Email OTP Authentication Documentation

**Overview**

The Email OTP module provides a secure way to authenticate users via a One-Time Password (OTP) sent to their email address. This module is implemented using ASP.NET Core and Microsoft SQL Server. The core functionalities include generating an OTP and verifying the OTP entered by the user.

**API Functions**

**1. Generate OTP**

Controller: OtpController

Function: GenerateOtp(string email)

**Description**

Generates a 6-digit OTP for the specified email address and sends it to the email if the domain matches the allowed domain (`.dso.org.sg`). If the request has wrong email then it returns incorrect email status.  
  
Success and failure messages by the API method

* STATUS\_EMAIL\_OK: email containing OTP has been sent successfully.
* STATUS\_EMAIL\_FAIL: email address does not exist or sending to the email has failed.
* STATUS\_EMAIL\_INVALID: email address is invalid.

**2. Verify OTP**

Controller: OtpController

Function: VerifyOtp(VerifyOtpRequest request) : VerifyOtpRequest is a model which accepts email and OTP for verification.

**Description**

Verifies the OTP entered by the user against the OTP generated and sent to their email. Allows up to 10 attempts or a timeout of 1 minute.

Success and failure messages by the API method

* STATUS\_OTP\_OK: OTP is valid and checked
* STATUS\_OTP\_FAIL: OTP is wrong after 10 tries
* STATUS\_OTP\_TIMEOUT: timeout after 1 min

Database Design  
  
The database is created in Microsoft SQL and has script of create table and 2 Store Procedure.

* TableCreation :
* InsertOTP
* ValidateOTP

**Testing Plan**

We can test the API through swagger (as it the installed with application) or Using PostMan.

- Validate email domain check.

- Test OTP generation logic.

- Ensure proper handling of invalid email addresses.

- Verify the end-to-end flow of OTP generation and email delivery.

- Validate OTP verification with valid and invalid inputs.

- Test timeout and maximum retry scenarios.

- Test OTP generation and email delivery under high load.

- Measure response time for OTP verification.