Timing Tools

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Outline

We'll review the following timers

For cpu time:

- **etime**
- **dtime**

For wall clock time:

- **time**
- **walltime**

Use of the etime function

A section of code can be timed using etime. It returns the elapsed cpu time in seconds since program start.

```
 real*4 tarray(2),time1,time2,timeres
… beginnning of program …
time1=etime(tarray)
do i=1,1000
...lots of computation...
enddo
time2=etime(tarray)
timeres=time2-time1
```

Use of the dtime function

A section of code can also be timed using dtime. It returns the elapsed cpu time in seconds since the last call to dtime.

```
real*4 tarray(2),timeres
… beginning of program …
timeres=dtime(tarray)
do i=1,1000
...lots of computation…
enddo
timeres=dtime(tarray)
```

Description of etime/dtime

- **User time**
  - This is returned as the first element of tarray
  - It is the cpu time spent executing user code
- **System time**
  - This is returned as the second element of tarray
  - It is the time spent executing system calls on behalf of your program
- **Sum of user and system time**
  - This is the function value that is returned
  - It is the time that you usually want to report

Description of etime/dtime (Cont.)

Metric

- **Timings are reported in seconds**
- **Timings are accurate to 1/100th of a second**

Availability

- **The functions etime and dtime are available on the Exemplar, Power Challenge and Origin computers**

Timer Differences

For the Power Challenge and Origin computers:

- **`etime` and `dtime` return the MAX time over all threads for a parallel program**
- **It is the time of the longest thread, which is usually the master thread**

For the Exemplar computer

- **`etime` and `dtime` return the SUM of the time over all threads for a parallel program**

Use of the time function

The function `time` returns the time since 00:00:00 GMT, Jan. 1, 1970 in seconds. Its a means of getting the elapsed wall clock time.

```
real*4 time1,time2,timeres
    time1=time( )
    … lots of computation …
    time2=time( )
    timeres=time2- time1
```

This function is available on the Exemplar, Power Challenge and Origin computers.

Use of the walltime function

The function `walltime` returns the total amount of wallclock time since program startup minus the argument passed to `walltime`.

```
real*4 wall1,timeres
wall1=walltime(0.0)
 ...lots of computation...
 timeres=walltime(wall1)
```

This function is only available on the Exemplar computer.