**I have made makefile for all file, run ./run.sh to make all file**

**Problem 4.1:**

*Please make the input files the same parent with the makefile and problem1 file*

To compile use:

**make problem1**

To run use:

**./problem1**

The output will be created and stored in a file named “moviesRating.txt” with the format look like this

Movie 1 has rated 3.878319

Movie 2 has rated 3.206107

Movie 3 has rated 3.033333

Movie 4 has rated 3.550239

Movie 5 has rated 3.302326

Movie 6 has rated 3.576923

Movie 7 has rated 3.798469

**Problem 4.2:**

You can compile separate files with:

**make sum\_serial**

**make sum\_multi-threads**

or compiling in 1 command

**make sum\_serial && make sum\_multi-threads**

To run file, the correct command should be like this:

**./sum\_serial number\_to\_cal**

**./sum\_multi-threads number\_of\_threads number\_to\_cal**

Or you can compile all of them in 1 command:

**./sum\_serial number\_to\_cal && ./sum\_multi-threads number\_of\_threads number\_to\_cal**

If you don’t do so, it will error

A close up of a text

Description automatically generated

With the correct inputs, the outputs should look like this:

A screenshot of a computer screen

Description automatically generatedA screenshot of numbers

Description automatically generated

I have added the runtime for easy comparing the efficiency of 2 programs

And with the 1 command line, it will be even easier:  
A screenshot of a computer

Description automatically generated

**Problem 4.3 (bonus):**

You need to open 2 terminal parallel to test this. My program is good except 1 thing that you can only sending 1 message in terminal once then you need to switch to next terminal. If you don’t do so, the second message will be received in the same terminal with the sending one

