Class Abstraction

EECS 230

Winter 2017

Let’s say we want a counter

Clients of the counter should be able to:

- increment it
- find out its value

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Clients of the counter should be able to:

- increment it
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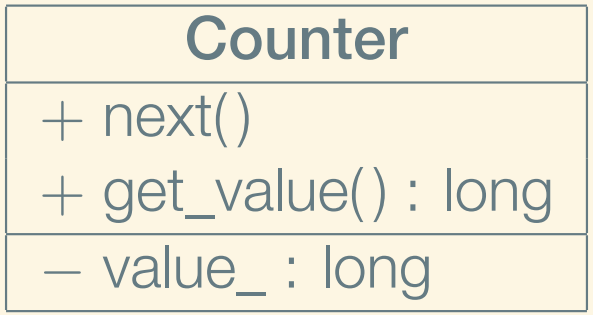
They shouldn’t be able to arbitrarily change the value.

Counter in UML



Counter in C++

In `Counter.h`:

```
class Counter
{
public:
        void next();
        long get_value() const;

private:
        long value_ = 0;
};
```

Counter in C++

In `Counter.cpp`:

```
void Counter::next()
{
        ++value_;
}

long Counter::get_value() const
{
        return value;
}
```

In `Counter.h`

```
class Counter
{
public:
        void next();
        long get_value() const;

private:
        long value_ = 0;
};

void advance_by(Counter&, long);
long get_next(Counter&);
```

In `Counter.cpp`

```
void Counter::next()
{ ++value_; }

long Counter::get_value() const
{ return value; }

void advance_by(Counter& counter, long amount)
{
    for (long i = 0; i < amount; ++i) counter.next();
}

long get_next(Counter& counter)
{
    counter.next();
    return counter.get_value();
}
```

In `Counter.h`

```
class Counter
{
public:
        void next() { ++count_; };
        long get_value() const;

private:
        long value_ = 0;
};

void advance_by(Counter&, long);

inline long get_next(Counter& counter)
{
        counter.next(); return counter.get_value();
}
```