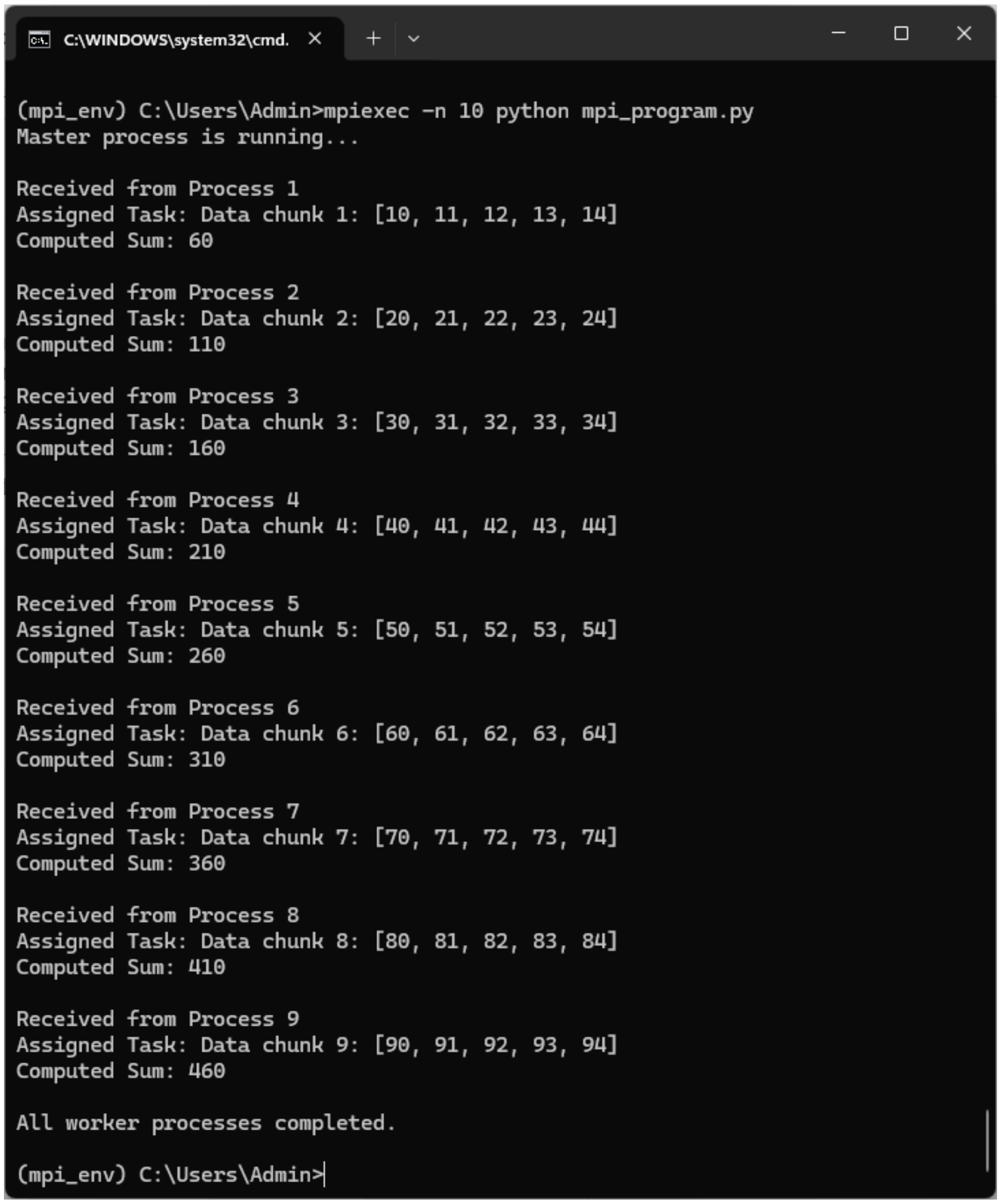
Reflection

Message passing is needed because processes have their own memory and cannot share data directly. They must send messages to communicate and work together. If a process fails, the master might wait forever for its message, which can stop the program. Unlike shared-memory programming, distributed processes are separate and must use messages to share information. This makes distributed systems easier to run on many computers but a bit harder to manage.



```
(mpi_env) C:\Users\Admin>mpiexec -n 10 python mpi_program.py
Master process is running...

Received from Process 1
Assigned Task: Data chunk 1: [10, 11, 12, 13, 14]
Computed Sum: 60

Received from Process 2
Assigned Task: Data chunk 2: [20, 21, 22, 23, 24]
Computed Sum: 110

Received from Process 3
Assigned Task: Data chunk 3: [30, 31, 32, 33, 34]
Computed Sum: 160

Received from Process 4
Assigned Task: Data chunk 4: [40, 41, 42, 43, 44]
Computed Sum: 210

Received from Process 5
Assigned Task: Data chunk 5: [50, 51, 52, 53, 54]
Computed Sum: 260

Received from Process 6
Assigned Task: Data chunk 6: [60, 61, 62, 63, 64]
Computed Sum: 310

Received from Process 7
Assigned Task: Data chunk 7: [70, 71, 72, 73, 74]
Computed Sum: 360

Received from Process 8
Assigned Task: Data chunk 8: [80, 81, 82, 83, 84]
Computed Sum: 410

Received from Process 9
Assigned Task: Data chunk 9: [90, 91, 92, 93, 94]
Computed Sum: 460

All worker processes completed.

(mpi_env) C:\Users\Admin>
```