1. Running Make File:

Place all the codes on BareMetal instance except Network_Benchmark from folder – "Source Code" present in the .zip folder.

- **On instance Run:**
  - **./Makefile**
  - **If file is not executable - please change the file to executable (chmod 755)**

Note: For Disk Benchmark, filename is hard coded in makefile. You can edit it as per needs and keep file at same location as Disk_Benchmark.c program location.

2. CPU Benchmark

- Add files CPU_Benchmark, CPU_Benchmark_AVX to the instance path.
- Run below command:
  - gcc CPU_Benchmark.c -pthread
  - ./a.out

  - gcc CPU_Benchmark_AVX.c -pthread
  - ./a.out

3. Memory Benchmark

- Add MemoryBenchmark.c file to the instance path
- Tested on Bare Metal, as had no available Floating IP on KVM instance
- Run below command:

  - gcc MemoryBenchmark.c -pthread -o output
  - ./output <read+write>:1/<seq>:2/<rand>:3 <BLOCK_SIZE> <THREAD>

  - **1. Read + Write Memory**
    - ./output 1 <BLOCK_SIZE> <NUMBER_OF_THREADS>
    - **Eg:** To run on 4 threads with 8KB as block size
      - ./output 1 8000 4

- **2. Sequential Write Memory**
  - ./output 2 <BLOCK_SIZE> <NUMBER_OF_THREADS>
  - **Eg:** To run on 4 threads with 8KB as block size
    - ./output 2 8000 4

- **3. Random Write Memory**
  - ./output 3 <BLOCK_SIZE> <NUMBER_OF_THREADS>
  - **Eg:** To run on 4 threads with 8KB as block size
    - ./output 3 8000 4

4. Disk Benchmark

- Add Disk_Benchmark.c file to the instance path
- Keep intended file that is to be read at same location on Bare Metal instance. **(Tested on Bare Metal, as program was triggering KILLED output due to insufficient available resources)**

- Run below command:

  - gcc Disk_Benchmark.c -pthread -o output
  - ./output <read+write>:1/<seq>:2/<rand>:3 <BLOCK_SIZE> <THREAD> <FILENAME>

  - **1. Read + Write File:**
    - ./output 1 <BLOCK_SIZE> <NUMBER_OF_THREADS><FILENAME>
    - **Eg:** To run on 4 threads with 8KB as block size
      - ./output 1 8000 4 read_file.txt

  - **2. Sequential Read File:**
    - ./output 2 <BLOCK_SIZE> <NUMBER_OF_THREADS><FILENAME>
    - **Eg:** To run on 4 threads with 8KB as block size
      - ./output 2 8000 4 read_file.txt

  - **3. Random Read File:**
    - ./output 3 <BLOCK_SIZE> <NUMBER_OF_THREADS><FILENAME>
    - **Eg:** To run on 4 threads with 8KB as block size
      - ./output 3 8000 4 read_file.txt

5. Network Benchmark

- **TCP**
    1. Run the TCPServer.jar file using the command:
        - java -jar TCPServer.jar
    2. Run the TCPClient.jar file using the command:
        - java -jar TCPClient.jar 127.0.0.1

- **UDP**
    1. Run the UDPServer.jar using the command:
        - java -jar UDPServer.jar
    2. Run the UDPClient.jar using the command:
        - java -jar UDPClient.jar 127.0.0.1