



Understanding & Using Computers

Chapter 4

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History of Computers

- No other idea or device has impacted engineering as computers have.
- A colorful history of small but detrimental steps toward today's computer.



History of Computers

- Today's computers are based on John Von Neuman's architecture developed after World War II.
- 1977 Apple computer was found by two teenagers, Steve Jobs and Steve Wozniak.



Number Systems in Computers

- Computers use binary systems rather than decimal.

$$6 \times 10^3 = 6000$$

$$9 \times 10^2 = 900$$

$$5 \times 10^1 = 50$$

$$1 \times 10^0 = 1$$

$$6951$$

$$1 \times 2^3 = 8$$

$$0 \times 2^2 = 0$$

$$1 \times 2^1 = 2$$

$$1 \times 2^0 = 1$$

$$11$$



Number Systems in Computers

- Binary system can easily mimic mechanical and electronic systems
- 0 and 1 in binary systems model off and on in electronic systems.



Algorithms

- Developed in 825 A.D. by Persian mathematician.
- An algorithm is a sequence of actions that will bring about the solution to a particular problem.



Algorithm

- Engineers solve problem by:
 1. From the universe, we choose those variables important to the problem at hand.
 2. Model the interrelation of the significant variables mathematically.
 3. The math is converted to algorithm.



Algorithm

- Engineers solve problem by:
 4. The algorithm is converted to a series of binary instruction (computer).
 5. The result is compared with reality.
 6. If successful, the problem is solved, if not, repeat all steps.



Basic Building Blocks of Computers

- Memory
 - RAM
 - Permanent Storage
- Central Processing Unit
- Input / Output
- Computer Language.

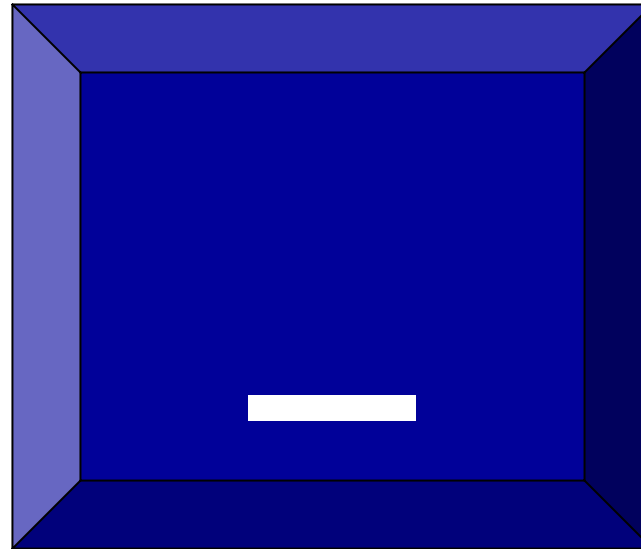


Neural Networks

- Information Processing technique as a function of architecture.
 - Humans: Parallel, Distributive.
 - Computers: Sequential, Pointwise.

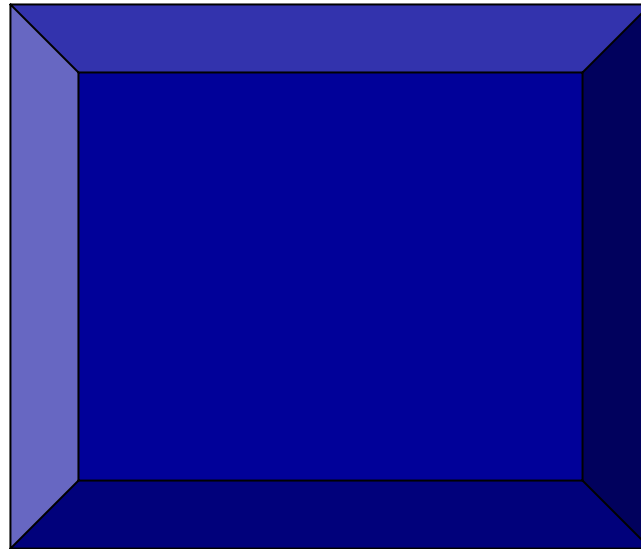


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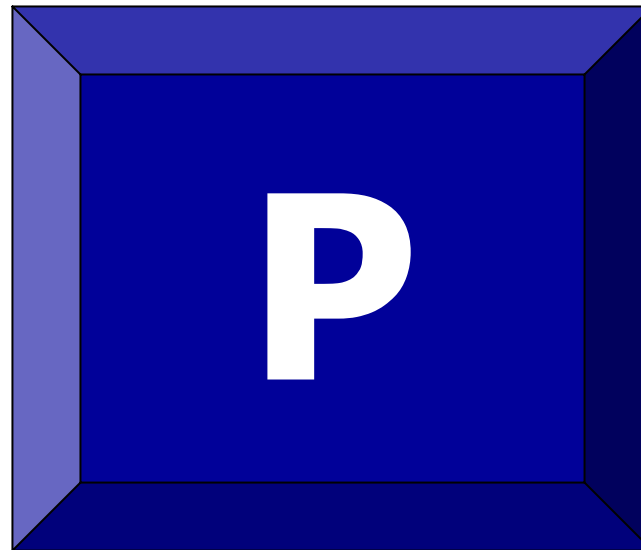


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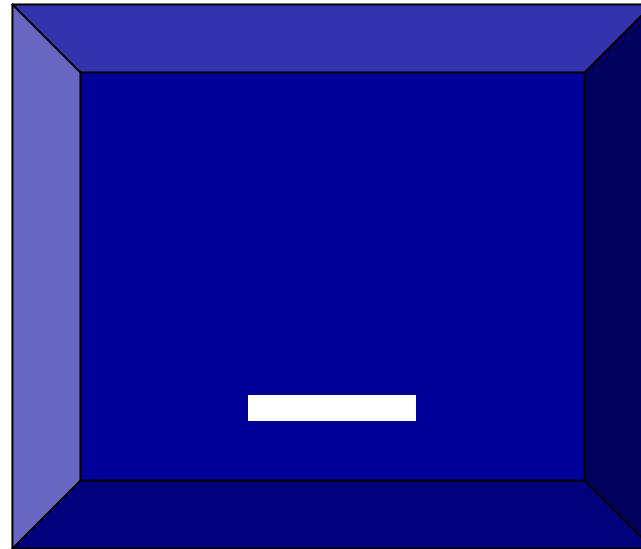


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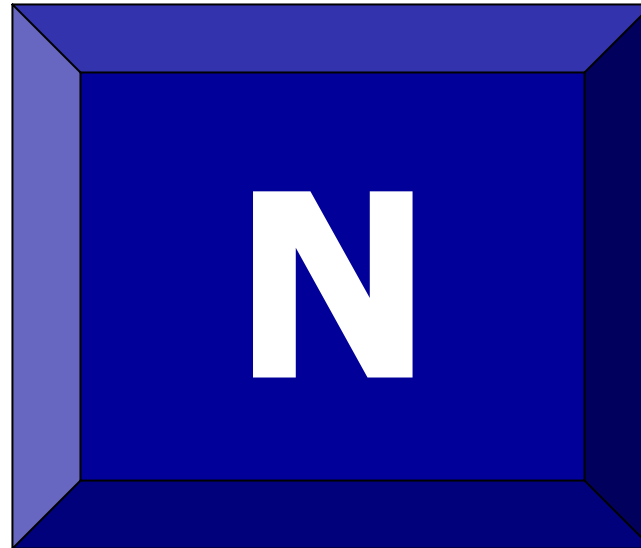


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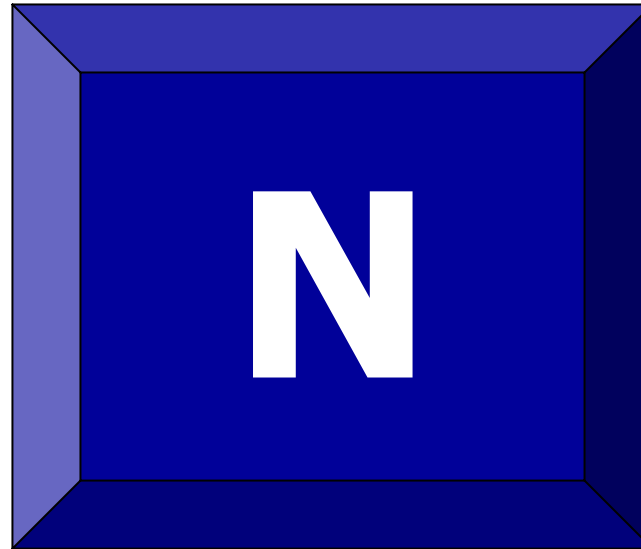


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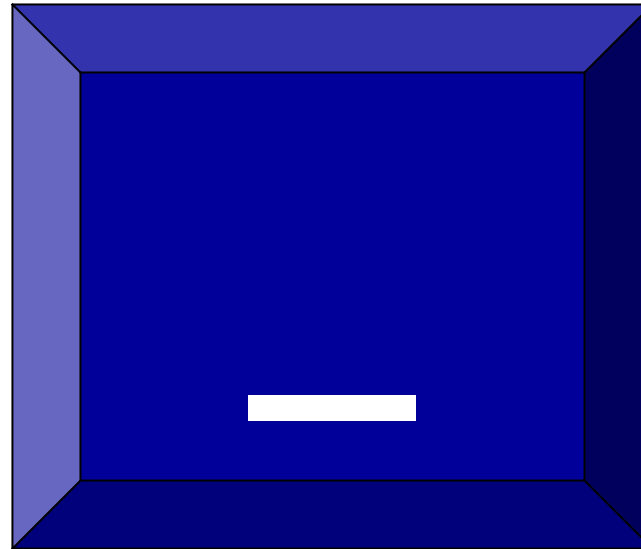


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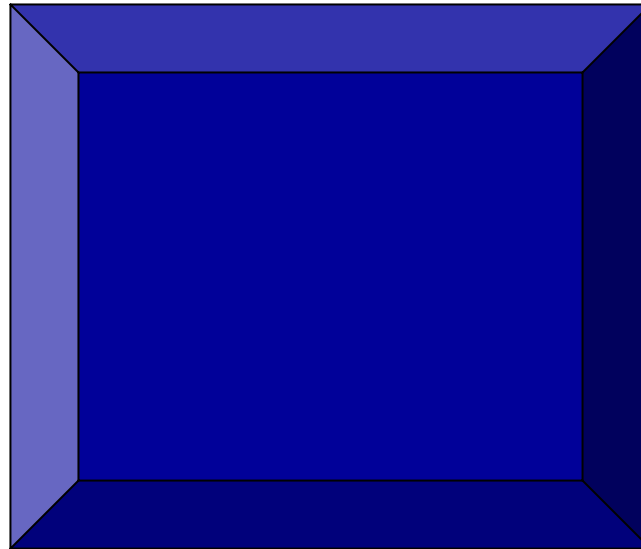


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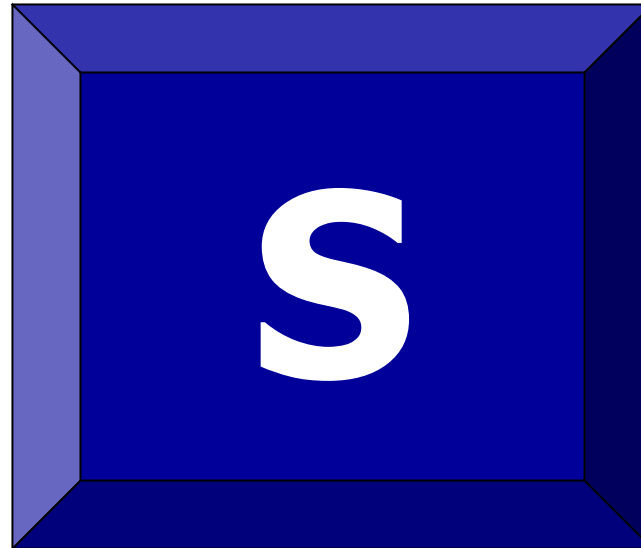


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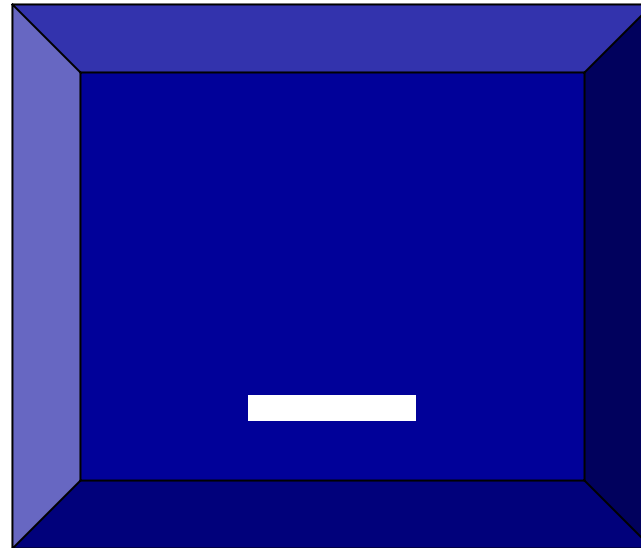


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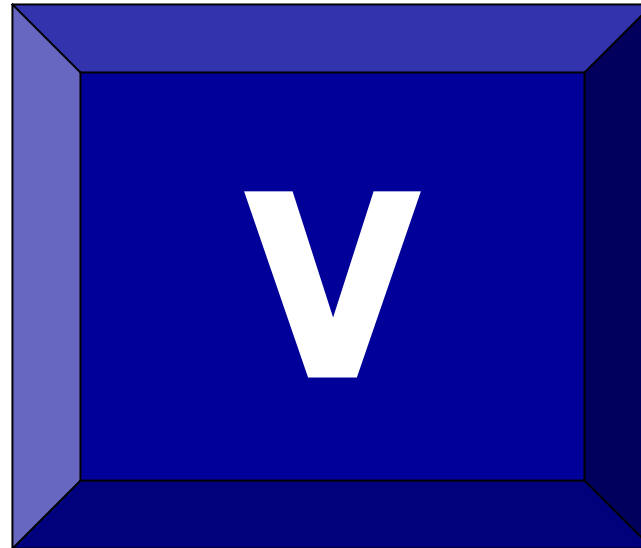


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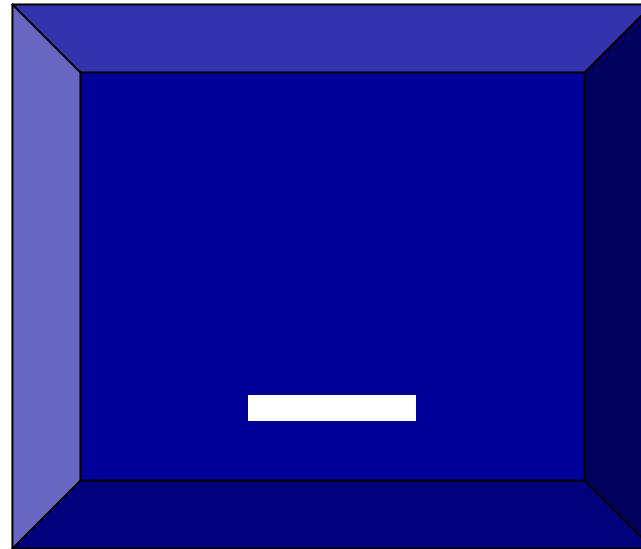


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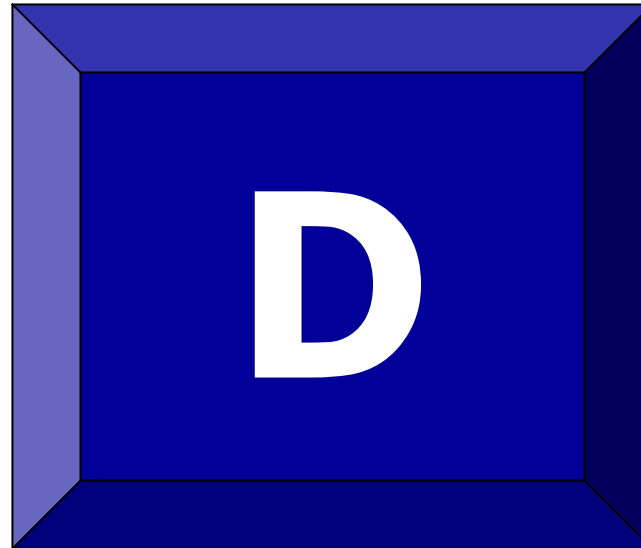


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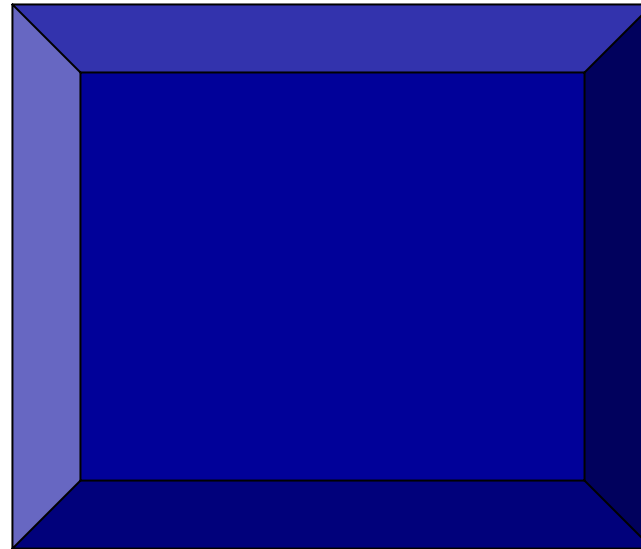


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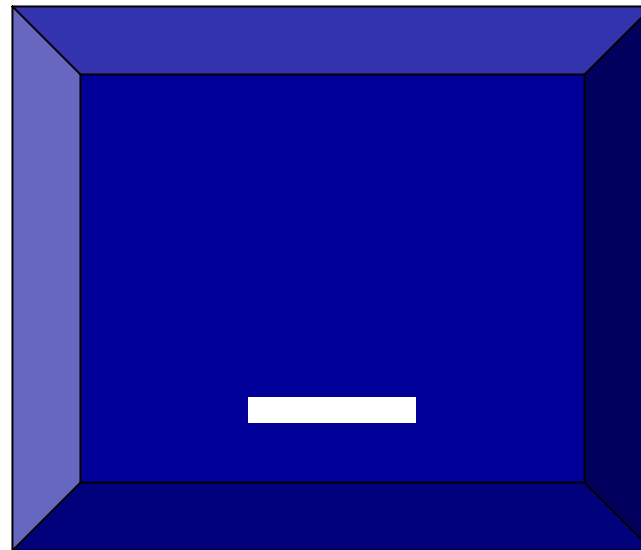


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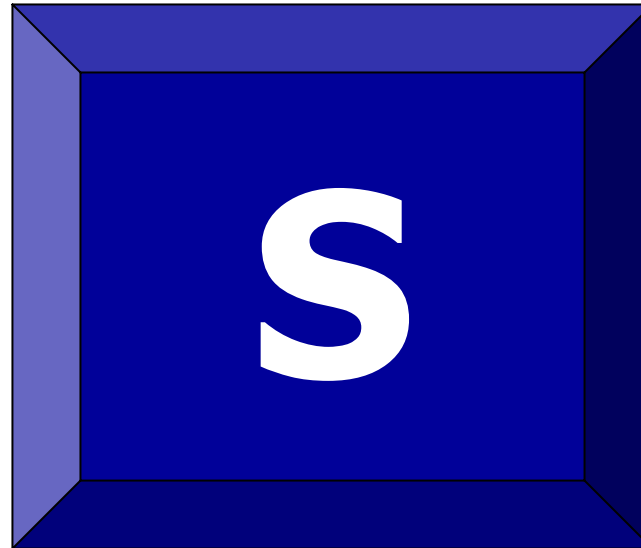


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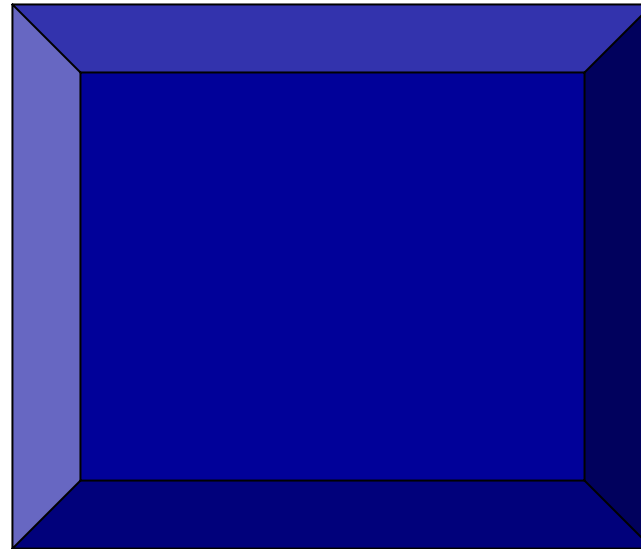


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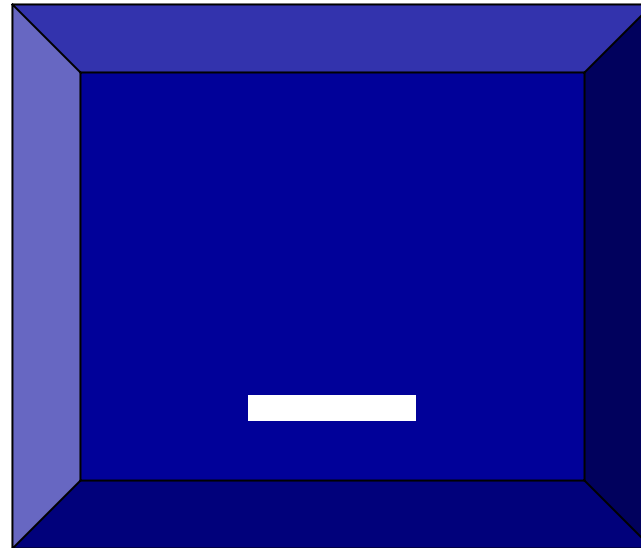


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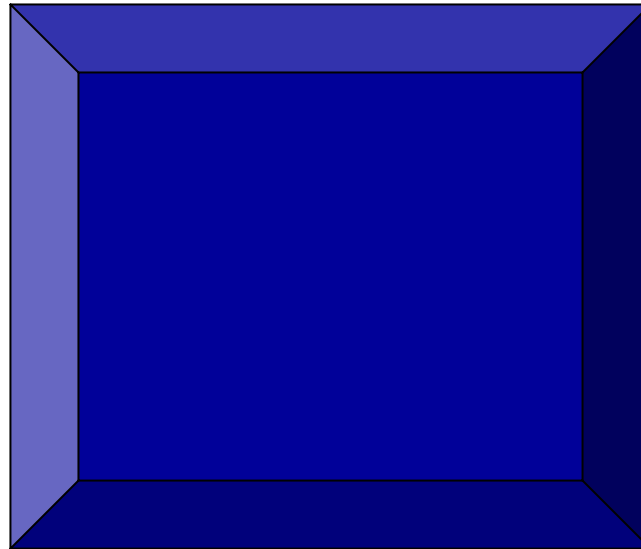


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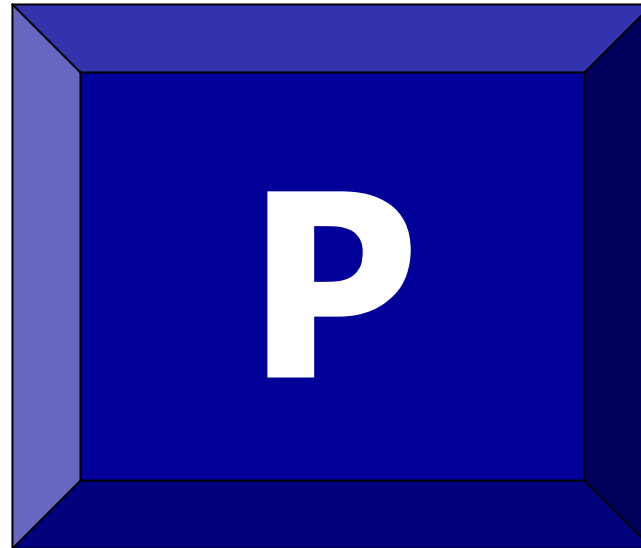


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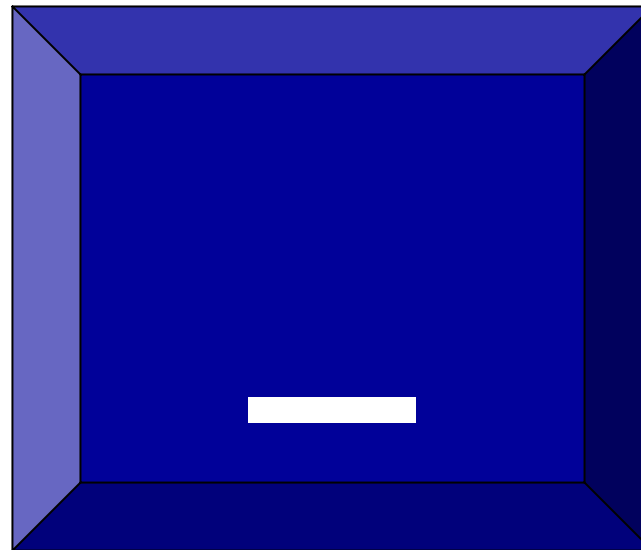


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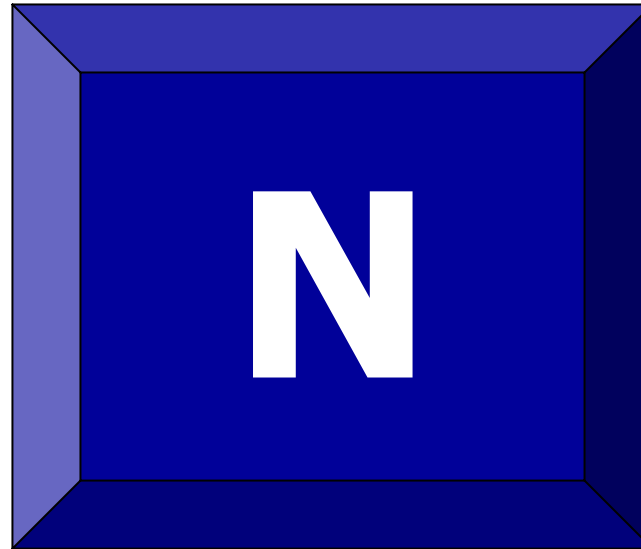


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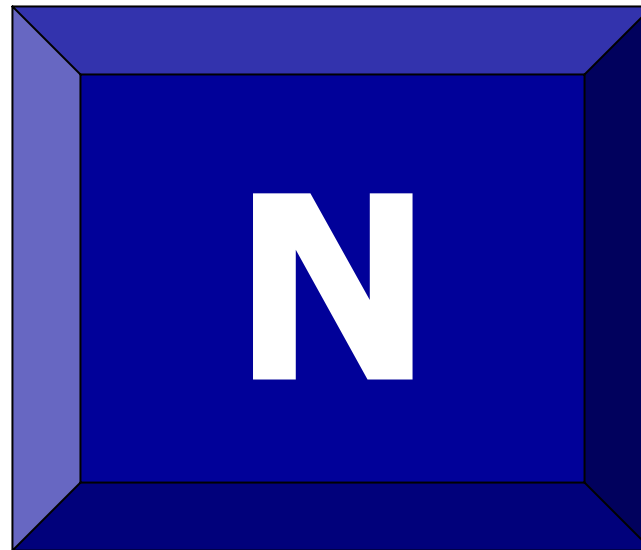


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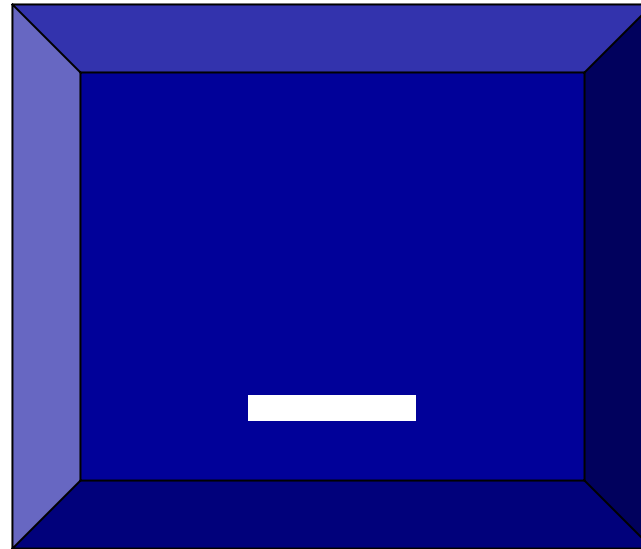


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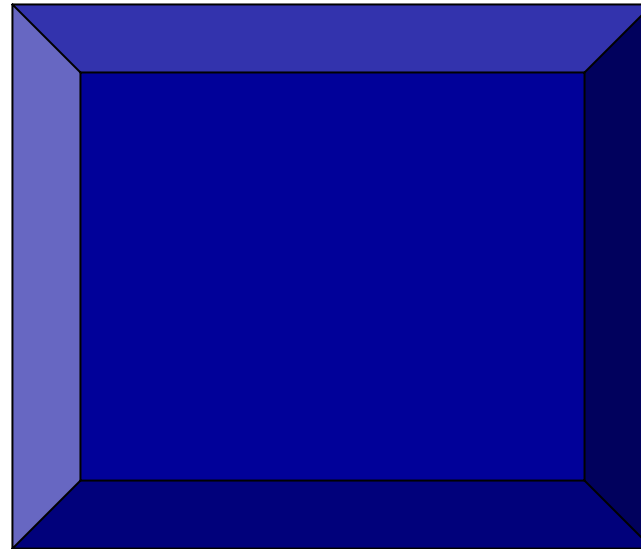


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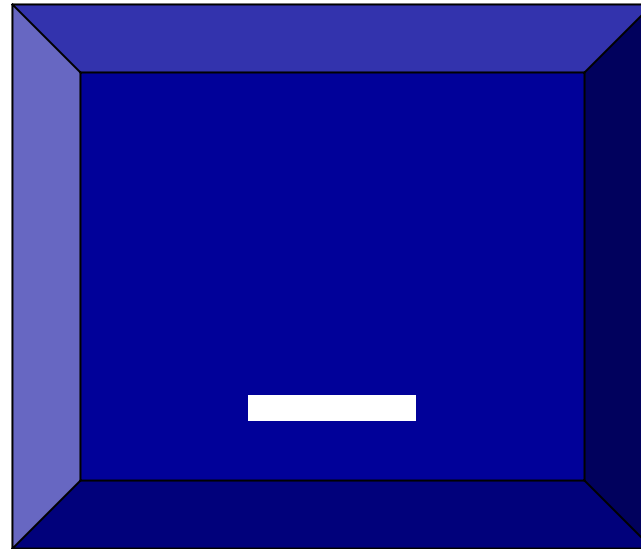


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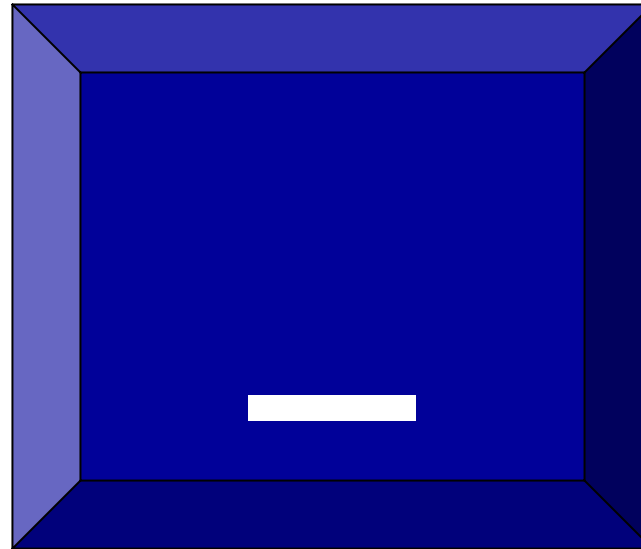


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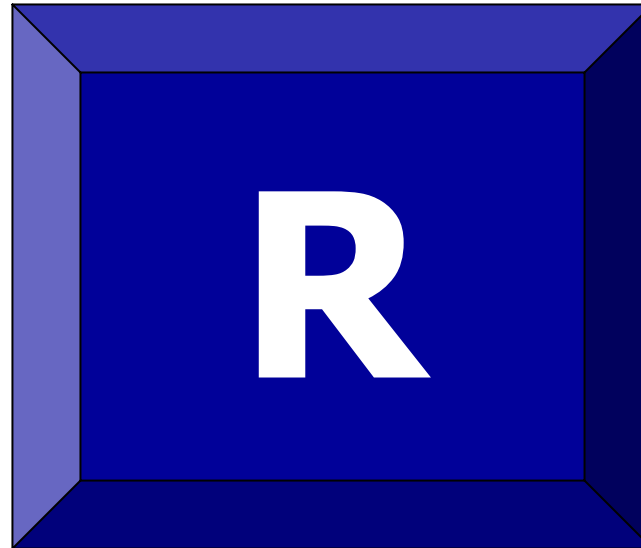


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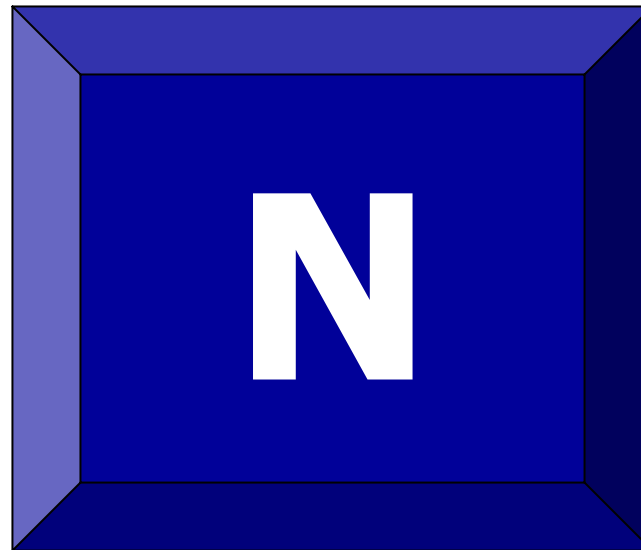


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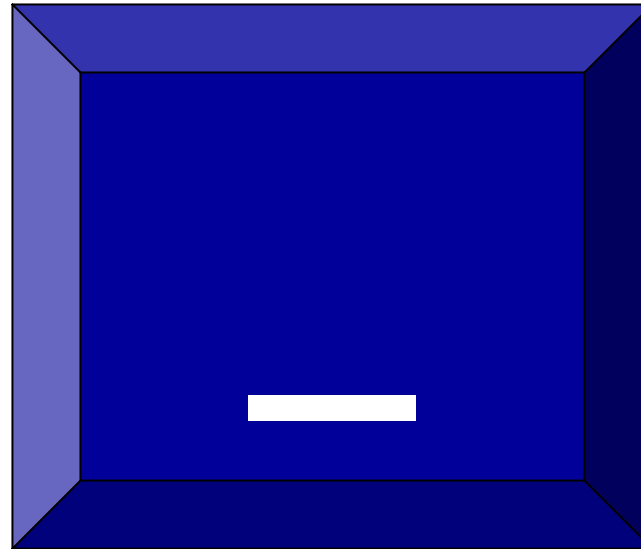


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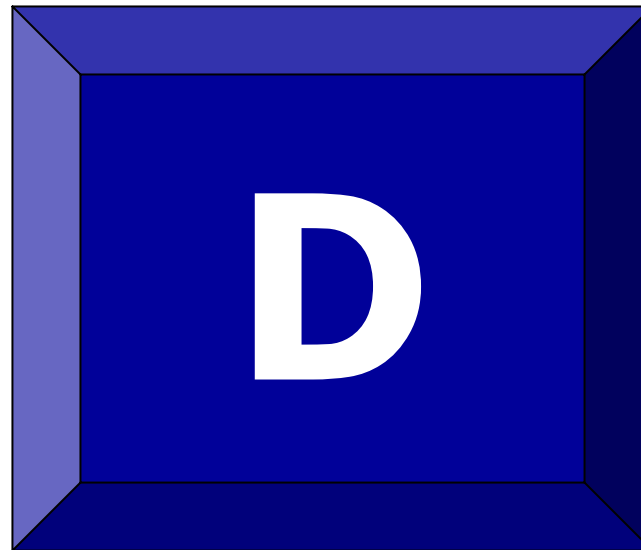


Neural Networks





Neural Networks





Neural Networks

- What did that phrase say?
- You were forced to function like a machine.
- Now function as you usually do.....

Neural Networks

_ P_NN_ S_V_D

_S

_ P_NN_ _RN_D