**Golang-Redis project Citymall**

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**Methodology:**

**GEOADD key{maps} Longitude Latitude Member{Pincode}**

**Pincode Versioning:**

The above is the redis function we are using to add a particular pincode to our database. In this function the member acts as a unique “Id” like Primary Key in SQL databases. So, when a point: Point 1 is initially added for say ”431513” it gets added but when say Point 2: which is outside 1 km range of Point 1 but still has pincode 431513 we were unable to add. So, I created a Pincode versioning function that maps the previous versions and add the proper version for our requested pincode to cache. So, we can add that co-ordinate as well and every pincode entry in our cache is unique. This versioning is internal implementation of the code and wont be visible to Client, only pincode is generated.

**Edge Cases and proposed solutions:**

**1. The points at the boundary of 2 different pincodes.**

**Sol.** When we receive the output via GEORADIUS command and if we get the output as 2 different pincodes then there are two solutions to it:

1. If cost saving is aim, we can output the pincode with highest count
2. Calling API whenever we have 2 different pincodes as ouput. I personally prefer method 2 as it will eventually increase the accuracy of our redis cache.

**2.Chain effect can happen if requests of consecutive pincodes are also consecutively.**

**Sol.** I have added the Request\_Count variable in our server so we need to decide threshold say 20, i.e., after every 20 requests once we will call the API

**3. We need to add latitude and longitude bounds of India so as the output pincode is of India only.**

**4. Inability to add same pincode is the flaw of redis, but it is an implementation issue and I have addressed that in my code.**

**File details**

**Link to GitHub repo:** [**https://github.com/asm-walking-theatre/Golang-Redis**](https://github.com/asm-walking-theatre/Golang-Redis)

I have implemented the proposed solution and tested it for a variety of range of latitude and longitudes in India. This is curated as of now for Citymall assuming all incoming client requests are from India and we need a 6-digit pincode.

**Files:**

1. **main.go** : This is the server file which needs to execute first and the server is started
2. **client.go** : This is the client file to send requests to server and it returns pincode

Note: A sample output response of both main.go and client.go are attached in the repo

Note: Redis server needs to be running for the code to get executed.