Congratulation! After successful key generation and submitting it to our agency, you are allowed to start your first job.
As you probably know, we are dealing with secrets, and many of them are encrypted using prime numbers. Our staff is struggling with solving a simple question: Is a given number is prime or not! Just to remind you, A prime number (or a prime) is a natural number greater than 1 that is not a product of two smaller natural numbers.
Please help the team working on this task, and find a way to check a number for being a prime or not, as fast as you can. We are expecting from you brilliant results! Good Luck!

Technical details:
We provide a tool, named “primeSlow” for its slowness. It can generate and check 100 primes in about 12 seconds. The usage is like this: ./primeSlow 6 100, where 6 is the random seed for nums generation, and 100 is the amount of numbers it needs to check. The output is the sum of the primes were found, and the amount of them. While developing your solution, please check that your results are equals to the expected one by the primeSlow tool. (The source code provided too, so you can get a basic idea and a template for future work).
As the solution will run on our hidden embedded device, keep an eye of the amount of memory you can use. It should not be more than 1MB of RAM usage.

We already tested (with a lot of patient) a few combinations for you. Here are the results:
input: <seed> <total_numbers> output: <primes_sum>,<prime_numbers>
input: 6 10000000 output: 513297223889453,490503
input: 7 10000000 output: 512007894110879,489247
input: 9 10000000 output: 512161926686405,489533
input: 12 100000000 output: 5118949132950395,4893869

On your result, keep the output format the same. (sum, count)

Remember, we are looking for the best talents, and awesome solutions!
We already know that our competitors managed to improve 35.5minutes to be only 0.013s on a home laptop. We were already able to steal their solution (executable provided), but we cannot guest how it’s made. Harry up!

Administrative details:
Doc Version: 1.1 updated on 12/05/21
Publication date: 02/05/21
Submission date: 17/05/21 – extended to 24/05/21 (expecting for better solution)
What you need to submit:
1) a C file, named **solution.c**
2) a **Make** file for your solution, including **default** and **clean** options,that will generate an executrion file named **solution**
3) Show, by providing a screenshot, **the results** and the **execution time** of the next options:
    a) 6 10000 for the primeSlow tool
    b) 6 10000 for your solution
    c) 6 10000000
    d) 7 10000000
    e) 9 10000000
    f) 12 100000000

The form of submission:
A ZIP file (Not RAR, Not 7z), named as your ID.zip
If you did the work with your mate, name it ID_ID.zip

Warning: the task is **very CPU consuming**, be aware of this,
and provide good ventilation for your PC. We are not taking any guaranties for your hardware.
If you are not sure about it, you can get to the campus and use a classroom pc (Building 9).

The task intends to be checked automatically. Therefore:
1) Please, don't add any unnecessary folders, or files, as the submission may be ignored
2) You should provide a zip archive (nor rar/7z/tar etc.). Files in a wrong archive will not be checked
3) A working make file is a MUST for the task. Broken make (for any reason), will cause the whole work to get a zero mark, even if the code perfect.
Beware of using mac OS, windows subsystem, and so on, as they may append changes
4) The executable should be named according to the task. Wrong name will lead to a zero (0) mark.
5) Don't wait for the last day to submit your work. No excuses like "pc fall from 5-th flor, water ruined the memory, windows update brooked the file system" and so on will be accepted.
Verify on the moodle website, that the work is submitted. You may (but not have to) provide a screenshot of the submission.
6) If you are late with the submitting and have a good reason (Reserves, seeks, wedding, etc.), you have to provide evidence for that, and you can not submit with another person who is your pair, but don't have any reason being late. The penalty for being late without a reason will be 10 points for a day, and you MUST update your trainer about that, and follow the instruction if they exist.
7) A screenshot from camera/phone is not accepted
8) Execution time is measured by the time shell command
9) If the results of your solution are different from the listed in the task, you will get zero (0) mark
10) The screenshots of paragraph 3 may be provided as one big png file named **3.png**, or separate png files,with proper name (like **3_a.png** to **3_f.png**)

Once you got marks, and you are not satisfied, you can apply to os2021targilim@gmail.com for clarifications.

Bonus part!
The best result we are aware of, is:
input 55 55555555 output 2842479214816014,2718640 time 43 sec
Try to beat the result, and get a bonus of the % you improved it (but not more than 50) for your HW.
F.ex if you got it for 32 sec, 43/32 - 1 = 0.343 , so you will get 34 bonus points for any HW of the course. To claim for the bonus, please provide a screenshot named **original.png** with the provided solution running time and **bonus.png** of your results, and your CPU exact model.

Update on 12/5/21. The competitors are not wasting their time, and already improved their results to be less than 25 sec. Please note, that submitting the bonus after the 17/05/21 should beat their new results.

Optional: If you proud of yourself, try to verify if this answer is correct, and if not, where is the error.
Input 55 500000000 output 2559683829466674 2,24473126 time 382 sec.
Provide an evidence , in a form of a screenshot named **myvariant.png** for your results