

Dotnet Developer Test Assignment

Objective: Develop a .NET Core API to manage blocked countries and validate IP addresses using third-party geolocation APIs (e.g., ipapi.co or [IPGeolocation.io](https://ipgeolocation.io)). The application should **not use a database** and instead rely on in-memory data storage.

Setup Instructions

1. Project Setup

- Create a **.NET Core Web API** (Version 7/8/9).
- Install NuGet packages:
 - Microsoft.Extensions.Http (for HTTP client integration).
 - Newtonsoft.Json (optional, for JSON parsing).
- Use **in-memory collections** (e.g., ConcurrentDictionary) to store blocked countries and logs.

2. Third-Party API Setup

- Sign up for a free API key from ipapi.co or [IPGeolocation.io](https://ipgeolocation.io).
 - Configure the API key in appsettings.json.
-

Features & Endpoints

1. Add a Blocked Country

- **Endpoint:** POST /api/countries/block
- **Input:** Country code (e.g., "US", "GB", "EG").
- **Action:** Store the country in the in-memory blocked list.
- **Validation:** Prevent duplicates.

2. Delete a Blocked Country

- **Endpoint:** DELETE /api/countries/block/{countryCode}
- **Action:** Remove the country from the blocked list.
- **Error Handling:** Return 404 if the country is not blocked.

3. Get All Blocked Countries

- **Endpoint:** GET /api/countries/blocked
- **Features:**
 - **Pagination:** Use page and pageSize query parameters.
 - **Search/Filter:** Filter by country code or name. (you can save the blocked countries info in memory so you can search on them)

4. Find My Country via IP Lookup

- **Endpoint:** GET /api/ip/lookup?ipAddress={ip}
- **Action:** Call the third-party API to fetch country details (e.g., country code, name, ISP).
- **Validation:** Make sure it's a valid IP Format
- **Note;** if the ipAddress is omitted then send the caller IP address using HttpContext.

5. Verify If IP is Blocked

- **Endpoint:** GET /api/ip/check-block
- **Action:**
 1. Fetch the caller external IP address automatically using HttpContext
 2. Fetch the country code using the third-party API using the fetched IP address.
 3. Check if the country is in the blocked list.
 4. **Log the attempt** (see Endpoint 6).

6. Log Failed Blocked Attempts

- **Endpoint:** GET /api/logs/blocked-attempts
- **Features:**
 - Return a paginated list of blocked attempts.
 - Each log entry should include:
 - IP address
 - Timestamp
 - Country code
 - Blocked status
 - UserAgent
- **Storage:** Use an in-memory list.

7. Temporarily Block a Country

- **Endpoint:** POST /api/countries/temporal-block
- **Action:**
 - Block a country for a **specific duration** (e.g., 2 hours). After expiration, the country is automatically unblocked
 - Create a background service that runs every 5 minutes to remove expired temporal blocks from the in-memory store
- **Request:** "countryCode" and "durationMinutes": 120 // Block duration in minutes (1-1440)
- **Validation:**
 - Ensure durationMinutes is between 1 and 1440 (24 hours).
 - Reject invalid country codes (e.g., "XX").
 - Prevent duplicate temporal blocks for the same country (return 409 Conflict if already temporarily blocked).

Evaluation Criteria

1. **API Integration:**
 - Proper use of HttpClient with async/await.
 - Handling API rate limits/errors gracefully.
 2. **In-Memory Storage:**
 - Thread-safe implementation (e.g., ConcurrentDictionary).
 3. **Endpoint Quality:**
 - Pagination, filtering, and search logic.
 - Clean request/response models.
 4. **Code Structure:**
 - Separation of concerns (e.g., services for API calls, repositories for in-memory data).
 5. **Testing** (Optional but encouraged):
 - Unit tests for core logic (e.g., blocking/unblocking countries).
-

References

1. [ipapi.co Documentation](#)
 2. [IPGeolocation.io Documentation](#)
 3. [.NET Core In-Memory Data Management](#)
-

Submission Guidelines:

- Share your Documentation and **GitHub Repository link** via email.
- The assignment is due in 4 Days.
- For API Documentation use Swagger

Send your submission to the following emails:

dev@atechnologies.info

CC:

mamoun@atechnologies.info

hr-egy@atechnologies.info
