# bit hacking

AL Hady

## * IEEE floating point:


float f = 74.5; // 1 1000 0101 00101010000...

int x = *( (int*) &f ); // x = 1 1000 0101 ...

How to calculate $\log_2(x)$

① ~~$\log_2 2.25 \sim 5$~~

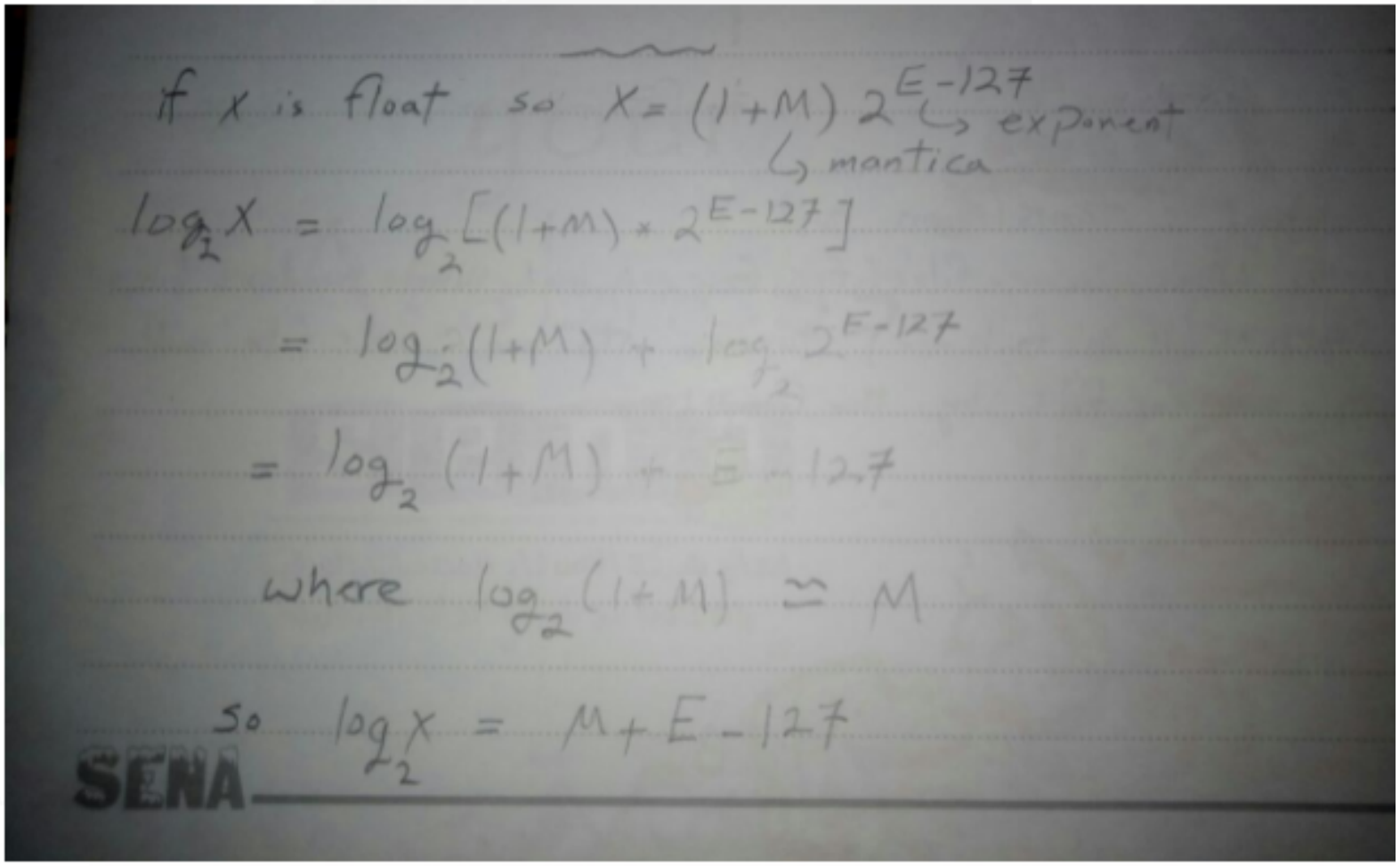
$\log_2 1.23 * 2^6 \simeq 6$

② IEEE = $[1 + Val(F)] * 2^{E-bias}$ ← $\log_2 \approx 0.3$

code

```
float f = 74.5;
int x = *((int*) &f);
x = x >> 23;
x -= 127;
cout << x // 6 = log2 74.5
```

# calculate log10




```c
float LOG10 (float x)
{
    int exp = (*(int*)&x>>23)-127;
    int temp =*(int*)&x &0x7fffff | 0x7f<<23;
    float mantice =*(float*)&temp;
    return (exp+mantice-1)/3.321928095;
}
```