CODING NUMBERS

1 Byte = 256 Numbers

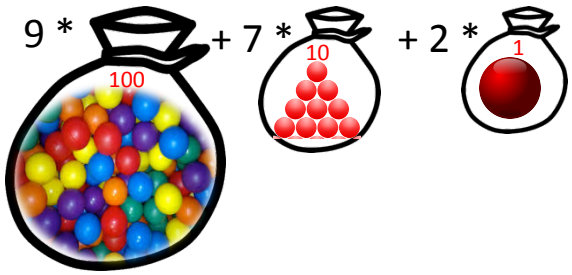
00000000	0
00000001	1
…	
01111111	127
10000000	128
…	
11111110	254
11111111	255

$2^8 = 256$ combinations

Weight System (Decimal)

$$972 = 9*10^2 + 7*10^1 + 2*10^0$$

Base 10

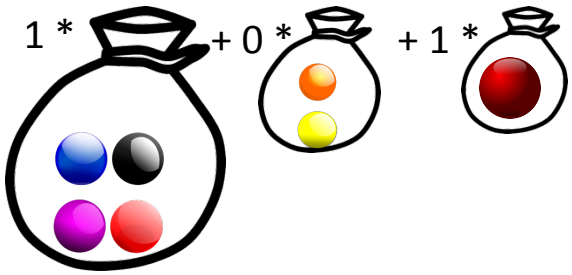


10 Decimal Digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Weight System (Binary)

$101 = 1*2^2 + 0*2^1 + 1*2^0$

Base 2



2 Binary Digits (Bits): 0, 1

Example

10110110 =

Base 2

$1*2^7 + 0*2^6 + 1*2^5 + 1*2^4 + 0*2^3 + 1*2^2 + 1*2^1 + 0*2^0 =$

$128 + 32 + 16 + 4 + 2 =$

182

Base 10

1 Byte = 256 Numbers

00000000	0
00000001	1
…	
01111111	127
10000000	-128
…	
11111110	-2
11111111	-1

$2^8 = 256$ combinations

2's comple-ment

Java Data Types for Integers

byte

8 bits: -128..127

short

16 bits: -32,768..32,767

int

32 bits: $-2^{31}..2^{31}-1$

long

64 bits: $-2^{63}..2^{63}-1$

Java Data Types for Reals

`float`

single-precision 32-bit
IEEE 754 floating point

`double`

double-precision 64-bit
IEEE 754 floating point