

SWINBURNE UNIVERSITY OF TECHNOLOGY

COS20007 OBJECT ORIENTED PROGRAMMING

Clock in Another Language

PDF generated at 15:39 on Wednesday 25th October, 2023

```
1  #include <iostream>
2  #include <string>
3  #include <iomanip>
4
5  class Counter {
6  private:
7      std::string name;
8      int ticks;
9
10 public:
11     Counter(const std::string& name) : name(name), ticks(0) {}
12
13     void increment() {
14         ticks++;
15     }
16
17     void reset() {
18         ticks = 0;
19     }
20
21     std::string getName() const {
22         return name;
23     }
24
25     int getTicks() const {
26         return ticks;
27     }
28 };
29
30 class Clock {
31 private:
32     Counter seconds;
33     Counter minutes;
34     Counter hours;
35
36 public:
37     Clock() : seconds("seconds"), minutes("minutes"), hours("hours") {}
38
39     void reset() {
40         seconds.reset();
41         minutes.reset();
42         hours.reset();
43     }
44     /*
45     std::string readTime() const {
46         return std::to_string(hours.getTicks()) + ":" +
47             std::to_string(minutes.getTicks()) + ":" +
48             std::to_string(seconds.getTicks());
49     }
50     */
51     std::string readTime() const {
52         return (hours.getTicks() < 10 ? "0" : "") + std::to_string(hours.getTicks()) +
53             ↪ ":" +
```

```
53         (minutes.getTicks() < 10 ? "0" : "") + std::to_string(minutes.getTicks())
54         ↪ + ":" +
55         (seconds.getTicks() < 10 ? "0" : "") + std::to_string(seconds.getTicks());
56     }
57     void tick() {
58         if (seconds.getTicks() < 59) {
59             seconds.increment();
60         }
61         else {
62             seconds.reset();
63             if (minutes.getTicks() < 59) {
64                 minutes.increment();
65             }
66             else {
67                 minutes.reset();
68                 if (hours.getTicks() == 23) {
69                     hours.reset();
70                 }
71                 else {
72                     hours.increment();
73                 }
74             }
75         }
76     };
77
78     int main() {
79         Clock clock;
80         for (int i = 0; i < 60 * 60 * 24 + 1; i++) {
81             std::cout << clock.readTime() << std::endl;
82             clock.tick();
83         }
84         return 0;
85     }
```

```
61         seconds.reset();
62         if (minutes.getTicks() < 59) {
63             minutes.increment();
64         }
65     }
66     else {
67         minutes.reset();
68         if (hours.getTicks() == 23) {
69             hours.reset();
70         }
71         else {
72             hours.increment();
73         }
74     }
75 }
76 };
77
78 int main() {
79     Clock clock;
80     for (int i = 0; i < 60 * 60 * 24 + 1; i++) {
81         std::cout << clock.readTime() << std::endl;
82         clock.tick();
83     }
84     return 0;
85 }
86
```

23:59:49
23:59:50
23:59:51
23:59:52
23:59:53
23:59:54
23:59:55
23:59:56
23:59:57
23:59:58
23:59:59
00:00:00

[Done] exited with code=0 in 0.978 seconds

Do you want to install the recommended 'C# Dev Kit' extension from Microsoft for the C# language?
[Install](#) [Show Recommendations](#)