Discussion [0b10] [2] [0x2]

Limits

    (a) **What is the biggest number that can be represented with two decimal digits?**

    (b) **What is the biggest number that can be represented with three binary digits?**

    (c) **What is the biggest number that can be represented with four hexadecimal digits?**

Conversion

(a) Convert the following binary numbers into decimal.

11001   _____

1001001 → _____

(b) Convert the following decimal numbers into binary.

12 →   _____

64 →   _____

127 → _____

(c) Convert the following binary numbers into hexadecimal.

10011001 → _____

11110111 → _____

110000001111111111101110 → _____

(d) Fill in the blanks.

Decimal	Binary	Hexadecimal
12		C
5		5
11	1011	
25	11001	
	10001	11
	11011	1B
8		
	1110	
		1E
		49

Challenge Problems

(a) The original Pokemon are numbered 1-150. We want to store a binary encoding for all original Pokemon where each Pokemon has a binary code equivalent to their decimal number. How many bits do we need to use?

_____

(b) What is the encoding for Pikachu (#25)?

_____

(c) Ternary utilizes base 3 instead of base 2. For example, 10 in ternary is equivalent to 3 in decimal. Imagine that we wanted to store a *ternary* encoding for all 150 Pokemon where each Pokemon has a ternary code equivalent to their decimal number. What is the ternary encoding for Pikachu (#25)?

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