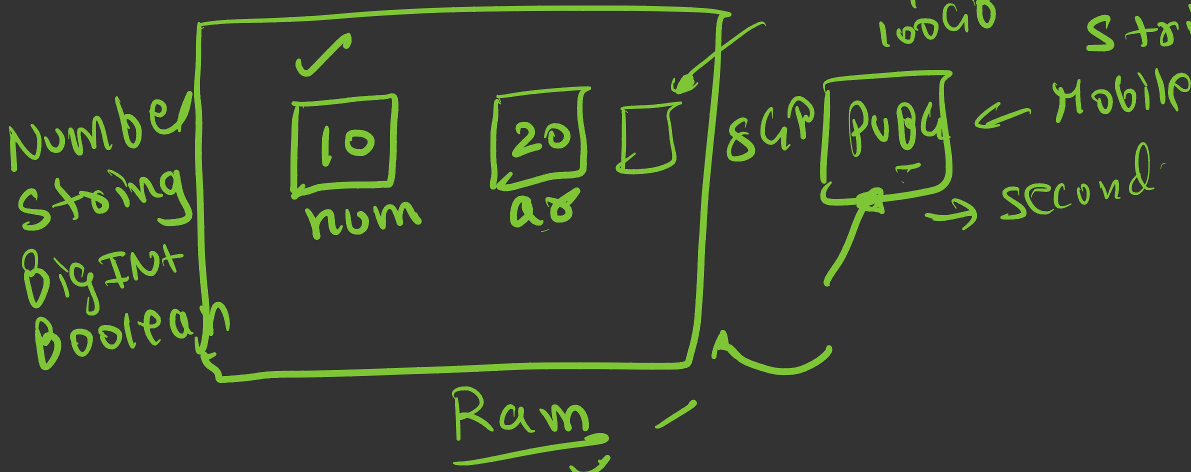
[let num = 10;]
let ar = 20;

Data generate

10, 20, 30

Instagram;
String.

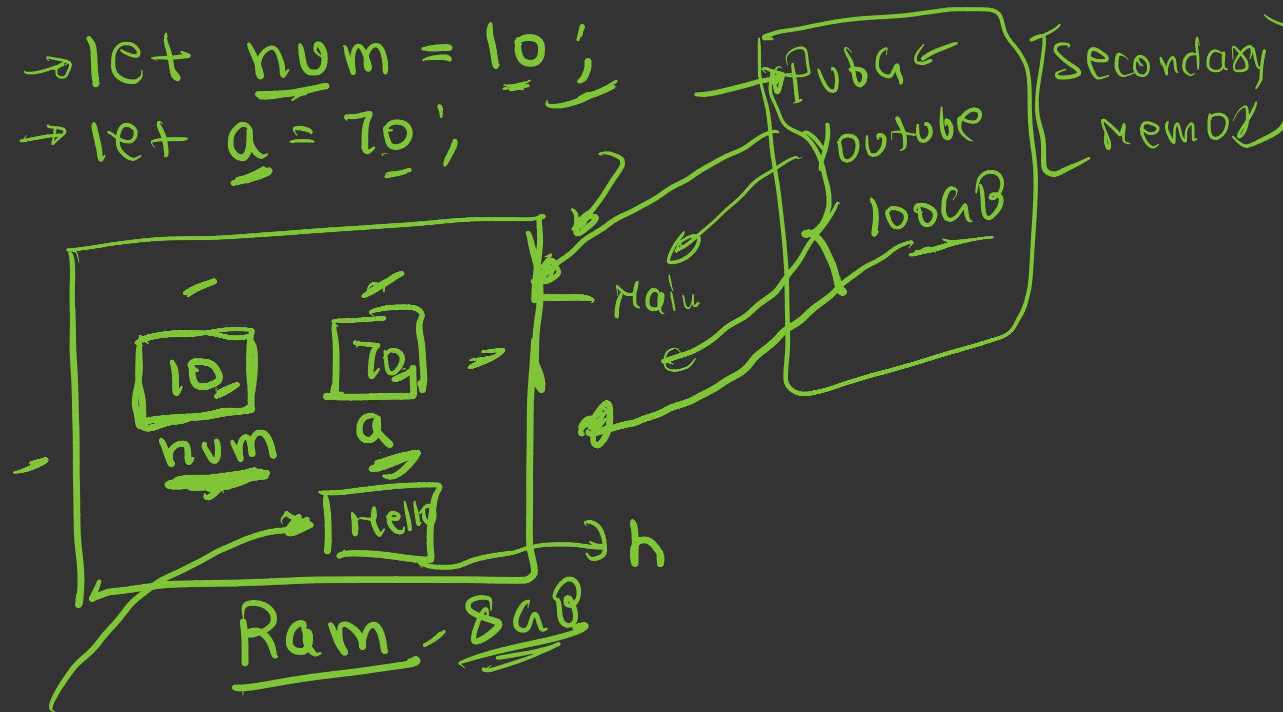


1. Number : 10, 20, -30, 50,
10.8, 19.68

2. String: "Rohit" ✓
"Mohit"
"Hello Coder Army"

Sin
'Hello Coder'

→ let num = 10;
→ let a = 70;



let h = "Hello";

Primitive

let num = Number, String, Boolean, Bigint, Null, Undefine, Symbol

10 20, 100, 200, 500

[500, 26, 78.95]

"Hello Coder Army"

"Rohit"

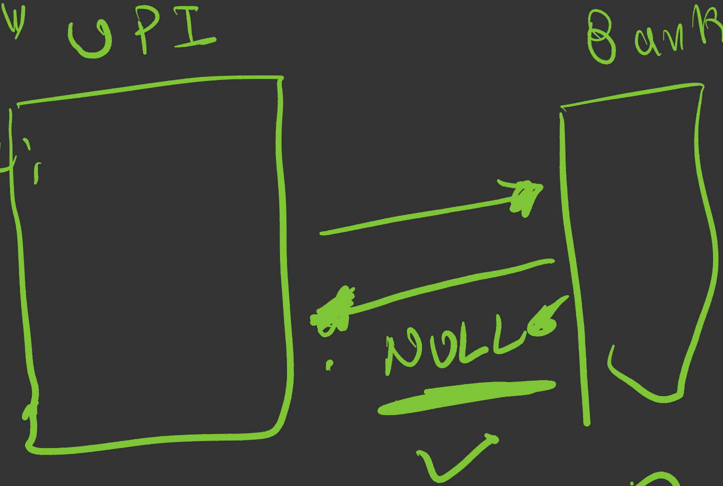
'Hello'

String

let a ;

undefin

let a=null;



NULL

undefined

account.balance;

0

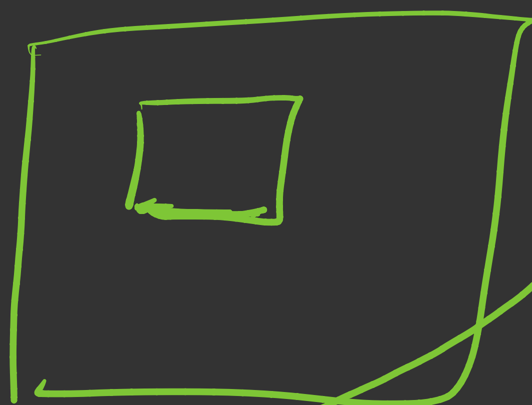
(*) Number : 64 bit

let a = 10

a = 4893612985120n;

Binary

68 bit

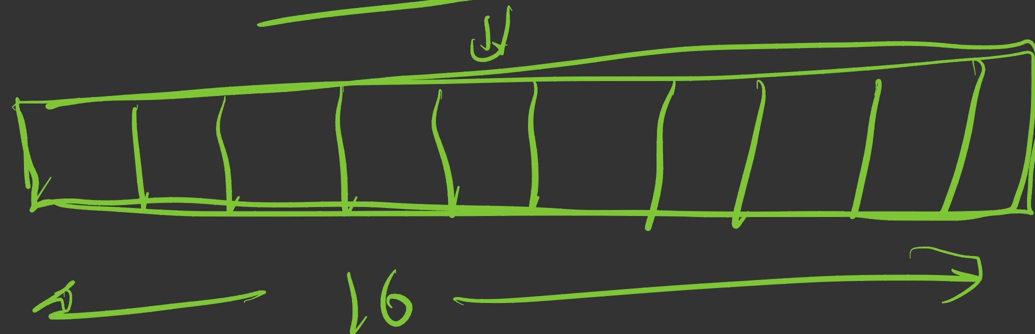


∃ Bigint

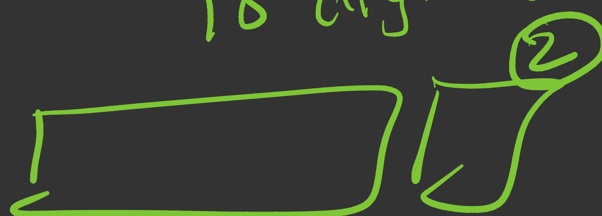
10 : 1010 4 bit

17 : 10001 : 5 bit

PNB :



18 digit Bar



64 bit

Binary → 0, 1

→ I

Number
→ Largest
→ Smallest

1 1 1 3 bit

0 0 0 0

0 | 1 1 → +3 ✓

3 2 1

0 1 0

0 0 1

sign bit → 0 +ve

1 → -ve

sign

1 | 1 1 → -3 ✓

-2

$\boxed{1}\ \boxed{1\ 0}$ $\quad -2$

$\rightarrow -2$

sign

$0\ 0\ 0 \rightarrow +0$

$1\ 0\ 0 \rightarrow -0$

$\rightarrow 0$

2 tarike

$$8 \left\{ \begin{matrix} 0 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{matrix} \right.$$

$\underline{1}\ \underline{1}\ \underline{1}$

$2 \times 2 \times 2$ $\boxed{3 \text{ bit}}$

2^{3-1}

$2^3 = \dfrac{8 \text{ Number}}{2}$

$\boxed{+3 \quad -3}$

$+ve = 4-1$ → $0-3$

$-ve \Rightarrow 4$ → $\boxed{0-3}$

$(2^{3-1} - 1)$ +ve number

$-(2^{3-1} - 1)$ -ve number

$2^3 - 1$

7 ✓

$0 \; 1 \; 1 \; 1$

$2^3 - 1 \Rightarrow 7$

7

-7

4 bit

3 bit

$2^3 - 1 = 7$

$-(2^3 - 1) = -7$

$-(2^3 - 1) \Rightarrow -7$

$[2^{53}-1]$

$-[2^{53}-1]$

$\boxed{64 \text{ bit}}$

1 bit 63

$[2^{63}-1]$ Integer

$-[2^{63}-1]$ Min

64 bit

1 bit

1 Sign

11 bit Expotent

52 bit Mantissa

42.75 → 64 JS

2	42	
2	21	0
2	10	1
2	5	0
2	2	1
2	1	0
	0	1

42 : 101010.11

$.75 \times 2 = 1.5$

$.5 \times 2 = 1.0$

$\boxed{.0 \times 2 = .0}$

10

101010.11

1.0101011×2^{5}

exponent

1023

+ 5

1028

acto

52 bit

0 10000000100 0101011000000000

exponent

52 bit

mantissa

1. Binary convert
2. Move Decimal to left side,

0 1 0 1 1 1 1 1 1 1 1 1 1 1 1

1 52

52

53 bit

$$\left(2^{53}-1\right) - \left(2^{53}-1\right)$$

$(1\,1\,1\,1\,1\,1\,1\,1\,1\,1 \cdots 1)\ (2^{53}-1)$

$\underline{1}\ \underline{1}\ \underline{1}$

$2^3 - 1 = 7$

$1\,1\,0\,1\,0\,1\,1$

$1.\underbrace{101011}\times 2^{6}$

$1.\boxed{1111 \cdots 1} \times 2^{52}$

0

Sign

52

$1010110000000000 \cdots$

← exponent →

← 52 bit →

Mantissa

$\boxed{1\,1\,1\,1\,1\,1\,1\,1\,1}$

$101010.11 \Rightarrow 42.75$

$1.01101011 \times 2^5 \Rightarrow 42.75$

$\boxed{11111111111}$

11 $2^{53}-1$

$2^{53}-1$ 11 $\underbrace{1.1111111\ldots1}_{52} \times 2^{52} \Rightarrow (2^{53}-1)$

1 52 11

111

1 1 1 1 1 1 1 1 1 1 1 1 1 1

$\underbrace{01101100000000}_{\text{mantissa}}$

0 ——— 7

$2^3-1 =$

$\boxed{0.75}$

$\boxed{\text{Cxpotent}}$

63 → 0

$2^{63}-1 \Rightarrow$

INT

75

0.68

$[6.8 \times 10^{-1}]$

$\boxed{0.75}$

Expo 1023

-1

$\boxed{1022}$ → exx

0.1.1

$1.1 \times 2^{-1} \Rightarrow 0.75$

1 0 0 0 0 0 0

mantiss

0.101011

$[1.01011 \times 2^{-1}]$

$0.000001.0101$

$(1.\underbrace{0101}_{\boxed{\text{mantissa}}} \times 2^{-5})$ ✓

64 bit

2 digit pehle

0 1 0 1 0 1 1 1 1 - - - - - - - - -

sign

63 bit

exponent

exponent

42.75

101011.11

101010.11

1.0101011×2^{5} exponent

$1023 + 5$

$1023 + 5$

-20

1023

1

expotent 11 bit

Sign bit

1 0 0 0 0 0 1 0 1 0 0

Sign 10100 20

11

exp

1 1 1 1 1 1 1 1 1 1 1

- 1023

1023

2^{5}

2^{10}

2^{20}

2^{-11}

2^{-12}

2^{-20}

2^{11}

11 bit

-ve

+ve

$2^{10}-1$

-1023

1023 ✓

1023

2046

+ve

$+1023$

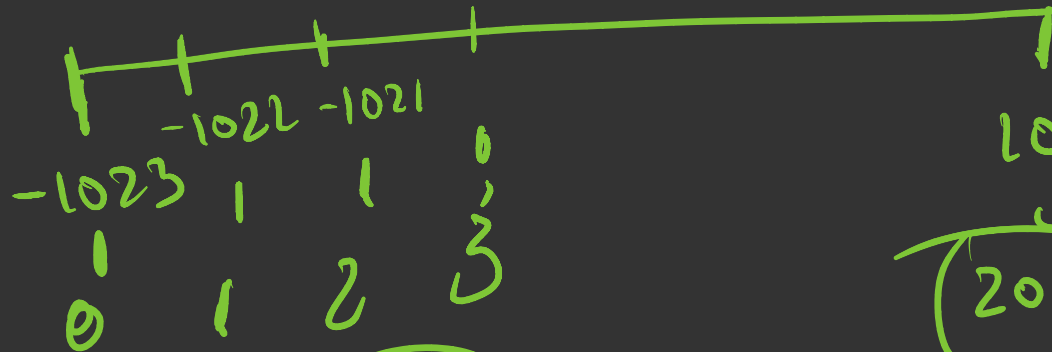
0

1 ✓

sign bit

unsign

sign bit



2046

+ve

5

$\frac{1023}{1028}$

[0 → age]

2^{20}

2^{20}

0 1 1 1 1 1 1 1 1 1 1 1 1 — 1023

1

Sign-bit

11 bit

1 0 1 1 1 1 — -1023

-3 -2 -1 0 1 2 3

0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	0	0	-0
1	0	1	-1
1	1	0	-2
1	1	1	-3

4 position

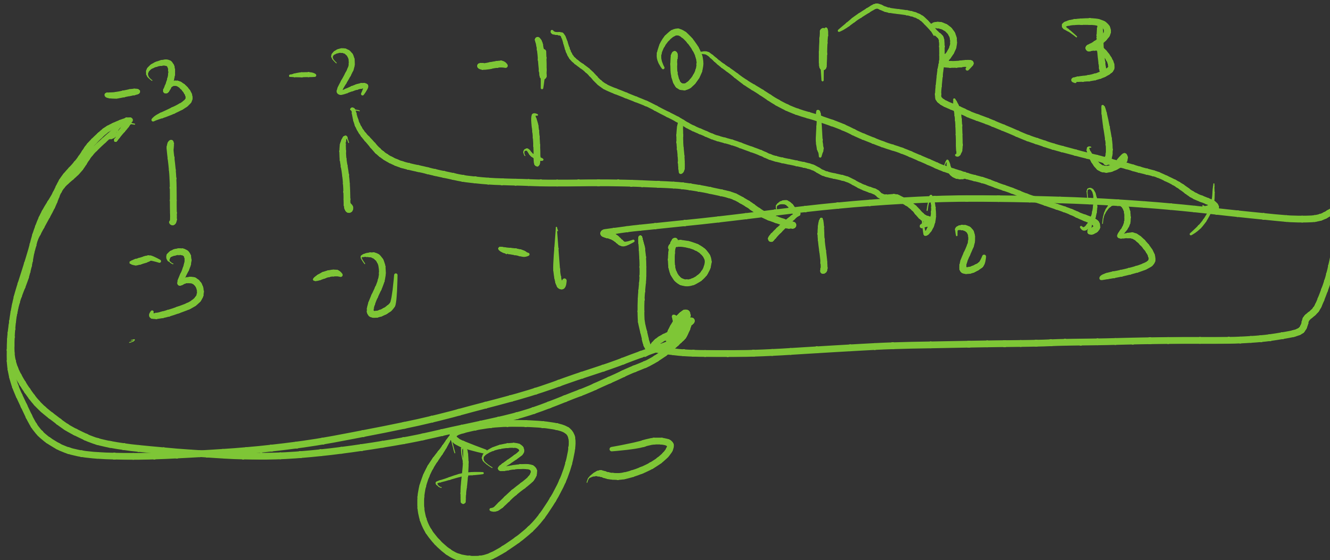
4 negal

11 bit

$2^{11-1}-1$

$\rightarrow 2^{10}-1 = \underline{1023}$

-1
-3
+3
0
010 +3
2
-3
-1
-3 -2 -1 0 1 2 3
0 1 2 3 4 5 6
000
001
010
011
100
101
110
100
4
-3
1
2^2-1 = 3


-3 -2 -1 0 1 2 3
-3 -2 -1 0 1 2 3
+3