COS20007 - Object Oriented Programming

11.1P - Clock in Another Language with Practical Benchmarks

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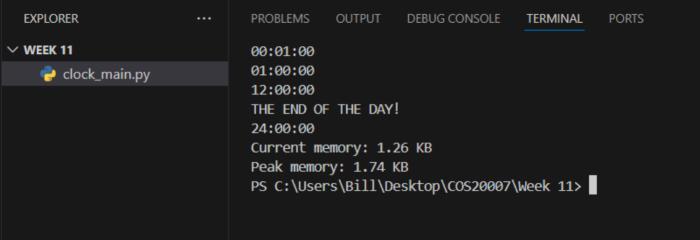
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clock_main.py

```
import tracemalloc
 2
 3
    class Counter:
 4
        def __init__(self, name, count):
 5
            # Constructor like C#
            self.name = name
 6
 7
            self.count = count
 8
 9
        def tick(self):
            self.count += 1
10
11
            return self.count
12
        def reset(self):
13
14
            self.count = 0
            return self.count
15
16
    class Clock:
17
        def init (self):
18
19
            # doesn't need to pass in the class name
            self.second = Counter("second", 0)
20
            self.minute = Counter("minute", 0)
21
            self.hour = Counter("hour", 0)
22
23
        def time(self, i):
24
25
            for _ in range(i):
                if self.second.tick() == 60:
26
27
                    self.second.reset()
28
                    if self.minute.tick() == 60:
                         self.minute.reset()
29
                         if self.hour.tick() == 24:
30
                             print("THE END OF THE DAY!")
31
32
33
        def reset(self):
34
            self.second.reset()
35
            self.minute.reset()
            self.hour.reset()
36
37
        def show(self):
38
            print(f"{self.hour.count:02}:{self.minute.count:02}:{self.second.count:02}")
39
40
41
42
    tracemalloc.start()
43
44
    clock = Clock()
45
   clock.time(60) #1 min
46
    clock.show()
47
   clock.reset()
```

```
49
50
   clock.time(3600) #1 hour
51
   clock.show()
   clock.reset()
52
53
54
   clock.time(43200) #12 hours
55
   clock.show()
56
   clock.reset()
57
58
   clock.time(86400) #full day
59
   clock.show()
   clock.reset()
60
61
62
   current, peak = tracemalloc.get_traced_memory()
    print(f"Current memory: {current / 1024:.2f} KB")
63
    print(f"Peak memory: {peak / 1024:.2f} KB")
64
   tracemalloc.stop()
65
66
```



PROBLEMS OUTPUT DEBUG C Microsoft Visual Studio Debu 00:01:00 00:01:00 01:00:00 01:00:00 12:00:00 12:00:00 THE END OF THE DAY! 23:59:59 24:00:00 Memory Usage: 9592 KB Current memory: 1.26 KB Peak memory: 1.74 KB C:\Users\Bill\Downloads\Clock\ PS C:\Users\Bill\Desktop\C To automatically close the con le when debugging stops. Press any key to close this wa