API Design Document: Scalable Tracking Number Generator API

Overview:

Design and implement a RESTful API that generates unique tracking numbers for parcels. This API must be scalable, efficient, and capable of handling high concurrency.

Endpoint: GET /next-tracking-number

Request:

Name	Data Type	Description
origin_country_id	String	ISO 3166-1 alpha-2 country code for the origin (e.g., "MY").
destination_country_id	String	ISO 3166-1 alpha-2 country code for the destination (e.g., "ID").
weight	Float	Order weight in kilograms (up to 3 decimal places, e.g., "1.234").
created_at	String	Order creation timestamp in RFC 3339 format (e.g., "2018-11-20T19:29:32+08:00").
customer_id	UUID	Customer's unique identifier (e.g., "de619854-b59b-425e-9db4-943979e1bd49").
customer_name	String	Customer's name (e.g., "RedBox Logistics").
customer_slug	String	Customer name in slug-case/kebab-case (e.g., "redbox-logistics").

Request DTO:

```java
public class TrackingNumberRequest {

    private String originCountryId;

    private String destinationCountryId;

    private Double weight;

    private OffsetDateTime createdAt;

    private UUID customerId;

    private String customerName;

    private String customerSlug;

}
```

Response DTO:

```java
public class TrackingNumberResponse {

    private String trackingNumber;

    private OffsetDateTime createdAt;

    private String originCountryId;

    private String destinationCountryId;

}
```

Response Body:

Response code: 200

Example value:

{

 "tracking_number": "MYID1A2B3C4D5E6F",

 "created_at": "2023-03-19T12:34:56+08:00",

 "origin_country_id": "MY",

 "destination_country_id": "ID"

}

Validation Rules:

- The generated tracking number must:
  - Match the regex pattern: `^[A-Z0-9]{1,16}$`
  - Be unique (no duplicate tracking numbers allowed).
  - Be generated efficiently.