from mpi4py import MPI

def calculate\_partial\_sum(arr):

partial\_sum = sum(arr)

return partial\_sum

def distribute\_array(arr):

comm = MPI.COMM\_WORLD

size = comm.Get\_size()

rank = comm.Get\_rank()

# Distribute the array to all processes

chunk\_size = len(arr) // size

remainder = len(arr) % size

start = rank \* chunk\_size

end = start + chunk\_size

if rank == size - 1:

# Include the remaining elements in the last chunk

end += remainder

chunk = arr[start:end]

# Calculate the partial sum for the chunk

partial\_sum = calculate\_partial\_sum(chunk)

# Gather all the partial sums at the root process (rank 0)

total\_sum = comm.reduce(partial\_sum, op=MPI.SUM, root=0)

if rank == 0:

# Display the intermediate and final sums in order of rank

for i in range(size):

print("Rank", i, "Partial Sum:", calculate\_partial\_sum(arr[i\*chunk\_size:(i+1)\*chunk\_size]))

print("Final Sum:", total\_sum)

if \_\_name\_\_ == '\_\_main\_\_':

arr = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10] # Example array

distribute\_array(arr)

“””sudo apt install python3-pip

pip install mpi4py

sudo apt update

sudo apt-get install libopenmpi-dev

apt insatll mpich

python3 mpi.py

"""lamboot -v”””