

## S4 Text. The Calculation of runtime.

The pseudocode of computing the runtime is as follows.

```
if (computing node == Master node)
do
double Master_start_time, Master_end_time;
double t0;
Master_start_time = MPI_Wtime()
Master Process
Master_end_time = MPI_Wtime()
t0 = Master_end_time - Master_start_time;
enddo

else if (computing node == Slave nodes)
do
double Slave_start_time, Slave_end_time;
double T[];
for i = 1:M
Slave_start_time = MPI_Wtime()
Slave i Process
end for
Slave_end_time = MPI_Wtime()
T[i] = Slave_end_time - Slave_start_time;
enddo
```

$$T = t_0 + \max_{i \in \{1, 2, \dots, M\}} \{T[i]\}$$