



Programming Assignment - Rate Limiter

Create a rate limiter program using a sliding window which allows/blocks request based on timestamps. Program will receive sequence of timestamps via arguments. For each timestamp it has to output allowed/blocked based on the sliding window.

Sliding window to have 2 configurations,

R: maximum number of requests allowed in sliding window

S: sliding window time period in seconds

For example

R = 2, S = 5 means maximum 2 requests are allowed in previous 5 seconds Request arrives in following seconds: 1, 2, 4, 5, 6, 7, 8, 9
1 - allowed # In previous 5 seconds 0 requests allowed - []
2 - allowed # In previous 5 seconds 1 request allowed - [1]
4 - blocked # In previous 5 seconds 2 requests allowed - [1, 2]
5 - blocked # In previous 5 seconds 2 requests allowed - [1, 2]
6 - blocked # In previous 5 seconds 2 requests allowed - [1, 2]
7 - allowed # In previous 5 seconds 1 request allowed - [2]
8 - allowed # In previous 5 seconds 1 request allowed - [7]
9 - blocked # In previous 5 seconds 2 requests allowed - [7, 8]

Program arguments

Rate Limiter program to accept 3 or more arguments

0th argument is for specifying R

1st argument is for specifying S

2nd argument onwards for specifying sequence of timestamps in ascending

order Running the program

ratelimiterto accept arguments and to produce output as follows

```
$ ratelimiter 2 5 1 2 4 5 6 7 8 9
1 allowed
2 allowed
4 blocked
5 blocked
6 blocked
7 allowed
8 allowed
9 blocked
```

For simplicity 1 to 9 are used above, program has to support the unix timestamp like 1628679347

Instructions for the assignment



Code

Please provide solution in any one of following languages, C, C++, Java, Golang, Python The assignment has to be provided as a text file(s) with appropriate extn (.c, .cpp, .java, .go, .py) Don't provide assignment as pdf, work or any otherfile format

Make sure to use standard headerfiles. For ex `bits/stdc++.h` is not a standard headerfile

Documentation

Provide a README.md file with following details

How did you build and run the program

Runtime environment it was developed such as OS, language version

Sample input and output tested