

```

> restart;
'numcpus'=kernelopts(numcpus), 'gcmmaxthreads'=kernelopts(gcmmaxthreads),
'gcthreadmemorysize'=kernelopts(gcthreadmemorysize);

nelems := 10000000;
n := 374894756873546859847556;

str,sgctr := time[real](), kernelopts(gcttotaltime[real]):
A := Array(1 .. 4, 1 .. nelems):
A[1,1..nelems] := Array([seq(i^10*n, i=1..nelems)]):
A[2,1..nelems] := Array([seq(length(A[1,i])-1, i=1..nelems)]):
A[3,1..nelems] := Array([seq(iquo(A[1,i], 10^(A[2,i]-2)), i=1..nelems)]):
A[4,1..nelems] := Array([seq(irem(A[1,i],1000), i=1..nelems)]):
RT,GCRT := time[real]()-str, kernelopts(gcttotaltime[real])-sgctr:
print(sprintf("total real time: %a secs   gc real time: %a secs",
              evalf[4](RT), evalf[4](GCRT)));
              numcpus = 8, gcmmaxthreads = numcpus, gcthreadmemorysize = 67108864
              "total real time: 37.77 secs   gc real time: 17.18 secs"
(1)

> restart;
kernelopts(numcpus=7): kernelopts(gcmmaxthreads=7): kernelopts(gcthreadmemorysize=2^17):
'numcpus'=kernelopts(numcpus), 'gcmmaxthreads'=kernelopts(gcmmaxthreads),
'gcthreadmemorysize'=kernelopts(gcthreadmemorysize);

nelems := 10000000;
n := 374894756873546859847556;

str,sgctr := time[real](), kernelopts(gcttotaltime[real]):
A := Array(1 .. 4, 1 .. nelems):
A[1,1..nelems] := Array([seq(i^10*n, i=1..nelems)]):
A[2,1..nelems] := Array([seq(length(A[1,i])-1, i=1..nelems)]):
A[3,1..nelems] := Array([seq(iquo(A[1,i], 10^(A[2,i]-2)), i=1..nelems)]):
A[4,1..nelems] := Array([seq(irem(A[1,i],1000), i=1..nelems)]):
RT,GCRT := time[real]()-str, kernelopts(gcttotaltime[real])-sgctr:
print(sprintf("total real time: %a secs   gc real time: %a secs",
              evalf[4](RT), evalf[4](GCRT)));
              numcpus = 7, gcmmaxthreads = 7, gcthreadmemorysize = 131072
              "total real time: 39.05 secs   gc real time: 18.41 secs"
(2)

> restart;
kernelopts(numcpus=7): kernelopts(gcmmaxthreads=7): kernelopts(gcthreadmemorysize=2^17):
'numcpus'=kernelopts(numcpus), 'gcmmaxthreads'=kernelopts(gcmmaxthreads),
'gcthreadmemorysize'=kernelopts(gcthreadmemorysize);

nelems := 10000000;
n := 374894756873546859847556;

str,sgctr := time[real](), kernelopts(gcttotaltime[real]):
A := Array(1 .. 4, 1 .. nelems):
A[1,1..nelems] := Array([Threads:-Seq(i^10*n, i=1..nelems)]):
A[2,1..nelems] := Array([Threads:-Seq(ilog10(A[1,i]), i=1..nelems)]):
A[3,1..nelems] := Array([Threads:-Seq(iquo(A[1,i], 10^(A[2,i]-2)), i=1..nelems)]):
A[4,1..nelems] := Array([Threads:-Seq(irem(A[1,i],1000), i=1..nelems)]):
RT,GCRT := time[real]()-str, kernelopts(gcttotaltime[real])-sgctr:
print(sprintf("total real time: %a secs   gc real time: %a secs",
              evalf[4](RT), evalf[4](GCRT)));
              numcpus = 7, gcmmaxthreads = 7, gcthreadmemorysize = 131072
              "total real time: 16.62 secs   gc real time: 6.968 secs"
(3)

> restart;
kernelopts(numcpus=7): kernelopts(gcmmaxthreads=7): kernelopts(gcthreadmemorysize=2^17):
'numcpus'=kernelopts(numcpus), 'gcmmaxthreads'=kernelopts(gcmmaxthreads),
'gcthreadmemorysize'=kernelopts(gcthreadmemorysize);

subtask := proc(lo,hi,AA,nn) local i;
  AA[1,lo..hi] := Array([seq(i^10*n, i=lo..hi)]);
  AA[2,lo..hi] := Array([seq(length(AA[1,i])-1, i=lo..hi)]);
  AA[3,lo..hi] := Array([seq(iquo(AA[1,i],10^(AA[2,i]-2)), i=lo..hi)]);
  AA[4,lo..hi] := Array([seq(irem(AA[1,i],1000), i=lo..hi)]);
  return NULL;
end proc:
fulltask := proc(num::posint,n::posint,N::posint) local A,i;
  A := Array(1..4,1..num,order=C order);
  Threads:-Task:-Start(null, Task=[subtask, 1, ceil(num/N), A, n],
                      seq(Task=[subtask, ceil((i-1)*num/N)+1, ceil(i*num/N), A, n],
                          i=2..N));

  return A;
end proc:

nelems := 10000000;
n := 374894756873546859847556;
N := kernelopts(numcpus):
A,RT,GCRT := CodeTools:-Usage( Threads:-Task:-Start( fulltask, nelems, n, N),
                              output=[output, realtime, gcrealtime], quiet ):
print(sprintf("total real time: %a secs   gc real time: %a secs",
              evalf[4](RT), evalf[4](GCRT)));
              numcpus = 7, gcmmaxthreads = 7, gcthreadmemorysize = 131072
              "total real time: 17.06 secs   gc real time: 7.811 secs"
(4)

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