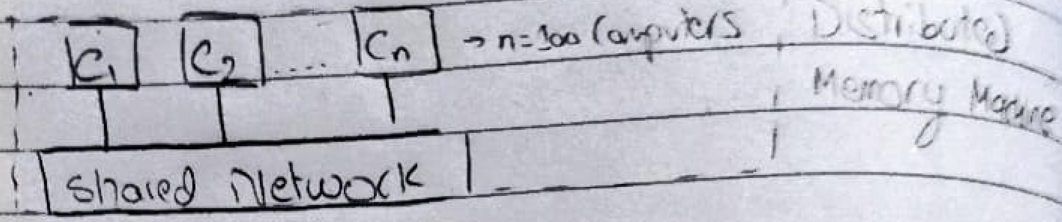
week 2 - MPI K200353 Mohsin Ali Mirza

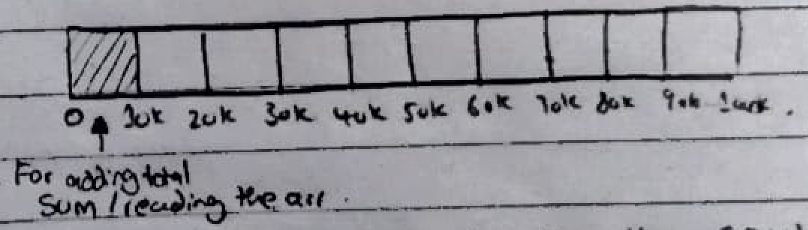
Cluster Diagram:



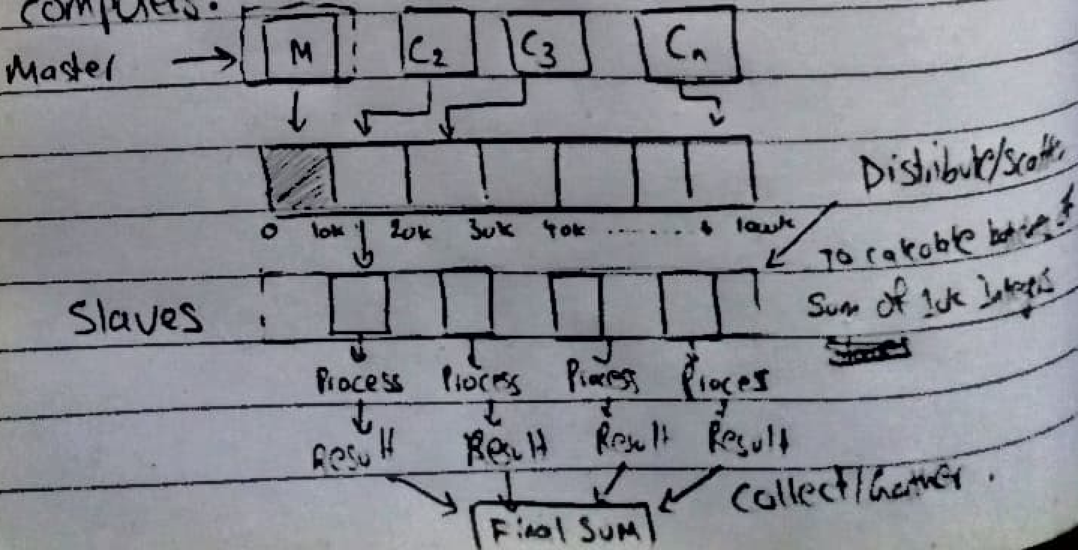
Problem: If we wish to sum a large array of integers, then this will require alot of ~~time~~ execution time therefore we can make this process go faster by using Distributed Memory Machine.

Workflow:

Assume that we have 100 computers & that the memory space ~~is~~ of 100k is divided into 10k segments.



We will be using SPMD approach rather than SIMD because a single program with multiple data will be divided into multiple computers.



Pseudo code:

```
if(nodeId==0)  //Master
{
 Readfromfile(arr,"___");
 foreach(10k integer in arr)
 {
   startRange=(    );
   EndRange=(    );   send node
   MPI_Send(...0, )
                 ↑
             Recieve node
 }
 do_processing(arr);
 foreach(10k integers in arr)
 { MPI_Read( ); }
 print( );
}
else   //Slave
{ MPI_Recieve(     0);
  Do_processing(    );
  MPI_send(result,0);
}
```

Notes

- Master Node
- Read the arr from file
- Distribute the 10k segments of integers to each Computer (sender master, Reciever Slaves)
- Sum individual batch because master will also sum its own 10k integers
- read each result & then sum to final result.
- Prints the final result
- For slaves.
  - Not after loop because individual computer.
  - sum 10k integers
- Send each result