**Business Document**

**Project Title**: Real-Time Bank Locator

**Objective**:

To develop a lightweight and efficient Spring Boot application that accepts a user's ZIP code and returns a list of banks within a 10-mile radius. The system leverages Google Maps APIs to perform geolocation and distance calculations, delivering real-time bank data without requiring a local database.

**Key Goals:**

1. Spring Boot Framework: Utilize Spring Boot to build a RESTful service with clean modular architecture.
2. REST API Development: Create a secure and responsive endpoint that receives a ZIP code and returns a list of nearby banks.
3. Google Maps API Integration: Use Google Maps Geocoding and Places APIs to convert ZIP codes to coordinates and retrieve nearby bank locations dynamically.

**Solution**

All components controller, service, utility, and model reside in a single Spring Boot module.

Key components include:

* **GoogleMapsAPI Utility**:

Uses the Google Geocoding API to convert ZIP codes into geographic coordinates (latitude and longitude).

Uses the Google Places API to search for banks within a 10-mile radius.

* **BankService**:

Calls the utility class to retrieve coordinates and fetch nearby bank information.

Filters and formats the result for the REST API response.

* **BankController**:

Exposes a REST endpoint /banks/nearby?zipcode=xxxx

Returns a list of banks in real-time with name and address information.