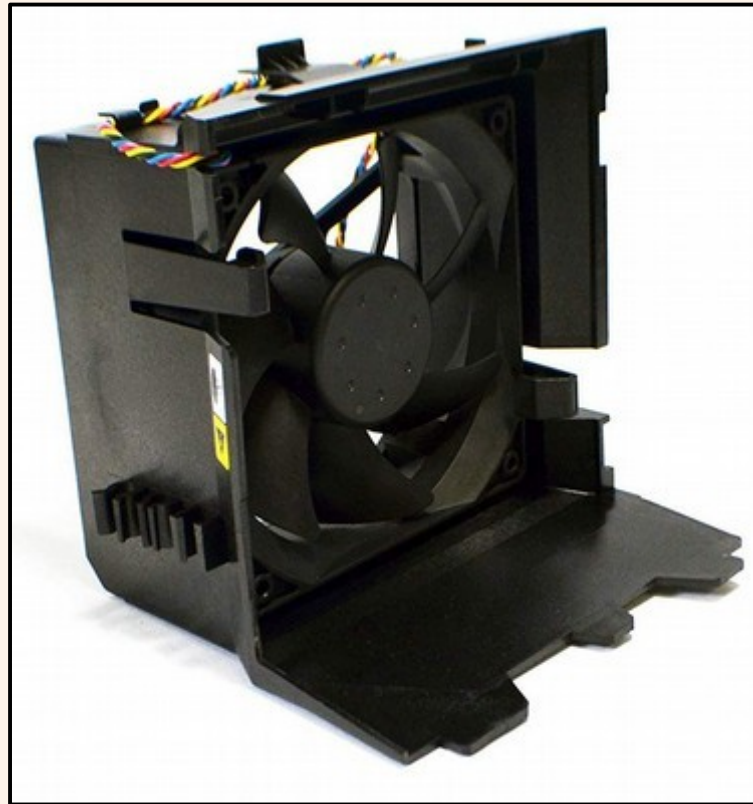
# ALTRI ACCESSORI



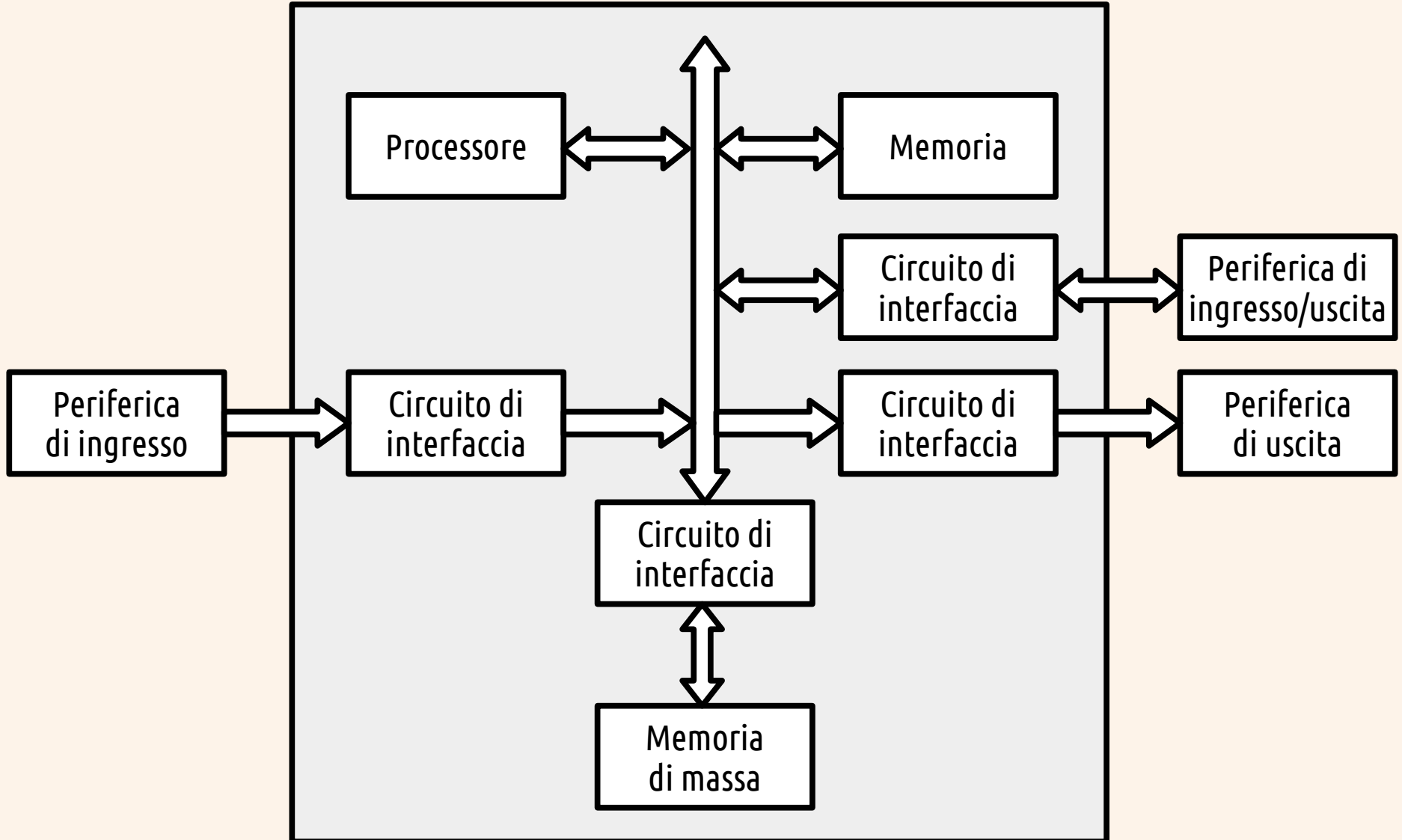
# ALTRI ACCESSORI



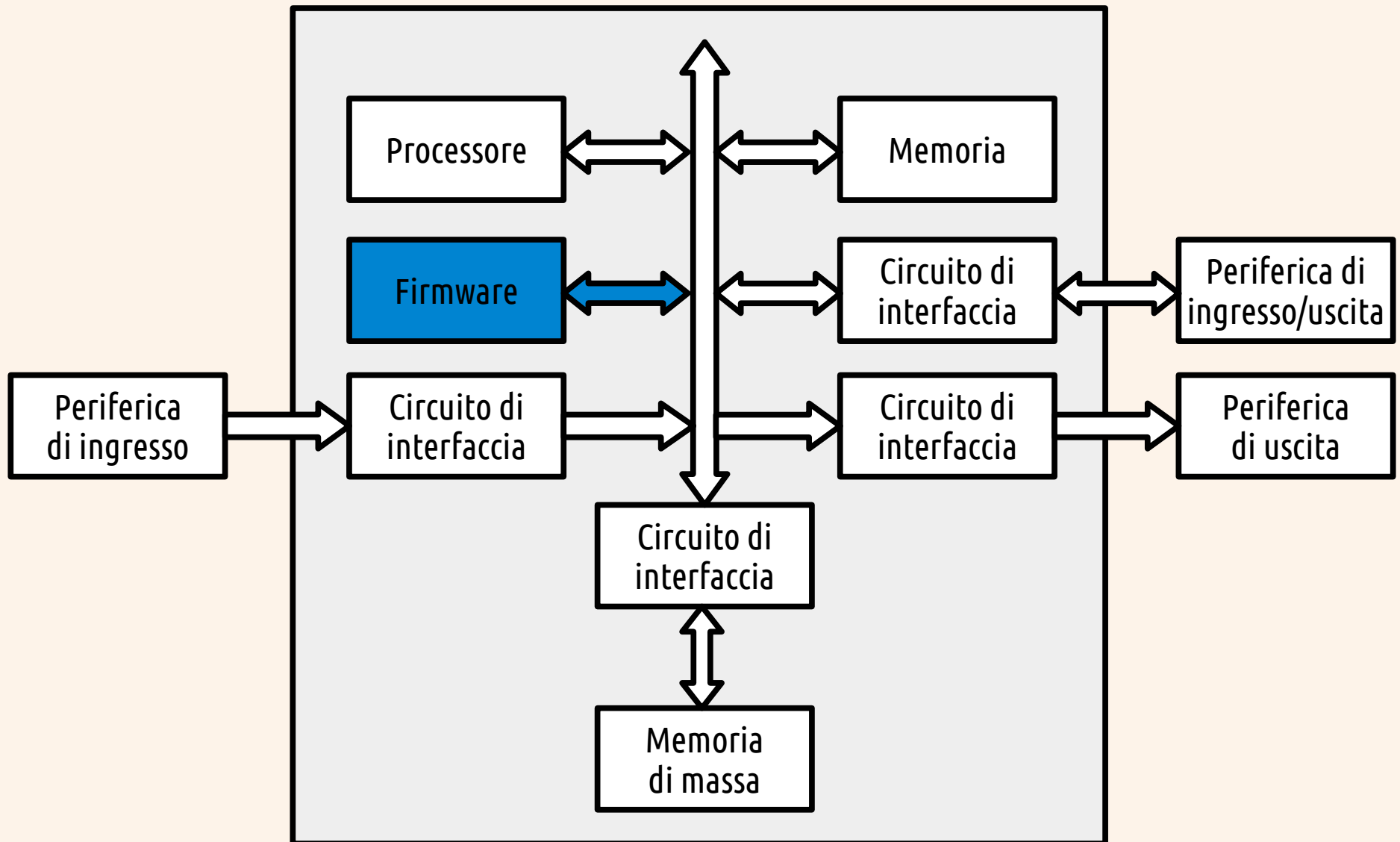
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