Simple Application Timing

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What is application timing?

- Analysis of a program's behavior using information gathered as the program runs

- Why do it?
    - Good way to improve efficiency of scripts
        - Identify performance problems
    - Many times required for allocation requests

How would you do it?

- Measure time of execution of an entire program or simply a code snippet
    - Loops
- Timing functions within programs
    - Python, Fortran, C++, R have functions that allow you to measure the execution time of small code snippets
    - Can also do this with the Linux “time” command
- Can make changes to code to improve efficiency
    - Or…it’s just informational

The Linux Time Utility

- The first place to start when profiling your program

```
time mpirun -np 4 ./prog.mpi
```

```
real      0m17.801s      Wall clock time
user      0m58.125s      Threads x Wall clock time
sys       0m0.081s       System overhead
```

Fine-grained Timing

- Often useful to time portions of a program
- Good idea when developing your own code
- Tough when its 3rd party software
- Useful functions:

Fortran:	system_clock
C++	clock()
Python:	time.time()
R	sys.time()