**Location Based Services(OSM API)**

**Open Street Map Api:**

**Steps to Implement**

1. Add Retrofit Dependency (For making API requests)
2. Create API Interface for Nominatim
3. Fetch Address using Latitude & Longitude
4. Display the Address in Your UI

**1. Add Dependencies in build.gradle (Module: app)**

dependencies {

implementation 'com.squareup.retrofit2:retrofit:2.9.0'

implementation 'com.squareup.retrofit2:converter-gson:2.9.0'

}

**2. Create API Interface (NominatimApi.kt)**

import retrofit2.Call

import retrofit2.http.GET

import retrofit2.http.Query

interface NominatimApi {

@GET("reverse")

fun getAddress(

@Query("lat") lat: Double,

@Query("lon") lon: Double,

@Query("format") format: String = "json"

): Call<NominatimResponse>

}

**4️. Create Data Model (NominatimResponse.kt)**

data class NominatimResponse(

val display\_name: String

)

**5️. Set Up Retrofit (RetrofitClient.kt)**

import retrofit2.Retrofit

import retrofit2.converter.gson.GsonConverterFactory

object RetrofitClient {

private const val BASE\_URL = "https://nominatim.openstreetmap.org/"

val instance: NominatimApi by lazy {

Retrofit.Builder()

.baseUrl(BASE\_URL)

.addConverterFactory(GsonConverterFactory.create())

.build()

.create(NominatimApi::class.java)

}

}

**6️. Fetch Address on Button Click (MainActivity.kt)**

import android.os.Bundle

import android.widget.Button

import android.widget.TextView

import androidx.appcompat.app.AppCompatActivity

import retrofit2.Call

import retrofit2.Callback

import retrofit2.Response

class MainActivity : AppCompatActivity() {

override fun onCreate(savedInstanceState: Bundle?) {

super.onCreate(savedInstanceState)

setContentView(R.layout.activity\_main)

val btnGetAddress: Button = findViewById(R.id.buttonGetAddress)

val addressTextView: TextView = findViewById(R.id.textViewAddress)

btnGetAddress.setOnClickListener {

val latitude = 12.9716 // Example: Bangalore

val longitude = 77.5946

getAddressFromAPI(latitude, longitude, addressTextView)

}

}

private fun getAddressFromAPI(lat: Double, lon: Double, textView: TextView) {

val call = RetrofitClient.instance.getAddress(lat, lon)

call.enqueue(object : Callback<NominatimResponse> {

override fun onResponse(call: Call<NominatimResponse>, response: Response<NominatimResponse>) {

if (response.isSuccessful) {

textView.text = response.body()?.display\_name ?: "Address not found"

}

}

override fun onFailure(call: Call<NominatimResponse>, t: Throwable) {

textView.text = "Failed to get address"

}

})

}

}

**7️. Update Your UI (Inside activity\_main.xml)**

<Button

android:id="@+id/buttonGetAddress"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Get Address" />

<TextView

android:id="@+id/textViewAddress"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Address will appear here" />

**How It Works**

* Click the button, and it sends a request to OpenStreetMap's Nominatim API.
* The API returns the full address (including door number, area, city, state, and country).
* The address is displayed inside the TextView.

**Output:**

