# IEEE 754 Converter (JavaScript), V0.22

| | Sign | Exponent | Mantissa |
|---|---|---|---|
| **Value:** | +1 | $2^{-4}$ | 1.60000023841858 |
| **Encoded as:** | 0 | 123 | 5033165 |

**Binary:**

Sign: ☐

Exponent: ☐ ☑ ☑ ☑ ☑ ☐ ☑ / ☑

Mantissa: ☑ ☐ ☐ ☑ ☑ ☐ ☐ ☑ ☑ ☐ ☐ ☑ ☑ ☐ ☐ ☑ ☑ ☐ ☐ ☑ / ☑ ☐ ☑

You entered: `0.10`

Value actually stored in float: `0.100000001490116119384765625`

Error due to conversion: `1.490116119384765625E-9`

Binary Representation: `00111101110011001100110011001101`

Hexadecimal Representation `0x3dcccccd`

+1

-1
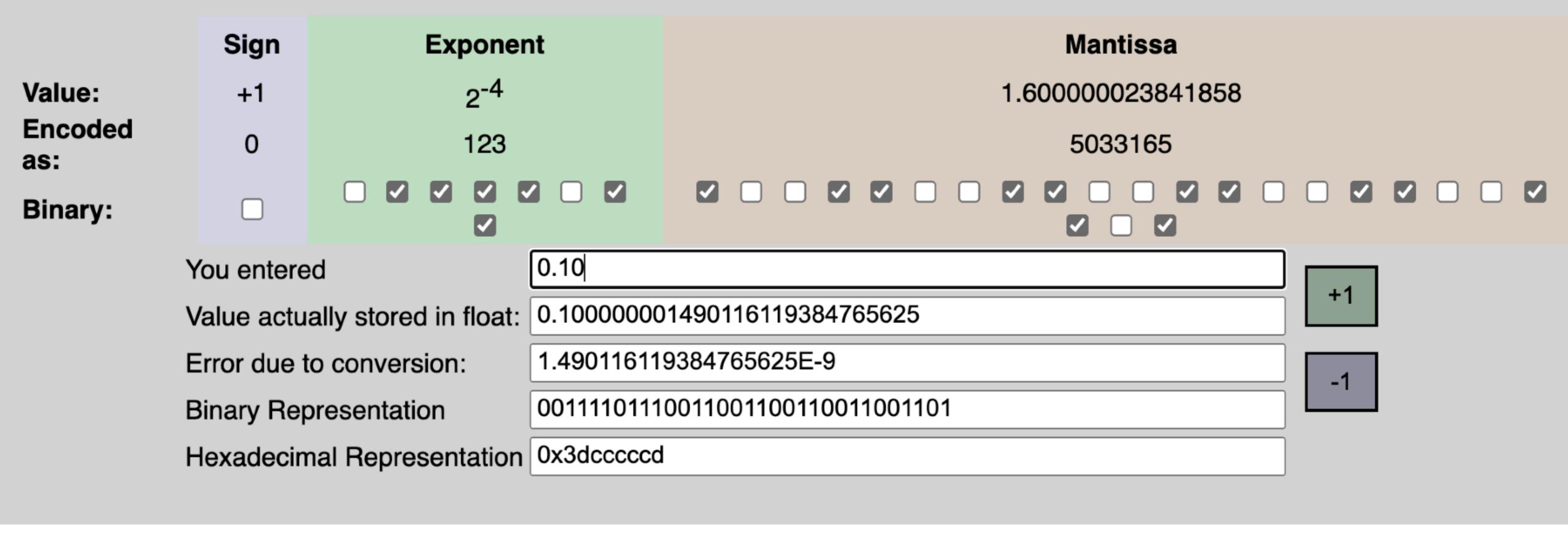
# Guarantees

- "Correct rounding" to 15 decimal places (for 64 bit "double")

- But once you start doing arithmetic, rounding errors accumulate to become larger that $10^{-15}$

- Hence the (0.3 - 0.2) problem.