

Average of  
Numbers

Node 0

initialize MPI

↓

open data file

↓

read N

↓

$N_{local} = N / size$

↓

Malloc space for x ( $N_{local} + size$ )

↓

process = 1

Loop

send N to "process"

↓

read data chunk

↓

send data chunk to "process"

↓

process ++

↓

process < size

↓

$N_{local} = N - (size - 1) N_{local}$

↓

read last data chunk

↓

perform local sum

↓

receive local sum from processes  $\neq 0$

↓

global sum

↓

average

↓

send average to nodes

↓

local  $\sigma$  sum

↓

Loop on processes

receive local  $\sigma$  sum from processes  $\neq 0$

↓

global  $\sigma$  sum

↓

$\sigma$  calculation

↓

MPI finalize

↓

free x

↓

exit

Average of  
Numbers

Node  $\neq 0$

