There are 10 types of people in the world:

- Those who can read binary
- Those who can’t

All Your Base Are Belong To Us

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Decimal System

- Base 10
- Valid Digits:
  - 0 1 2 3 4 5 6 7 8 9

- We know these numbers already

Binary System

- Base 2
- Valid Digits:
  - 0, 1

- `1101` (base 2) = **1**(1) + **0**(2) + **1**(4) + **1**(8) = 13

Octal System

- Base 8
- Valid Digits:
  - 0, 1, 2, 3, 4, 5, 6, 7

- $345_{(\text{base } 8)} = 5(1) + 4(8) + 3(64) = 229$

Hexadecimal System

- Base 16
- Valid Digits:
  - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F
    (10) (11) (12) (13) (14) (15)

- **3B5** (base 16) = **5**(1) + **11**(16) + **3**(256) = 949

01110101 (base 2)

- Convert to base 8
  - 11110101 (base 2)
  - 11 110 101
  - **365 (base 8)**
- Convert to base 16
  - 11110101 (base 2)
  - 1111 0101
  - **F5 (base 16)**

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

(10) (11) (12) (13) (14) (15)

D3 (base 16)

- Convert to base 8
  - First, convert to base 2
    - D3 (base 16)
    - 1101 0011 (base 2)
  - Then, convert to base 8
    - 1101 0011 (base 2)
    - 11 010 011
    - **323 (base 8)**

Hexadecimal Colors (RGB)

- #**FF**FF**FF**: R255, G255, B255
  - Lots of R, G, B: **White!**
- #**00**FF**00**: R0, G255, B0
  - Only G: **Green!**
- #**10**10**10**: R16, G16, B16
  - Little of each: **Dark Gray!**

Impress your friends and family now!