

# Conversion of Decimal float to custom-made hexadecimal Float representation.

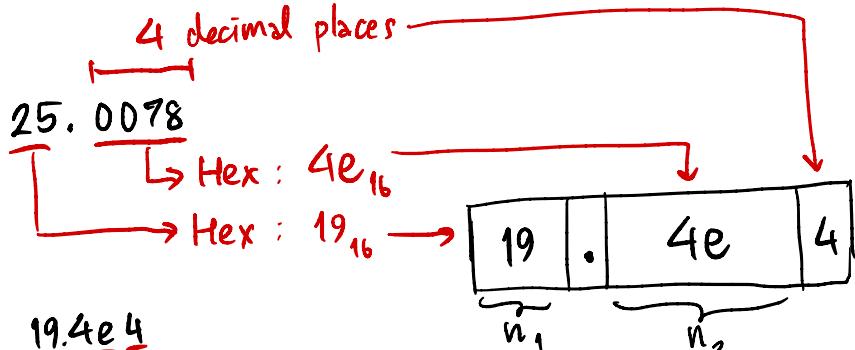
18/05/2022

Two Test Cases :

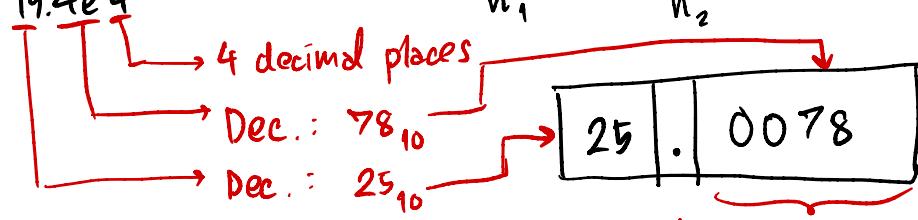
## Conversion Method

### ① HexFloat

Decimal type



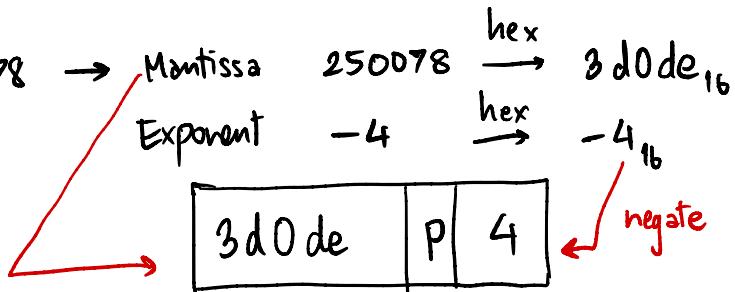
HexFloat type



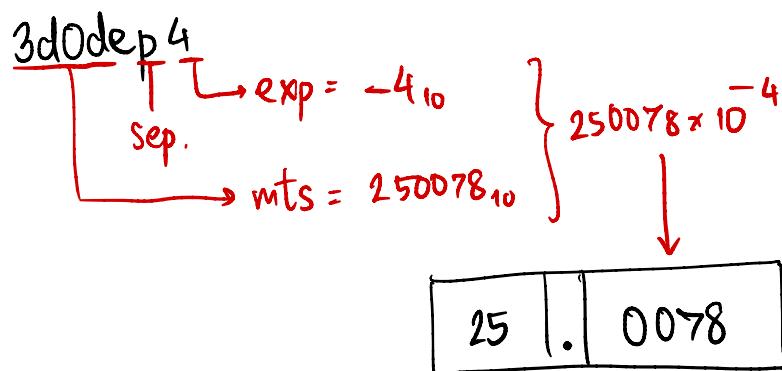
pad zeros with total length of 4.

### ② HexScientific

Decimal type 25.0078



HexScientific type



## Test Sample Generation

- Generate from seed.
- Range :  $x \in [1, 3400]$   $\xrightarrow{\text{step=1}}$  sample =  $[10x]$
- Uniform random  $(-10x, 10x)$  with  $40x$  samples between that range.
- Uniform decimal places from 0 to 8 in each uniform random
- Evaluate if  $\text{strlen}(\text{Hex"}String(n)) \geq \text{strlen}(n)$
- Count % of each Hex'n type -

## Conclusion

HexFloat & HexScientific have approx. the same success rate but HexFloat has far more failure rate (18.15%) than HexScientific.

$\therefore$  HexScientific

Note: (Average % rate)

HexFloat  $\downarrow$

$\Delta\text{len} < 0$  : - 25.23 %

$\Delta\text{len} = 0$  : - 48.92 %

$\Delta\text{len} > 0$  : - 27.61 %

HexScientific  $\uparrow$

- 23.79 %

- 66.75 %

- 9.46 %

X : Number of Test Sample , Y : Percent of Data

