

# Beyond milk

X is a global variable initialized to 0

thread 1

```
void foo() {  
    x++;  
};
```

thread 2

```
void bar() {  
    x--;  
};
```

What is the value of x after thread 1 and 2?

# CPU instruction level

Incrementing (or decrementing)  $x$  is **not** an atomic operation

thread 1 (foo function)

```
LOAD X
INCR
STORE X
```

thread 2 (bar function)

```
LOAD X
DECR
STORE X
```