🧠**Microprocessor Notes – AetherCode (Notion Template)**

😪Cover Page

Course Title: Microprocessor – Understand the Brain of Computers\ **Prepared By:** AetherCode Team\ **Website:** www.aethercode.com

> *"Code. Notes. Clarity."*

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🧠Introduction

A Microprocessor is an integrated circuit that executes instructions to perform tasks. It is the core of every computing device.

❤️‍🩹What is a Microprocessor?

- Central Processing Unit (CPU) on a single chip
- Executes arithmetic, logic, control operations
- Found in PCs, embedded systems, and appliances

😏8085 Architecture

- 8-bit processor
- 16-bit address bus → 64 KB memory

• Components:
• ALU
• Registers (A, B, C, D, E, H, L)
• Program Counter (PC), Stack Pointer (SP)
• Clock and Control Unit

😏8086 Architecture

• 16-bit processor
• 1 MB memory
• Segmented memory (Code, Data, Stack, Extra)
• Instruction Queue (Prefetch Concept)

🙃Instruction Set

• Data transfer: MOV, MVI, LXI
• Arithmetic: ADD, SUB, INR, DCR
• Logical: ANA, ORA, XRA
• Branching: JMP, CALL, RET
• Stack: PUSH, POP

👉🏾Addressing Modes

• Immediate
• Direct
• Register
• Register Indirect
• Implicit

👇🏾Registers

• Accumulator (A)
• General purpose: B, C, D, E, H, L
• Special: PC, SP

🟫Memory Organization

• Linear in 8085
• Segmented in 8086
• Stack and Heap memory concepts

🌞Flag Register

- Sign (S), Zero (Z), Auxiliary Carry (AC), Parity (P), Carry (CY)
- Affects conditional branching

🤔Instruction Cycle & Timing

- Fetch → Decode → Execute
- Machine cycle and T-states

👉Interrupts

- Hardware & Software
- Types in 8085: TRAP, RST7.5, RST6.5, RST5.5, INTR

👆🏾Assembly Language Programming

```
MVI A, 32H
ADD B
STA 2050H
HLT
```

- Machine-level understanding

🤨Comparing 8085 vs 8086

Feature	8085	8086
Bit-size	8-bit	16-bit
Memory	64 KB	1 MB
Segmentation	No	Yes
Speed	Slower	Faster

🖕🏽Applications

- Washing machines
- Calculators
- Embedded systems
- Robotics

👉Summary

Understanding microprocessors lays the groundwork for embedded systems, computer architecture, and low-level programming.

Next: Visualize your world with Computer Graphics.