

Constraints

Email (Forgot Password Page)

1. Must contain "@" and "." (e.g., `user@example.com`).
2. Must have characters before "@" and after the last ".".
3. No spaces allowed.
4. Must exist in the database.
5. Email is normalized to lowercase.

OTP (Reset Password Page)

1. Must be exactly 6 digits.
2. Only numeric characters allowed (0-9).
3. Must match the OTP stored in the database.
4. Valid for only 5 minutes (300 seconds).
5. One-time use only (deleted after successful verification).

New Password (Reset Password Page)

1. Minimum length: 6 characters.
2. Cannot be the same as the current password.
3. Must match confirm password field.

Equivalence Class

1. Email Field (Forgot Password)

| Class ID | Description | Type | Expected Result |
|----------|-------------------------------------|---------|--|
| E1 | Valid email that exists in database | Valid | Accepted |
| E2 | Missing the "@" symbol | Invalid | Error: "Please enter a valid email address." |
| E3 | Missing the "." symbol | Invalid | Error: "Please enter a valid email address." |
| E4 | Contains spaces | Invalid | Error: "Please enter a valid email address." |
| E5 | Too short (< 5 characters) | Invalid | Error: "Please enter a valid email address." |
| E6 | Too long (> 320 characters) | Invalid | Error: "Please enter a valid email address." |

2. OTP Field (Reset Password)

| Class ID | Description | Type | Expected Result |
|----------|-----------------------------------|---------|----------------------------------|
| O1 | Valid 6-digit OTP | Valid | OTP verified successfully. |
| O2 | Less than 6 digits | Invalid | Error: "OTP must be 6 digits." |
| O3 | More than 6 digits | Invalid | Input blocked (Max length 6). |
| O4 | Contains non-numeric characters | Invalid | Input blocked (Numeric only). |
| O5 | Correct length but wrong OTP code | Invalid | Error: "Invalid or expired OTP." |
| O6 | Expired OTP (> 5 minutes) | Invalid | Error: "Invalid or expired OTP." |

3. Set New Password Field

| Class ID | Description | Type | Expected Result |
|----------|---|---------|---|
| P1 | Valid password (≥ 6 chars) | Valid | Password reset successfully. |
| P2 | Valid minimum length (Exactly 6 chars) | Valid | Accepted. |
| P3 | Too short (< 6 chars) | Invalid | Error: "Password must be at least 6 characters long." |
| P4 | Empty password | Invalid | Error: "Please fill in all fields." |

Test cases

1. Forgot Password - Email Validation

| Test Case ID | Input Data | Equivalence Class | Expected Result |
|--------------|-------------------------|-------------------|--|
| TC01 | Email: user@example.com | E1 | OTP sent successfully. Navigate to reset password page after 2s. |
| TC02 | Email: examplegmail.com | E2 | Error: "Please enter a valid email address." |
| TC03 | Email: user@examplecom | E3 | Error: "Please enter a valid email address." |
| TC04 | Email: user@example.com | E4 | Error: "Please enter a valid email address." |

| | | | |
|------|--|-----|--|
| TC05 | Email: a@b.c | E5 | Error: "Please enter a valid email address." |
| TC06 | Email: a(repeated 321 times)@example.com | E6 | Error: "Please enter a valid email address." |
| TC07 | Email: <user>@example.com | E7 | Error: "Please enter a valid email address." |
| TC08 | Email: nonexistent@du.ac.in | E8 | Error: "No account found with this email address." (404) |
| TC09 | Email: [Empty Field] | E9 | Error/Validation: "Please fill out this field." |
| TC10 | Email: User@Example.COM | E10 | OTP sent successfully (email normalized to lowercase). |

2. Reset Password - OTP Validation

| Test Case ID | Input Data | Equivalence Class | Expected Result |
|--------------|-----------------------------------|-------------------|---|
| TC14 | OTP: 123456 (Correct) | O1 | OTP verified successfully. Password reset allowed. |
| TC15 | OTP: 12345 (5 digits) | O2 | Error: "OTP must be 6 digits." |
| TC16 | OTP: 1234567 (7 digits) | O3 | Frontend blocks input at 6 characters (maxLength). |
| TC17 | OTP: 12a456 (Contains letters) | O4 | Frontend blocks non-numeric input. |
| TC18 | OTP: 999999 (Wrong OTP) | O5 | Error: "Invalid or expired OTP. Please request a new one." |
| TC19 | OTP: 123456 (Expired >5 min) | O6 | Error: "Invalid or expired OTP. Please request a new one." |

3. Reset Password - **New Password Validation**

| Test Case ID | Input Data (New / Confirm) | Equivalence Class | Expected Result |
|--------------|----------------------------|-------------------|--|
| TC20 | NewPass123 / NewPass123 | P1 | Password reset successfully. Navigate to login after 3s. |
| TC21 | Pass12 / Pass12 (6 chars) | P2 | Password reset successfully. |
| TC22 | Pass1 / Pass1 (5 chars) | P3 | Error: "Password must be at least 6 characters long." |
| TC23 | [Empty] / [Empty] | P4 | Error: "Please fill in all fields." |
| TC24 | NewPass123 / NewPass456 | P5 | Error: "Passwords do not match." |

4. Integration, Flow & Security

| Test Case ID | Scenario / Input | Expected Result |
|--------------|--|---|
| TC25 | Complete Flow: Valid email => Receive OTP => Enter OTP => Set new password | Success: Password reset, redirected to login. |
| TC26 | Resend OTP: Click "Resend OTP" button | New OTP sent, old OTP invalidated. |
| TC27 | Auto-fill: Navigate from forgot password page | Email auto-filled in reset password page. |
| TC28 | Navigation: Click "Back" button on reset page | Returned to the forgotten password page. |
| TC29 | UI State: Click "Send OTP" | Button shows "Sending OTP...", disabled. |
| TC30 | SQL Injection: Email: ' OR '1'='1 | Rejected by email validation. |