



IITGN

**ES 215 - COA**

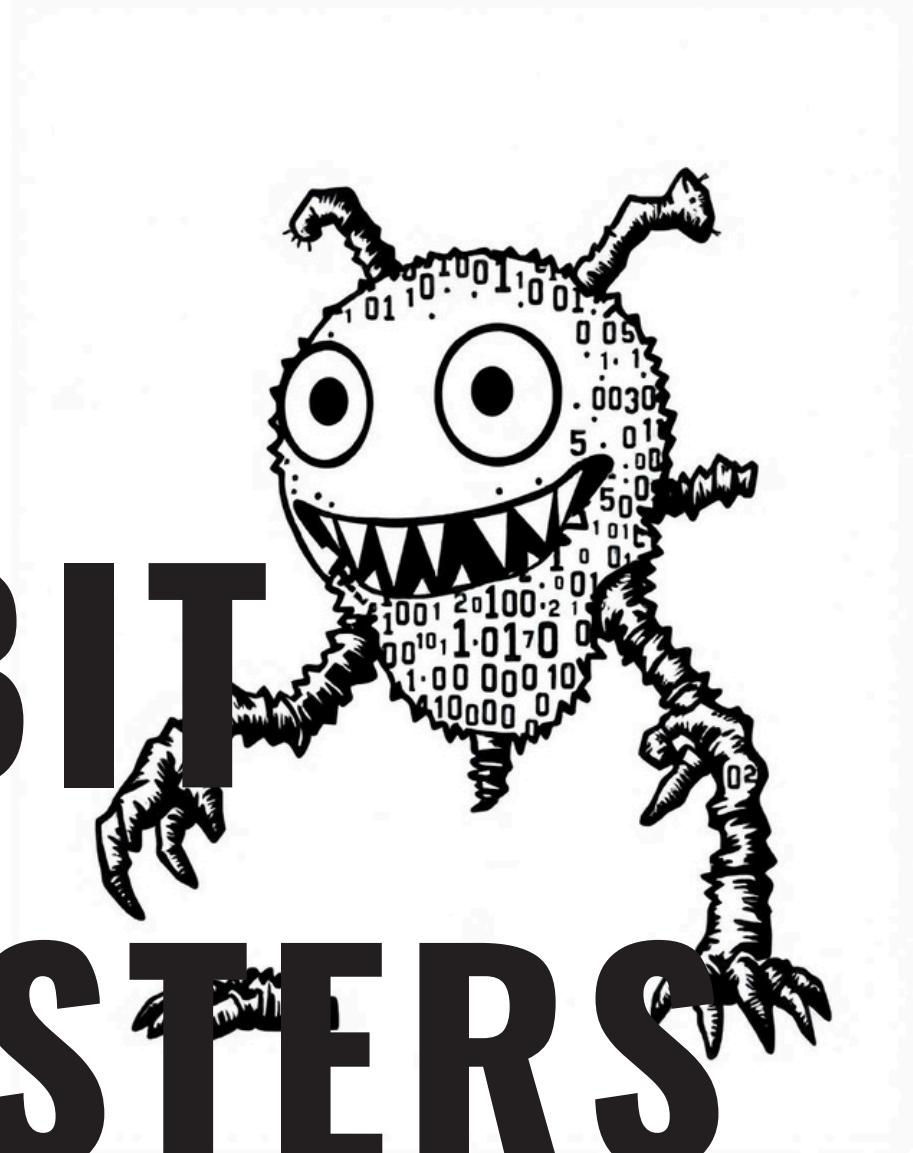
**GUI TOOL**

**FINAL PROJECT PRESENTATION**

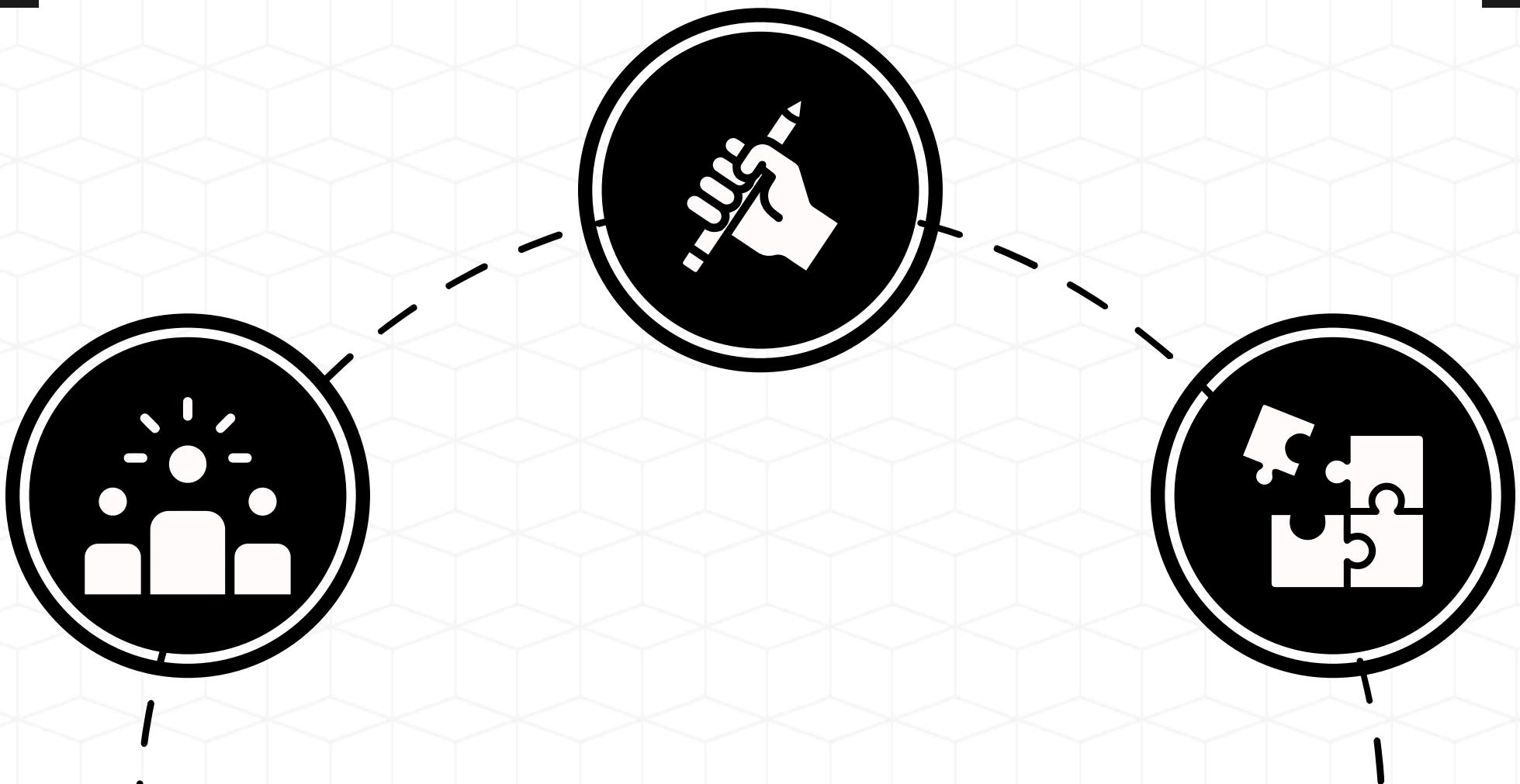
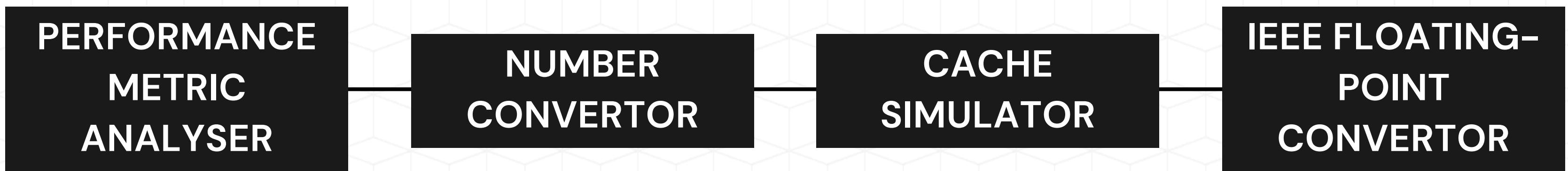
# OUR TEAM

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- *Hitesh Kumar* - 22110098
- *Jinil Patel* - 22110184
- *Ruchit Jagodara* - 22110102

**BIT  
MONSTERS**



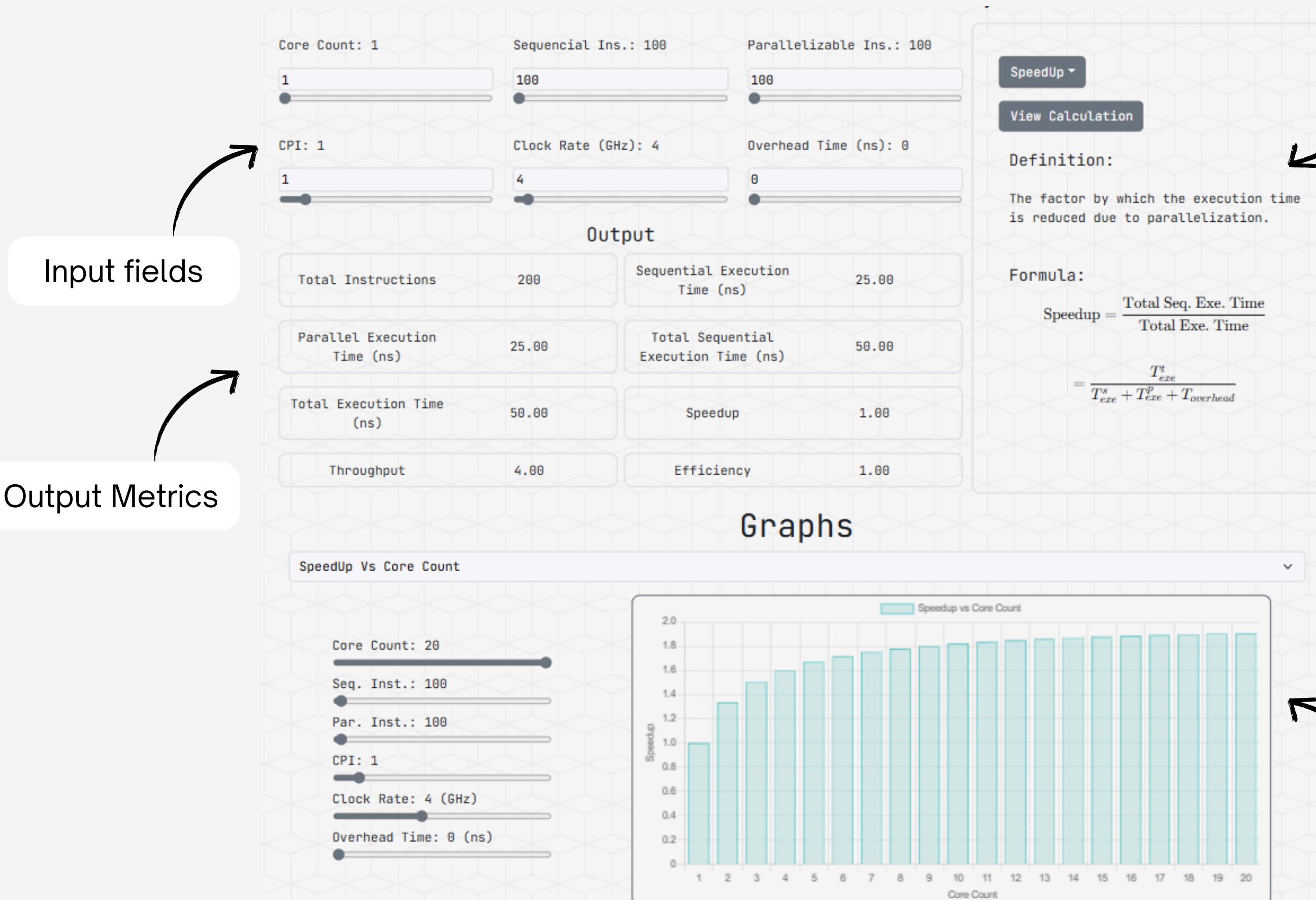
# <<< FEATURES >>>



# PMA

- Provides a better understanding of performance metrics.
- Includes their introduction, formula and calculation.
- Uses graphical visualisation for a better user experience.

# PMA



# NC

- 1 **Base to Decimal**
- 2 **Decimal to Base**
- 3 **Step by Step Conversion**

Users can input any base number and the tool will convert it to its decimal equivalent, demonstrating the process.

The tool converts a decimal number to any other base representation, highlighting the steps involved in the conversion process.

Offers instant results along with a step-by-step explanation for better clarity and understanding.

# NC

**Number System Converter**

Conversion Options

Final Result

Conversion Steps

Base-2 to Decimal Conversion

1	0	0	1	0	1	0	1	1	0	.	1	1	0	1	= 598.8125
$2^9$	$2^8$	$2^7$	$2^6$	$2^5$	$2^4$	$2^3$	$2^2$	$2^1$	$2^0$	.	$2^{-1}$	$2^{-2}$	$2^{-3}$	$2^{-4}$	

Decimal to Base-16 conversion

We convert the integer part and fraction part of the decimal separately.

The Integer value is 598

Division by 16	Quotient	Remainder (Digit)	Bit #
$(598) \div 16$	37	$\rightarrow 6 \rightarrow 6$	0(LSB)
$(37) \div 16$	2	$\rightarrow 5 \rightarrow 5$	1
$(2) \div 16$	0	$\rightarrow 2 \rightarrow 2$	2(MSB)

The fractional value is 0.81250

Step	Multiplication	Integer Part	Fraction Remaining
1	$0.81250 \times 16 = 13.00000 \rightarrow 13 \rightarrow 13$	13	0.00000

Summary

Base-2 (**1001010110.1101**) → Decimal (**598.8125**) → Base-16 (**13.D**)

# CS

- Gives an understanding of different Cache Replacement Policies.
- It uses dynamic component rendering to provide a deep understanding of the topic.
- Uses JavaScript library `Reactflow.js` for rendering

# CS

Replacement Policies



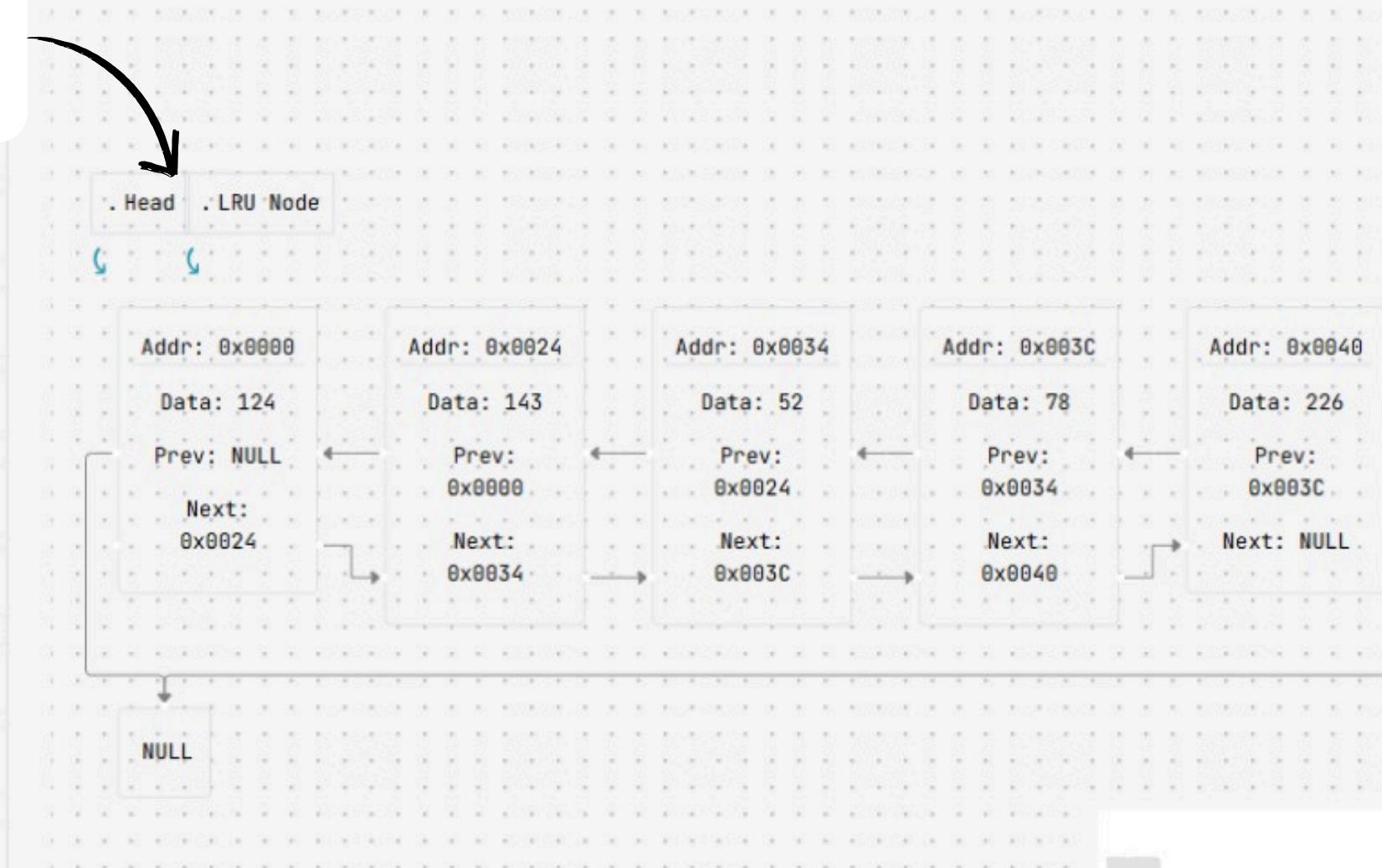
LRU

Simulating LRU Cache with DLL (Doubly Linked List):

Cache Size:

5

Cache Representation with DLL



Query Memory Address:

0x0040

Query

Clear Cache

Memory

0x0000	0x0004	0x0008	0x000C
124	92	29	205
0x0010	0x0014	0x0018	0x001C
82	143	207	179
0x0020	0x0024	0x0028	0x002C
95	143	86	57
0x0030	0x0034	0x0038	0x003C
159	52	155	78
0x0040	0x0044	0x0048	0x004C
226	7	229	218
0x0050	0x0054	0x0058	0x005C
144	201	133	23
0x0060	0x0064	0x0068	0x006C

Clickable  
Memory Addresses 9



# IEEE FC

- Seamlessly converts decimal values to both 32-bit single precision and 64-bit double precision IEEE formats
- Provides detailed explanations of the conversion process for both single and double precision, showing how the sign, exponent, and mantissa are derived.

# IEEE FP

Floating Point Options

FP32

FP64

Special Cases

Errors

Floating Point Representation

Decimal Input	123.012	+Infinity	-Infinity	NaN
Decimal Stored	123.01199340820312			
Error due to Conversion	-0.000006591796875454747			
Binary Representation	01000010111101100000011000100100			
Hex Representation	0x42f60624			

Representations

	Sign	Exponent	Mantissa
Value:	+1	$2^6$	1 + 0.9220625
Encoded as:	0	133	7734820
Binary:	0	10000101	11101100000011000100100

Hide Steps

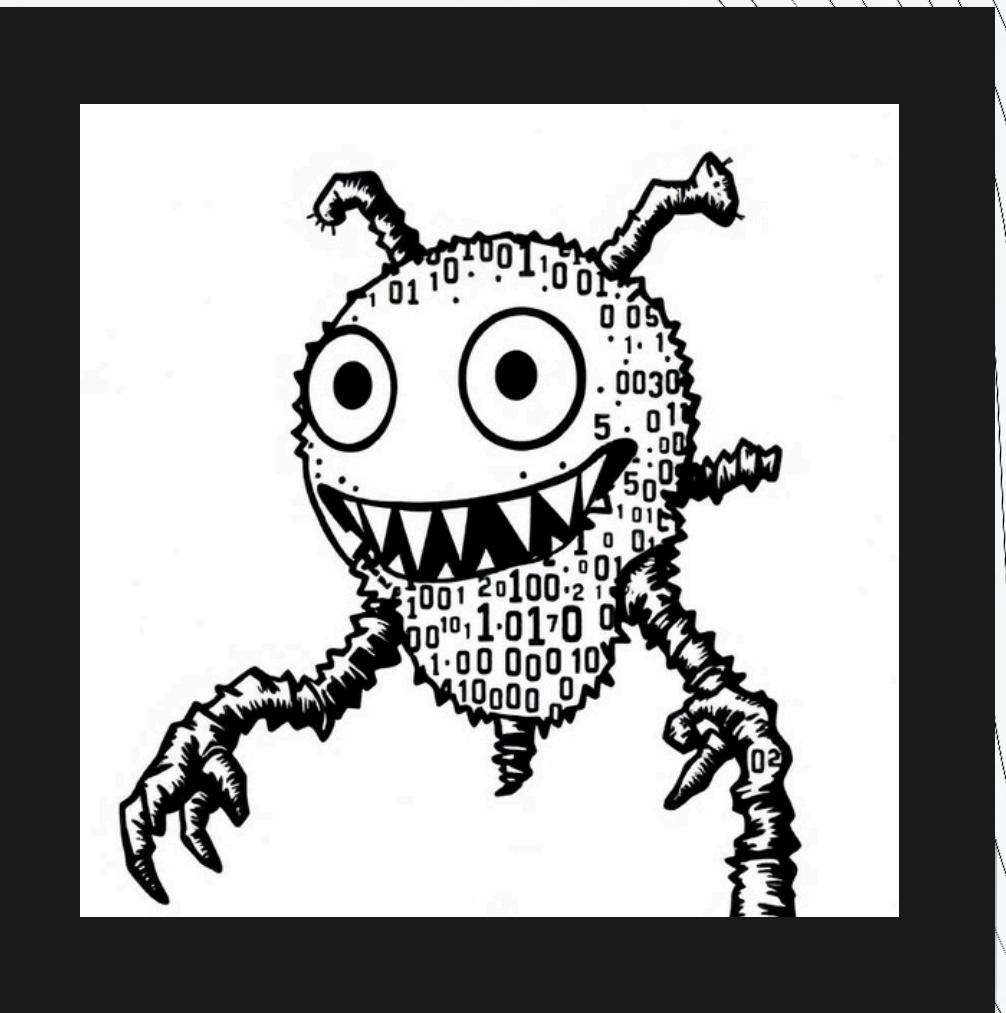
Step-by-Step Conversion

Conversion Steps

Step 1: Sign Bit(1 Bit) →

# LET'S DEMONSTRATE

COA GUI Tool



**THANKS FOR  
YOUR TIME**

