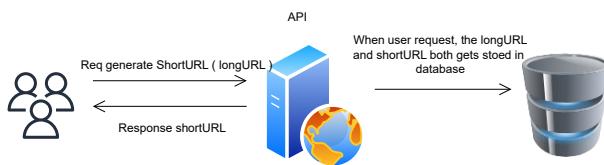
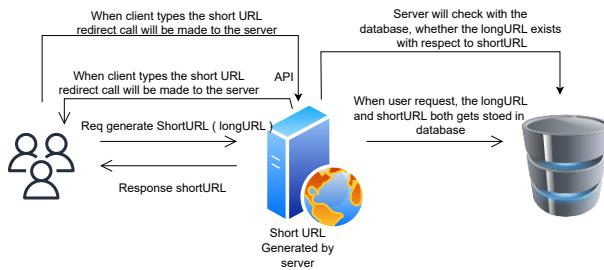


HIGH LEVEL DIAGRAM

1.URL Generation



2. URL Validation when Short URL is Entered



LOW LEVEL DESIGN

1. Approaches to generate shortURL from longURL

Approach 1: ENCRYPTION

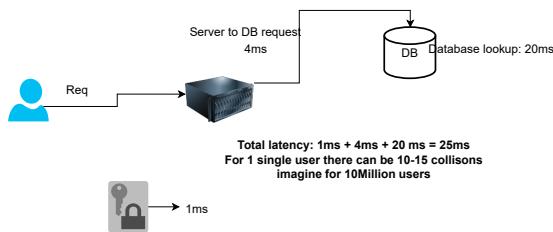
We can encrypt the long URL using some encryption algorithms like MD5, SHA1, BASE64 etc. and convert it to shortURL.

Problems with this approach:

1. Long encrypted text but we need shortURL ..if we shorten encrypted text then the starting 4-5 characters that we choose may be same for encrypted ID's of 2 different long URLs

Resolution :

We can lookup the database ,if same 4-char bytecode exist in DB if yes we can generate a new unique code again using MD5 algorithm.



Still many problems arise as --
1 Whole DB scan again and again.

2. Large number of collisions.
3. Latency issues- due to collisions.

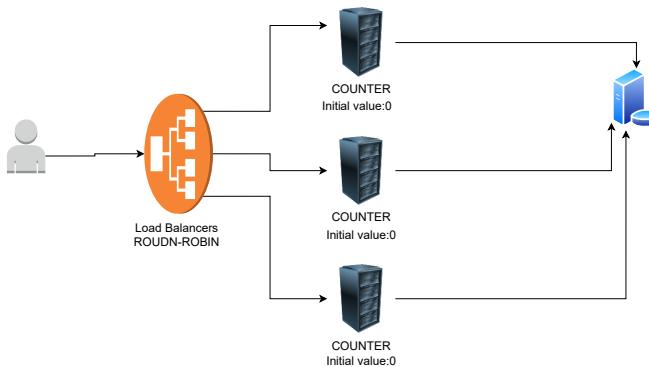
Approach 02: Counter Approach



Server will check in the local storage the value of the counter, based on this we will store short url in db and send it to user also

Problem with this approach
Server - SPOF, Single point of failure-
wouldn't be able to handle 100 Million
user requests

Resolution --
Scaling --no vertical
possible but we can do
horizontal scaling



Now the PROBLEM of dirty read arises as server 1's counter may have some other value as compared to server 2's value for same URL.

RESOLUTION to this is --
make a global counter globally available using
cache(REDIS)

