

# Microproject #3: Popcount

Due before class on December 3rd

# Make this code fast

```
int popcount_simple(uint64_t x) {
    int c = 0;
    for (int i = 0; i < 64; i++) {
        if (x & 1 << i != 0) {
            c++;
        }
    }
    return c;
}
```

# Results on My Laptop

- `popcount_simple` -- 14.1 s
- `popcount_fast` -- 1.3 s
- Your task: Make the code at least 5x faster
  - Bonus if your code beats mine.
- Explain what you did, and why it helped in 1 page or less.
- You may use any technique you wish, except a pop count instruction (I'm not sure if there is one on x86)
- Your code must work for any value of the random seed.

# Pitfalls: Beware the Compiler

- Make sure it's not optimizing away your code.