Take home quiz - appendix

I've added this note to clear up a few common doubts.

Convert your code to be have exactly one argument, which takes in the name of the file to read the input from. Eg:-

>> ./a.out roads.txt

No request will be of the form x,x (i.e both realms are the same.)

There are 5 required submissions. 3 C files for 3 of the programming questions, a text file for question number 2 and a one page pdf report.

Worst case scenario for question number 2 - Like how a fully sorted list runs causes quicksort to run extremely slowly, (https://www.geeksforgeeks.org/when-does-the-worst-case-of-quicksort-occur/) there is a certain type of input, which would take longer for the program in question 1 to run, as opposed to other type of inputs. The measured difference in time will not be noticeable on smaller test cases, like with 16 realms and 15 roads. The goal is to identify the pattern in such an input and describe it. Add this description to your one page report.

Your code is expected to handle upto $10^{**}8$ cities and requests. Do not worry if your system cannot handle it, my system can. Just ensure your code can handle such sizes.

Use the one page report to mention how long each of your codes takes on input's of various sizes, both in terms of cities and requests - 100 requests, $10^{**}5$ requests, $10^{**}7$ requests (If your system can handle it! :p).

Ensure the time it takes your program to run is mentioned in an integer count of milliseconds. This must be printed into the second line of your output file. Eg:- of a sample output: (For some input)

```
11111010010101
12 ms
```

Please avoid basic mistakes! Your code's output style must exactly match the above output. Add header and within code comments, adhere to file naming conventions as this quiz's correction will be automated. We will test your code against multiple hidden testcases. I've given a few tests on moodle, to check the correctness of your code by yourself.

You may use overleaf/latex to create your report. It's not necessary, but it is a good habit to pick it up early. (https://www.overleaf.com/read/vtsrszgrstbz) is a sample template from one of my earlier courses.