

# STOP USING FLOATS

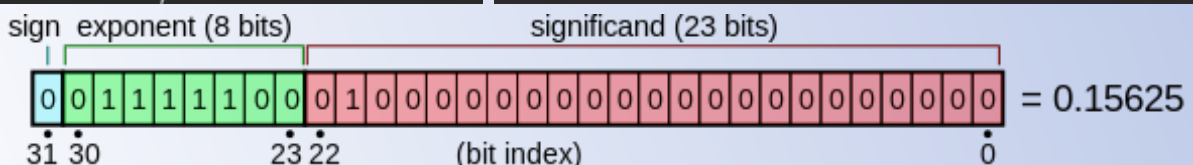
- BINARY DATA WAS NOT SUPPOSED TO HAVE DECIMAL PARTS
- YEARS OF COMPILER DEVELOPMENT yet NO REAL-WORLD USE FOUND for anything other than `char` and `int`
- Wanted to use decimal numbers anyway for a laugh? We had a tool for that: It was called FIXED-POINT ARITHMETIC
- 'x==x can be FALSE', ' $\frac{1}{0}$  is a number', 'the sum of  $\frac{1}{10}$  and  $\frac{2}{10}$  is 0.300000000004'—statements dreamt up by the utterly Deranged

LOOK at what Floating-Point Numbers have been demanding your Respect for all this time, with all the circuits and data types we built for them

**(This is REAL Floating-Point Arithmetic, done by REAL computers):**

```
fld     TBYTE PTR [rdi]
fyl2xp1
fdecstp
fld     st(0)
fstp    TBYTE PTR [rdi]
fld     TBYTE PTR [rsi]
fstp    QWORD PTR [rsp+16]
movsd   xmm0, QWORD PTR [rsp+16]
ucomisd xmm1, xmm0
```

```
x2 = number * 0.5F;
y = number;
i = * ( long * ) &y;
i = 0x5f3759df - ( i >> 1 );
y = * ( float * ) &i;
y = y * ( threehalfs - ( x2 * y * y ) );
```



'Hello, I want to know if  $x$  is a real number and less than  $-1$  please?'

'Sure, that'll be  $f \neq f ? 0 : -1 / 0 . f == f \mid \mid f == -1 . f / 0 ? 0 : -1 . f > f$ '

## They have played us for absolute fools