**Assumptions**

1. **Email Sending**:
   * Used Mailtrap to send emails in development.
   * For production, it can be replaced with SMTP (e.g., Gmail, Outlook) or third-party providers like SendGrid or Mailgun.
2. **Storage**:
   * OTP is stored in-memory (using a ConcurrentDictionary).
   * Can be replaced with Redis or SQL Server for persistence and scalability.
3. **OTP Expiry**:
   * OTP is valid for 1 minute after generation.
4. **OTP Attempts:**
   * Maximum of 10 attempts per OTP before locking out or regenerating.
5. **Email Configuration**:
   * SMTP and sender details are placed in appsettings.json for local environment flexibility and security.

**Testing Strategy**

**Tools Used**

* **Swagger UI** (for manual API testing)
* **Mailtrap** (for email inbox verification)

**Test Scenarios**

**1. Send OTP**

* **Endpoint**: POST /Emails/sendotp
* **Steps**:
  + Enter a valid email (e.g., bnirmala91@gmail.com) in Swagger UI.
  + Click **Execute**.
  + On success, response message:  
    -> OTP has been sent successfully
  + Login to **Mailtrap** → Sandbox → View the email and copy the OTP.
* **Failure cases**:
  + Invalid email format → Email address is invalid
  + Sending failed → Email address does not exist or sending to the email has failed

**2. Verify OTP**

* **Endpoint**: POST /Emails/verifyotp
* **Steps**:
  + Enter the same email and the OTP received.
  + Click **Execute**.
  + On success, response:  
    -> OTP is valid and checked
* **Validation checks**:
  + OTP is not expired (must be used within 1 minute).
  + Email must match a previously generated OTP.
  + OTP attempts must be ≤ 10.
  + OTP must match exactly.

**Manual Mailtrap Login for Verification**

* **Website**: https://mailtrap.io
* **Login**:
  + Email: bnirmala91@gmail.com
  + Password: test@emailOTP1
* Navigate to **Inbox → Sandbox** to view the latest OTP email.