**1. Architecture**

1. **API Gateway** – Public endpoint for receiving JSON objects.
2. **Lambda 1** – Validates JSON.
   * If valid: creates an SNS topic and subscription and sends an email.
   * If invalid: stores item in DynamoDB and schedules a deletion event.
3. **DynamoDB (Single Table Design)** – Stores invalid JSON with a TTL attribute for 24-hour automatic deletion.
4. **EventBridge scheduler** – Triggers a deletion Lambda exactly 30 minutes after inserting an item into the table (bonus).
5. **Lambda 2** – Deletes the item and sends a notification.
6. **SNS** – Sends emails for valid items and deletion notifications.
7. **DynamoDB Streams (Optional)** – Detects TTL-based deletions and triggers a Lambda for notifications.

**2. Alternatives**

* Use **Fargate** or **App Runner** instead of API Gateway + Lambda.
* Use **S3** with lifecycle rules instead of DynamoDB.
* Use **SES** directly for emails instead of SNS.