Exercise 12 – Error handling and exceptions

Objective

To try out Python exception handling within a module environment.

Questions

1. In the **mytimer** module, there were two functions, **start_timer()** and **end_timer()**, which needed to be called in that order. What if **end_timer()** was called without a **start_timer()** before it? We need to raise an exception in our timer module if that happens.

   Use your **mytimer.py**, or the one from the solutions directory, you will have to detect if **start_timer()** was called previously from the **end_timer()** function. We suggest that you initialise and reset your global time to **None** in **end_timer()** after a successful run, and test that. We use **None** because zero is a valid time. Which exception would be appropriate to raise?

   Test it using **Ex12.py**.

2. Now, in **Ex12.py**, handle the error elegantly with an appropriate error message.

If time allows...

Ex12.py opens and reads the words file. What happens if that file does not exist? Handle that exception in an elegant manner as well as creating a file. Output an error message if there is an error with the file.

Solutions

Here are our versions of these exercises, remember that yours can be different to these, but still correct. If in doubt, ask your instructor.

Question 1

Choosing which exception is not so easy. The nearest we could think of is SystemError. Given more time, we might invent our own exception subclass. Raising the exception is easy:

```
def end_timer(txt='End time'):
    """...
    """
    global start_time
    if start_time is None:
        raise SystemError(
                "end_timer() called without a start_timer()")
    end_time = os.times()[:2]
    print("{0:<12}: {1:01.3f} seconds".
          format(txt, end_time - start_time))

    start_time = None
    return
```

Question 2

Detecting the error is also fairly straightforward:

```
try:
    mytimer.end_timer()
except SystemError as err:
    print("end_timer error:", err, file=sys.stderr)
```

If time allows:

```
try:
    for row in open("words"):
        lines += 1
except IOError as err:
    print("Could not open:",
          err.filename, err.args[1], file=sys.stderr)
```