

Introduction to Computer Programming

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Online Python Training

History



Birth of Technology



- Mechanical Era
- Electro-Mechanical Era
- Electronic Era
- First Generation Computers (1940 – 1956)
- Second Generation Computers (1956 – 1963)
- Third Generation Computers (1946 -1971)
- Fourth Generation Computers (1971 – Present)
- Fifth Generation Computers (Present – Near Future)

First Computer

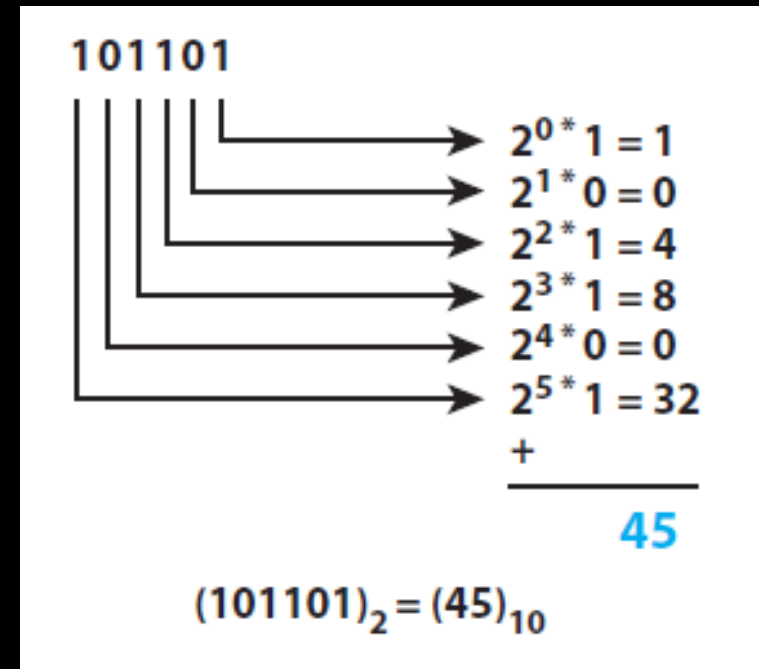
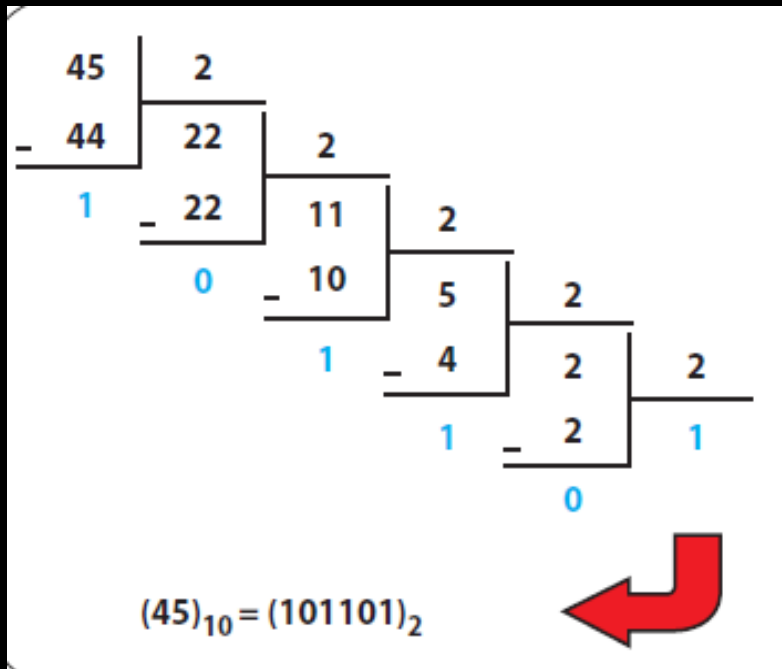


Binary Number System





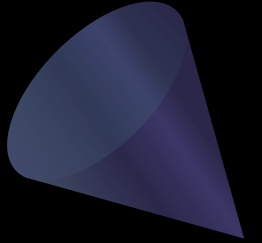
Binary, Number System



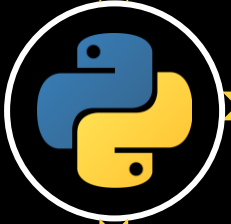
Binary Expression



- numbers,
 - texts,
 - Colours, Photos, Video
 - Sound,
- 8 Bit = 1 byte
 - 1000 bytes = 1 Kilobyte
 - 1000 Kilobytes = 1 Megabyte
 - 1000 Megabytes = 1 Gigabyte
 - 1000 Gigabytes = 1 Terrabyte



Fractional Numbers



1×2^3	1×2^2	0×2^1	1×2^0		1×2^{-1}	0×2^{-2}	1×2^{-3}	1×2^{-4}
1	1	0	1	.	1	0	1	1
8	4	0	1		0.5	0	0.125	0.0625
				↑				
				Binary point				

$$8 + 4 + 0 + 1 + 0.5 + 0 + 0.125 + 0.0625 = 13.6875 \text{ (Base 10)}$$

texts



- [ascii table](#)
- UTF Encoding



Colours, Photos, Video

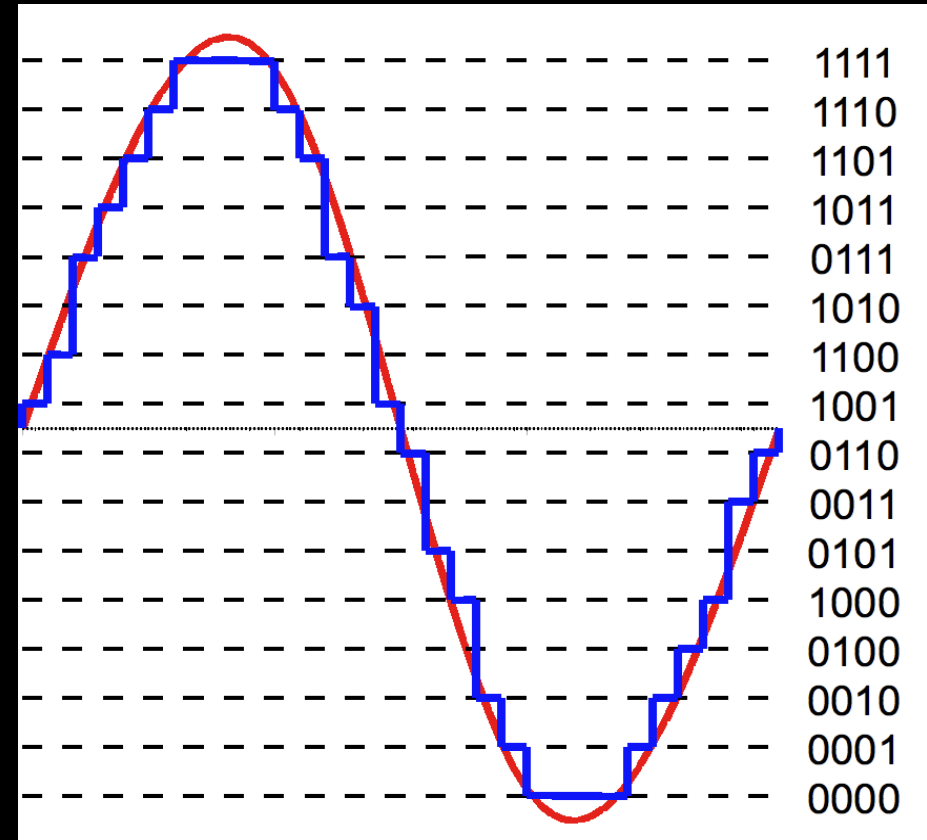
- RGB Value
- pixel



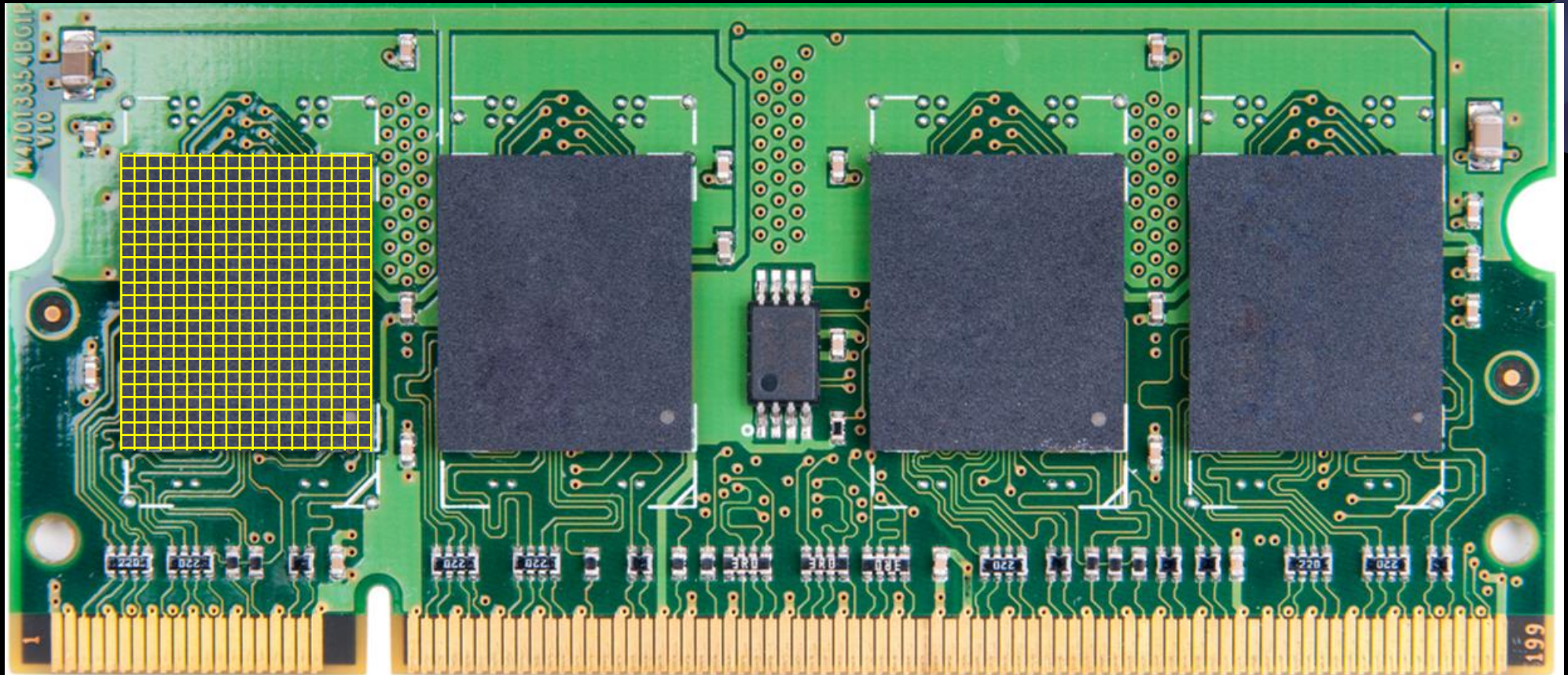


Sound

- Analog-Digital conversion

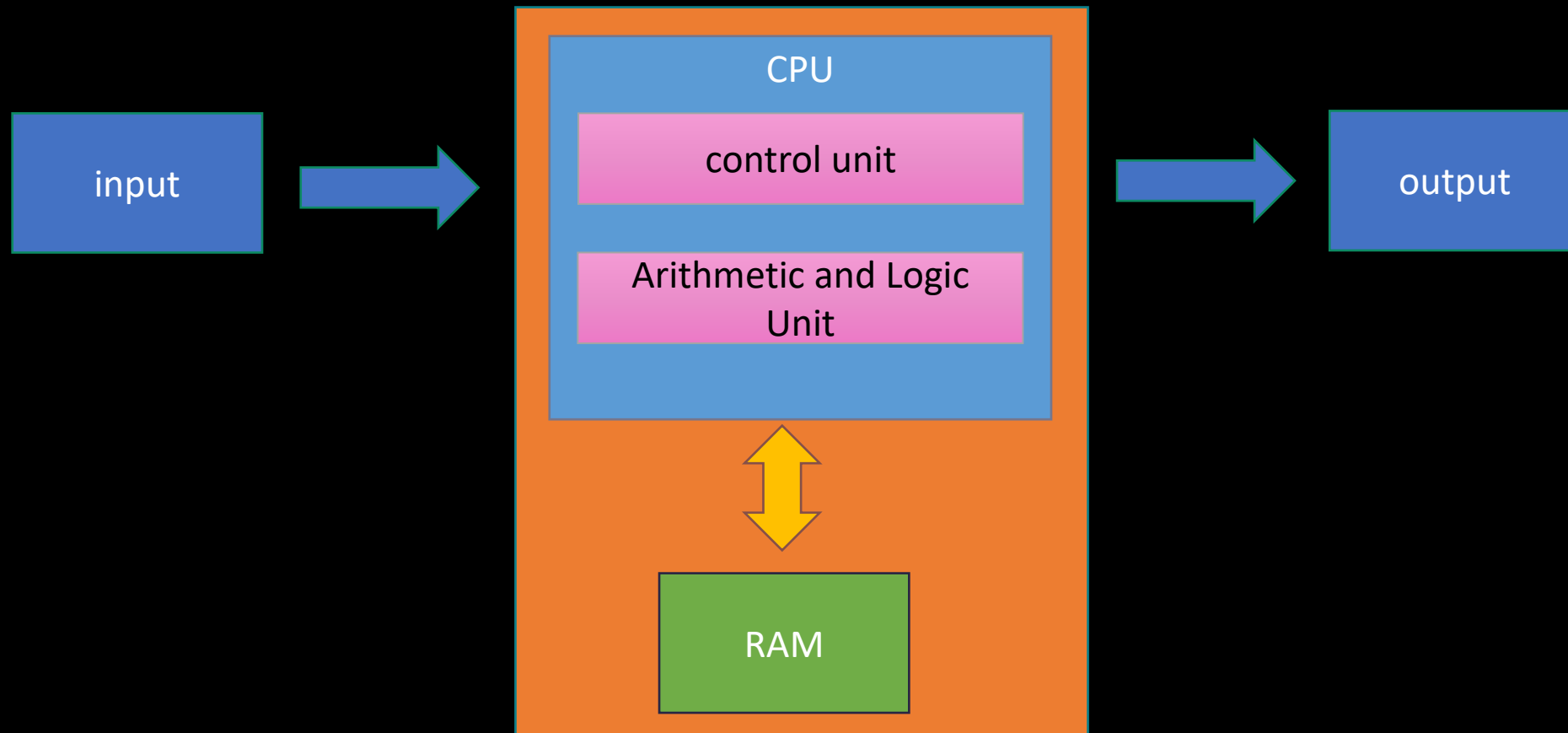


RAM

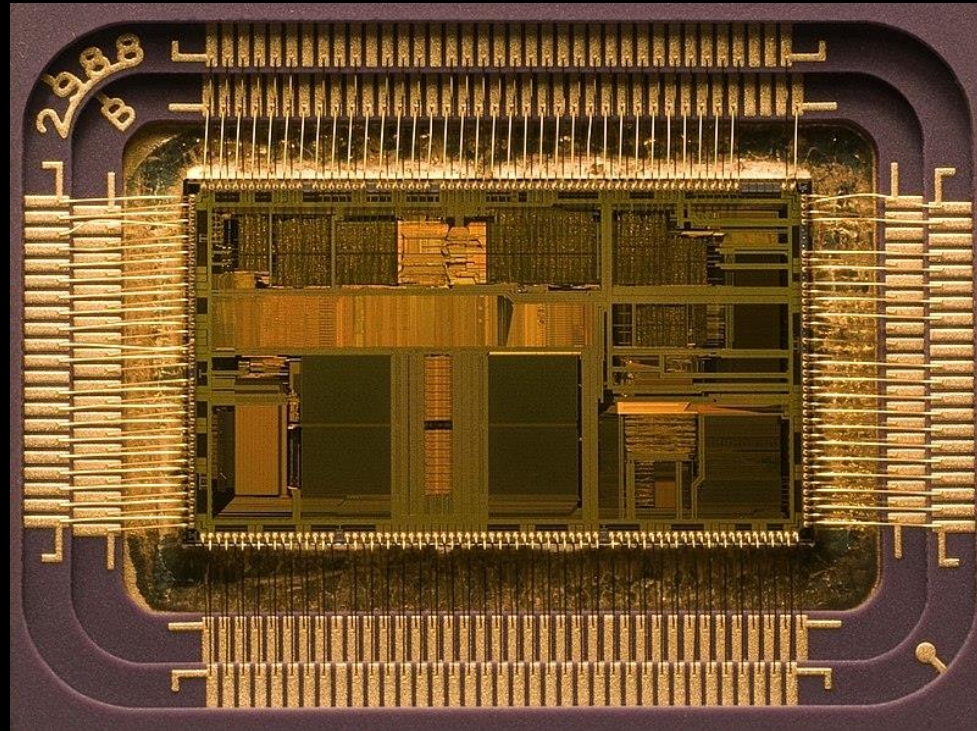




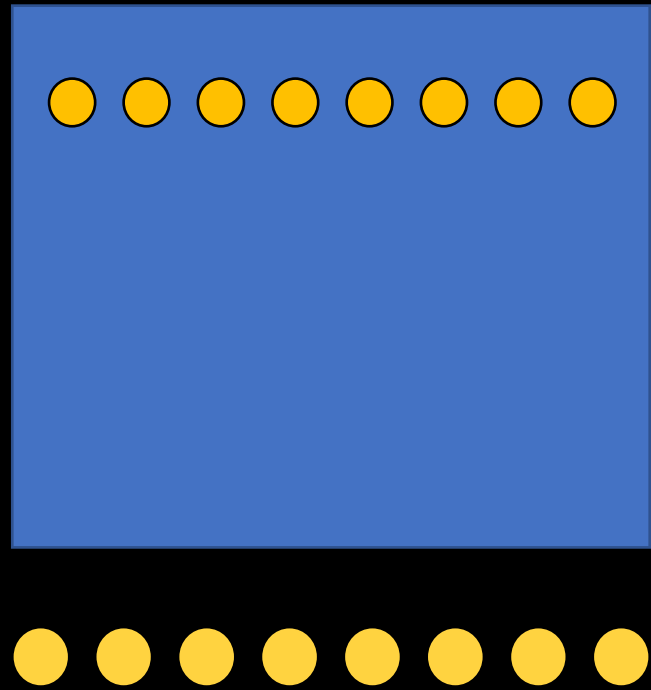
Computer Architecture



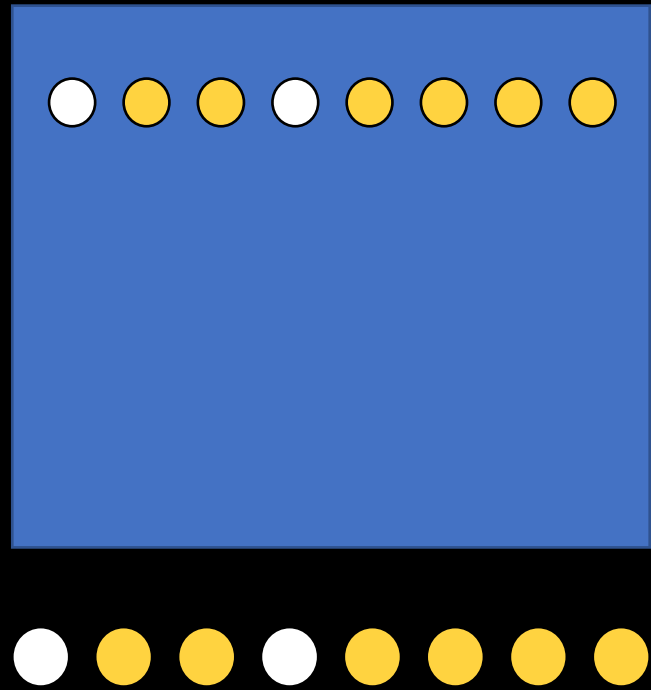
Central Processing Unit



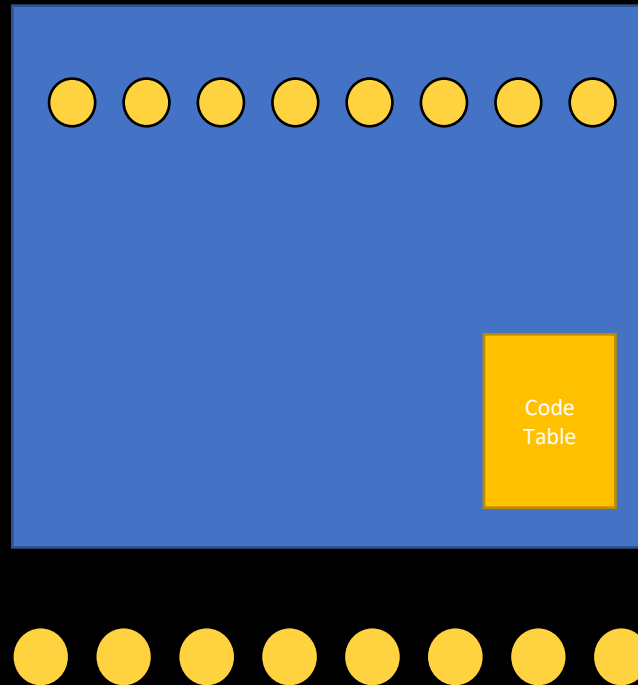
Central Processing Unit



Central Processing Unit



Central Processing Unit

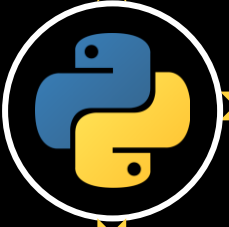




Central Processing Unit – Code Table

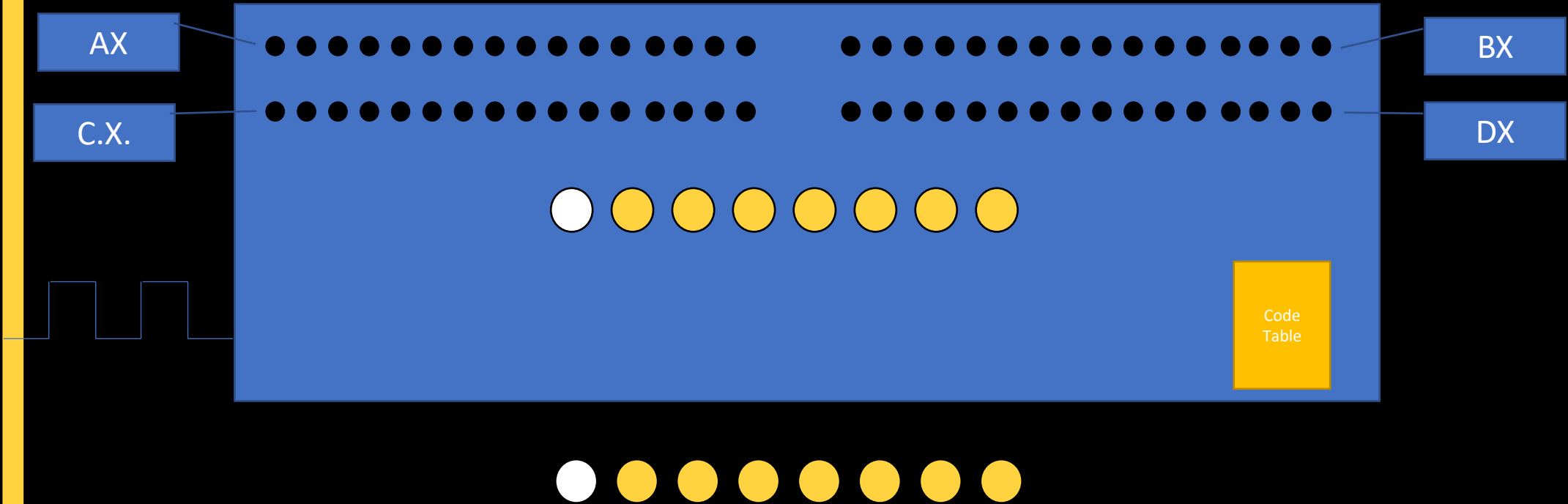
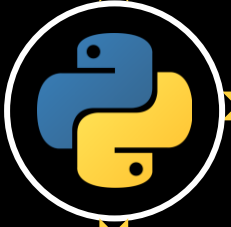
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1001 0000	Next up is a number. Place it in the BX register.
1011 0000	Add AX and BX, write the transaction to the AX register
1100 0000	Write the result to the external bus
0000 0000	0
0000 0001	one
0000 0010	2
0000 0011	3

A Simple Addition



- $3+5 = ?$
- $3 = 0000\ 0011$
- $5 = 0000\ 0101$
- $8 = 0000\ 1000$

Central Processing Unit

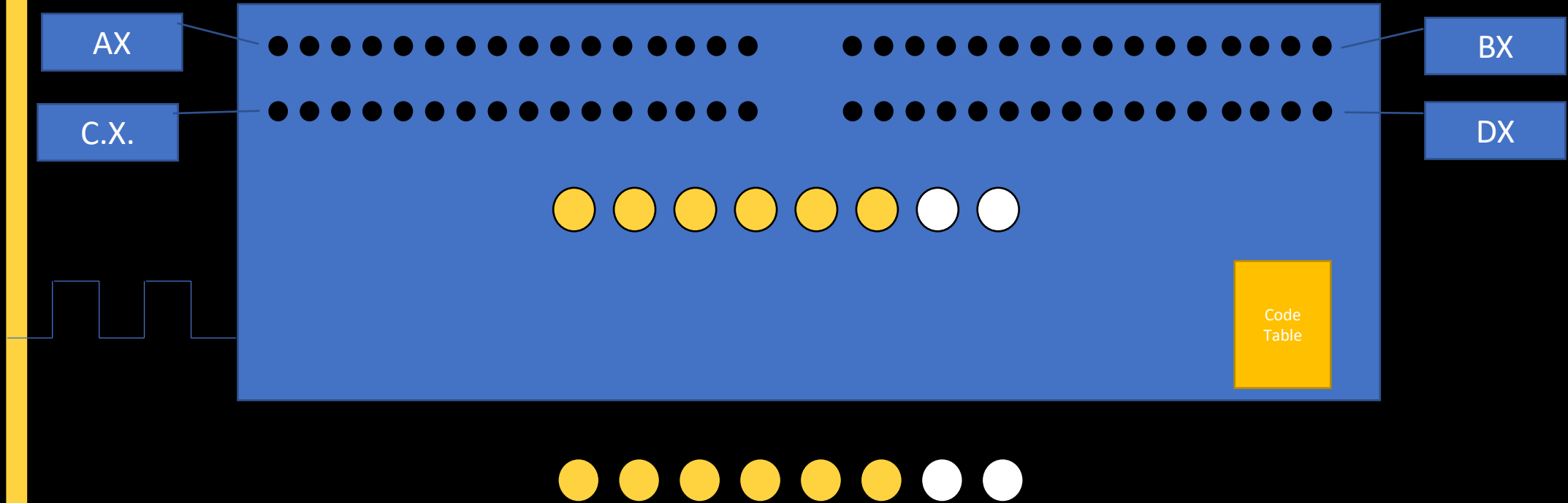




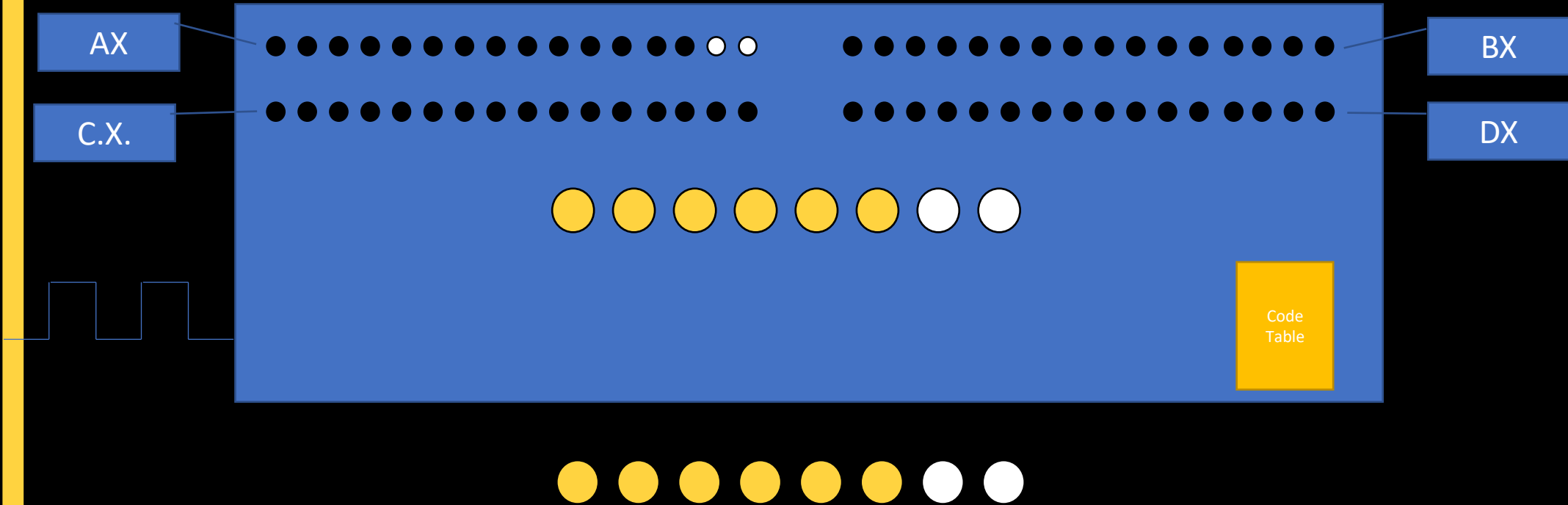
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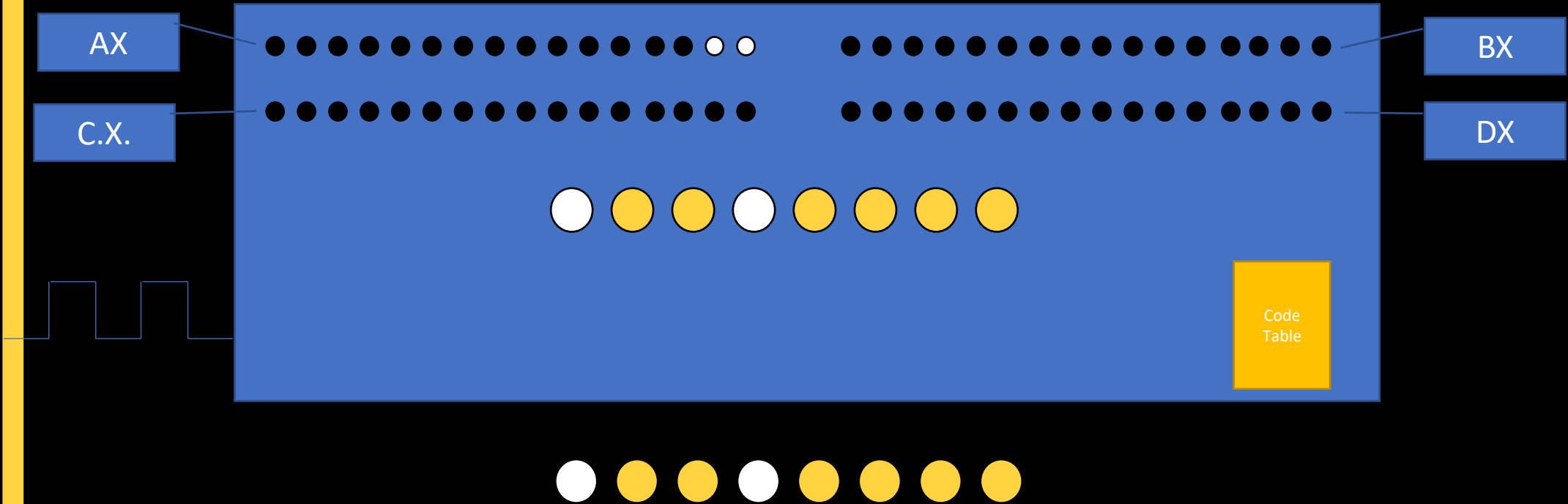




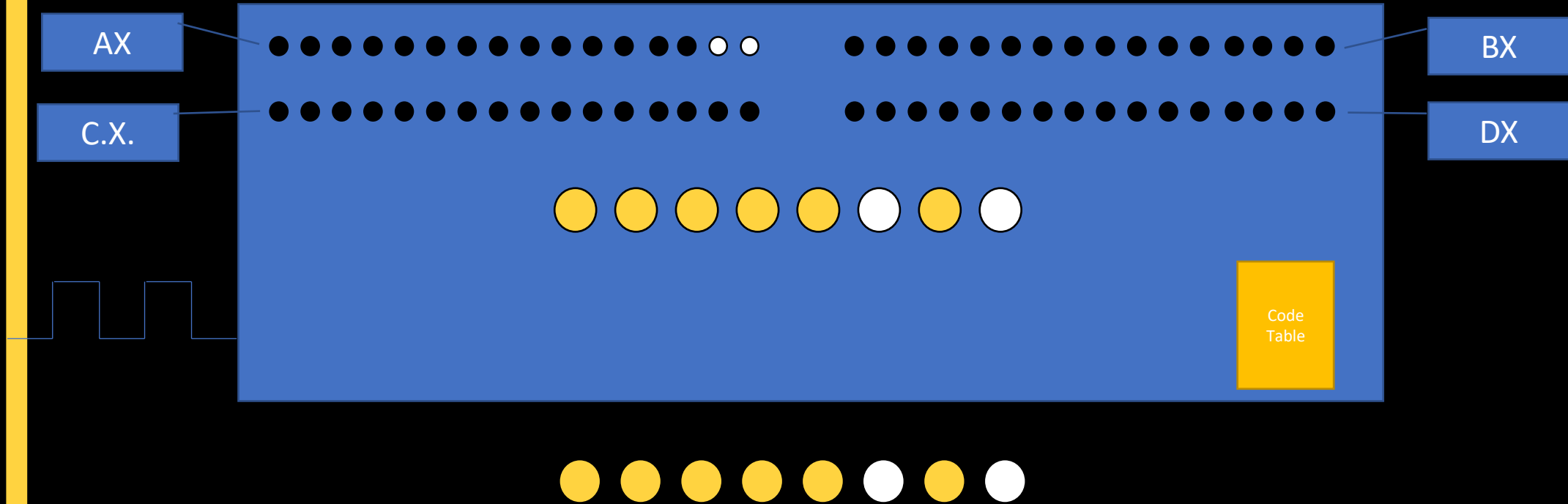
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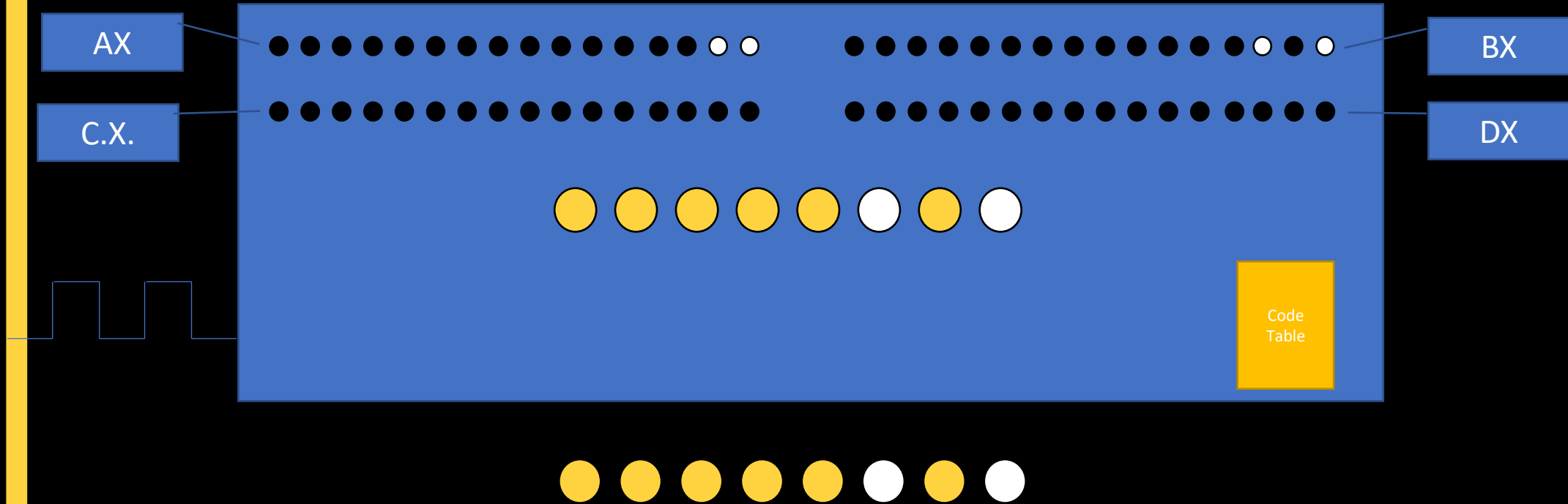
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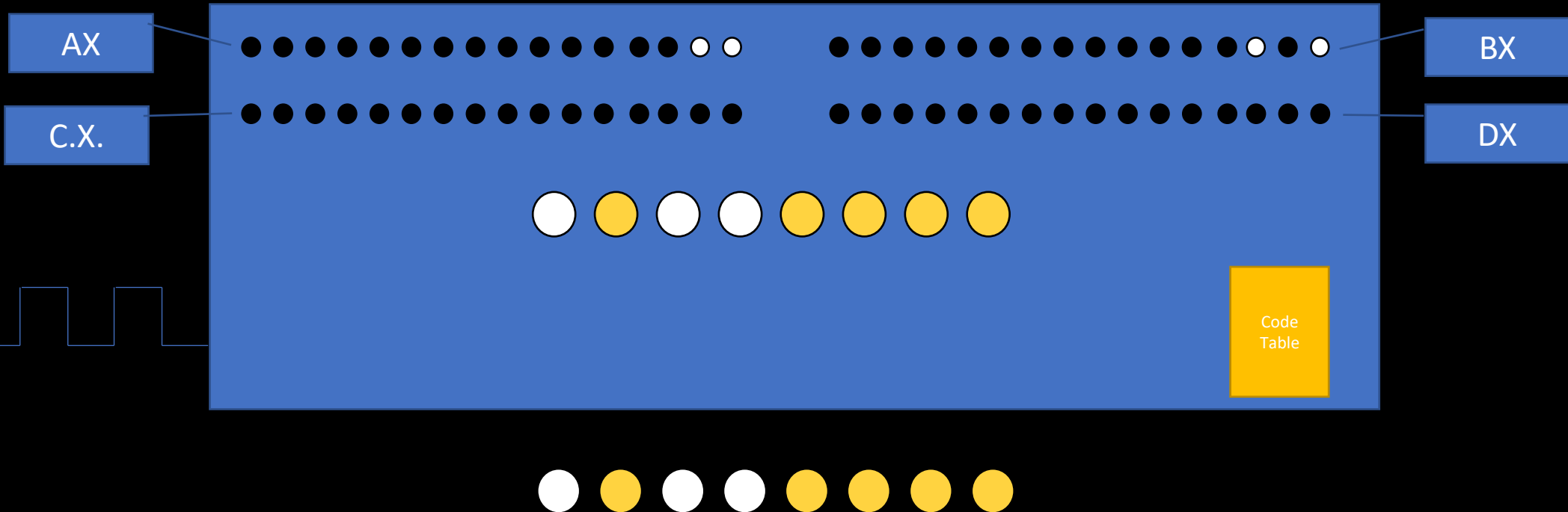




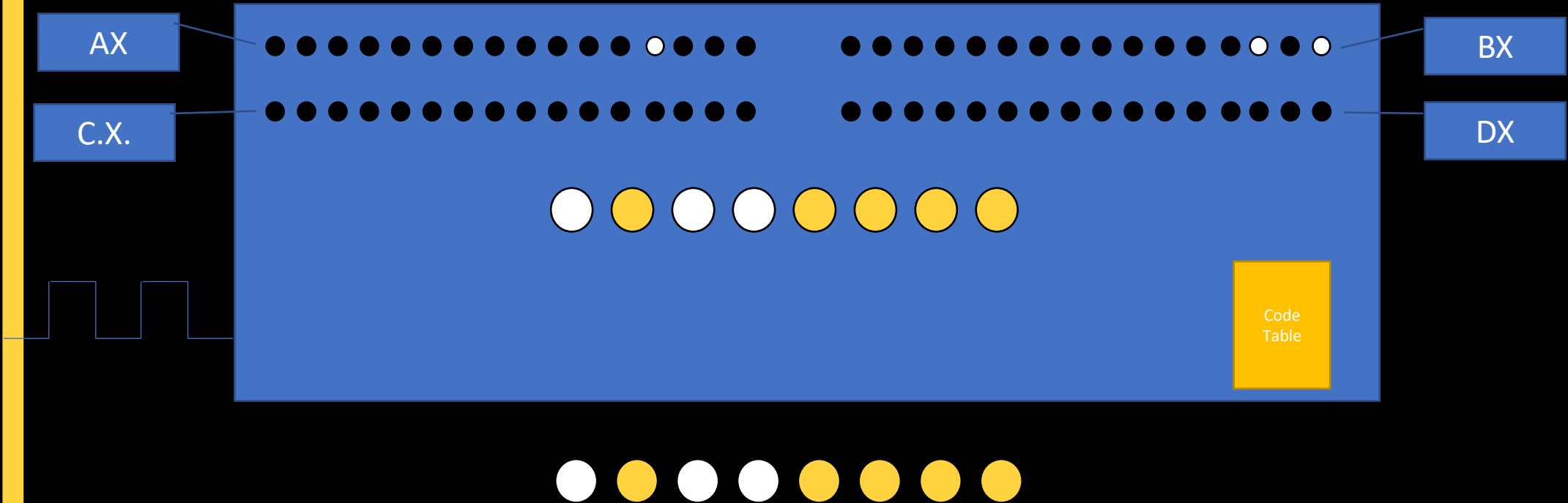
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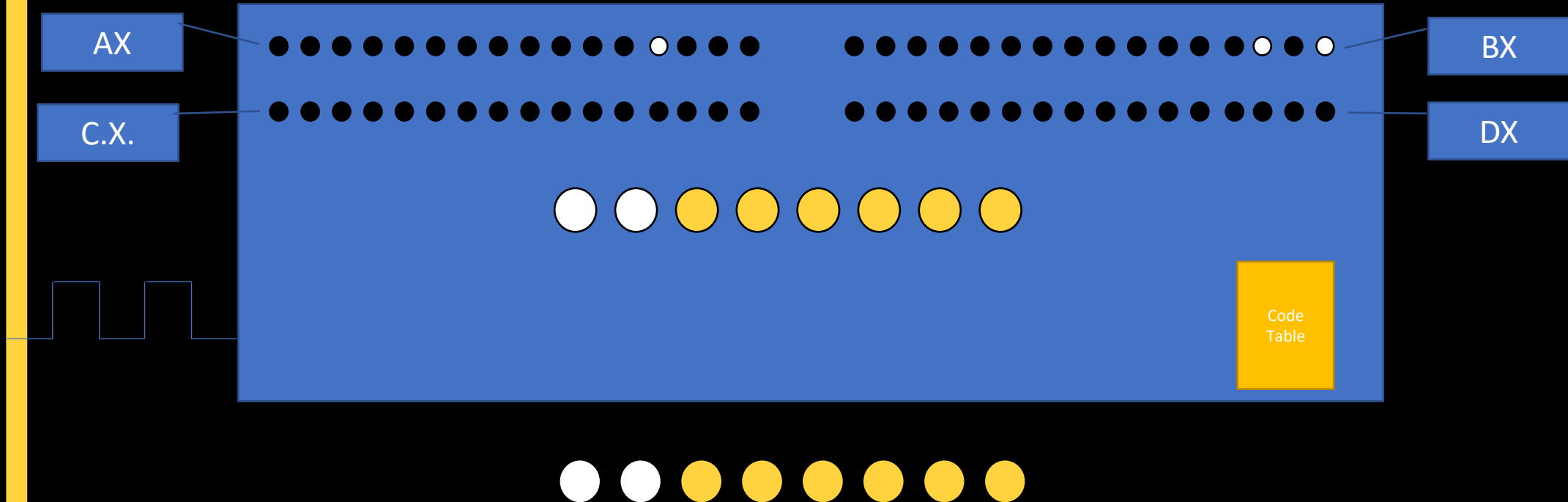




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