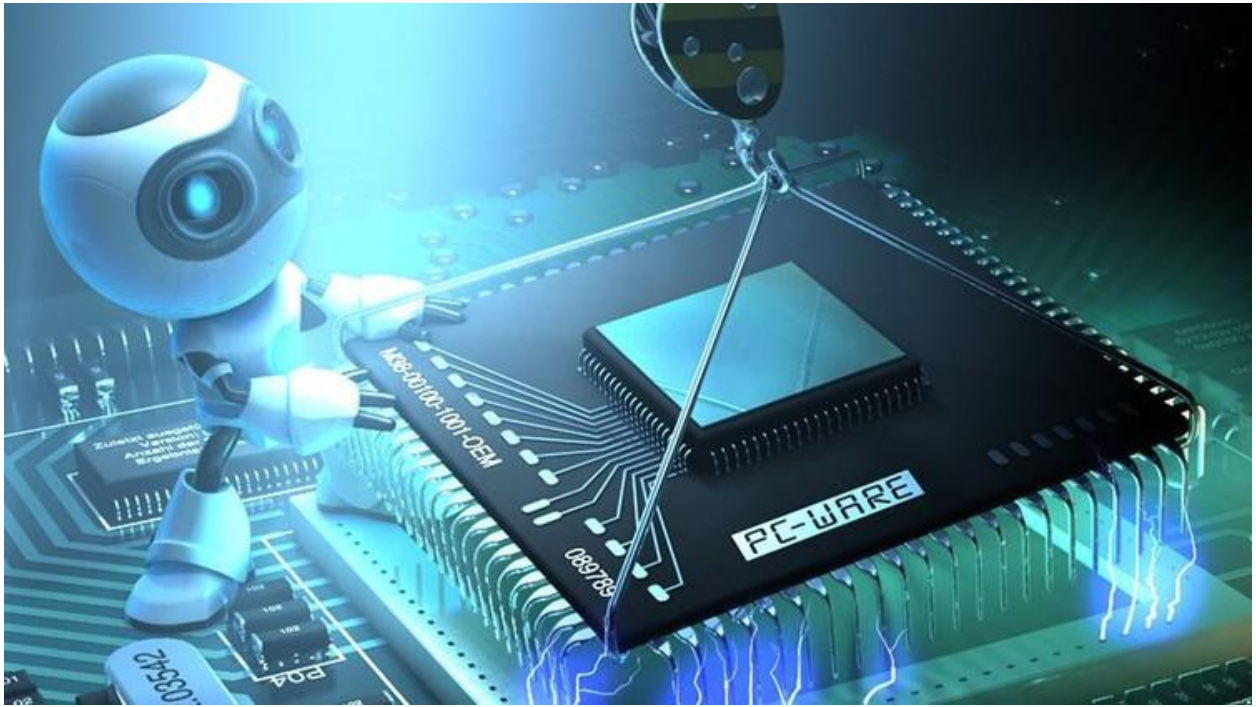
# Addressing Modes



# Addressing Modes

- Immediate
- Register
- Memory

# Addressing Modes

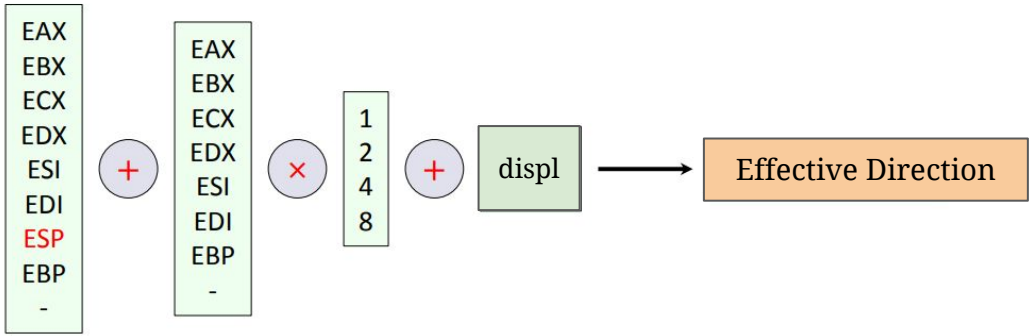
- **Immediate: $19, $-3, $0x2A, $0x2A45**
  - Codified with 1, 2 or 4 bytes.
- **Register: %eax, %ah, %esi**

# Addressing Modes

- **Immediate: $19, $-3, $0x2A, $0x2A45, $0x2A45D1C3**
  - Codified with 1, 2 or 4 bytes.
- **Register: %eax, %ah, %esi**

# Addressing Modes

- **Memory**: **D(Rb, Ri, s)** → **M[Rb+Ri*s+D]**
  - **D:** displacement coded with 1, 2 or 4 bytes.
  - **Rb:** base register. Any of the 8 registers.
  - **Ri**: index register. Anyone except %esp
  - **S:** scale factor: 1, 2, 4 or 8.



# Examples of Addressing Modes

| | |
|---|---|
| `(%eax,%ebx)` | `M[eax+ebx]` |
| `-3(%eax,%ebx)` | `M[eax+ebx-3]` |
| `(%eax,%ebx,4)` | `M[eax+ebx·4]` |
| `(,%ebx,4)` | `M[ebx·4]` |
| `12(%eax)` | `M[eax+12]` |
| `(%eax)` | `M[eax]` |
| `3(%eax,%esi,2)` | `M[eax+esi·2+3]` |
| `4` | `M[4]` |
| `$4` | `4` |
| `%eax` | eax Register |
| `%al` | 8-bit lower weight of eax |