

ĐẠI HỌC QUỐC GIA TP.HỒ CHÍ MINH

TRƯỜNG ĐẠI HỌC KHOA HỌC TỰ NHIÊN

KHOA CÔNG NGHỆ THÔNG TIN



Môn học: Kiểm thử phần mềm

Project report

Domain Testing

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Thành phố Hồ Chí Minh, ngày 10 tháng 6 năm 2025

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Task Allocation

Member Name	Member ID	Tasks Handling
Nguyễn Phúc An	22127002	Update User Profile Change Password Edit Product
Trần Nhật Huy	22127164	Order Products User Registration
Phạm Đình Khôi	22127211	Add favourite products Log in
Nguyễn Quốc Thuần	22127406	Contact Add Products

Bảng 1: Task Allocation among Group Members

1 Design Process

1.1 Description

1.1.1 Equivalence Partitioning

- Equivalence Partitioning Method is also known as Equivalence class partitioning (ECP). It is a software testing technique or black-box testing that divides input domain into classes of data, and with the help of these classes of data, test cases can be derived. An ideal test case identifies class of error that might require many arbitrary test cases to be executed before general error is observed.
- In equivalence partitioning, equivalence classes are evaluated for given input conditions. Whenever any input is given, then type of input condition is checked, then for this input conditions, Equivalence class represents or describes set of valid or invalid states.
- For this homework, we will identify 2 significant features from the ToolShop Website and design appropriate partitions that both valid and invalid equivalence classes.

1.1.2 Boundary Value Analysis

- Boundary Value Analysis is based on testing the boundary values of valid and invalid partitions. The behavior at the edge of the equivalence partition is more likely to be incorrect than the behavior within the partition, so boundaries are an area where testing is likely to yield defects. It checks for the input values near the boundary that have a higher chance of error. Every partition has its maximum and minimum values and these maximum and minimum values are the boundary values of a partition.

1.2 Design details

- Below are 3 selected features for applying BVA and EP
 - Update User Profile (Registered User)
 - Edit User (Admin)
 - Edit Product (Admin)

1.2.1 Feature 1. Update User Profile (Admin)

- Input description and Constraints
- Apply Equivalence Partitioning

Input	Input Type	Constraints
First Name	String	Required, max 40 characters
Last Name	String	Required, max 20 characters
Date of Birth	Date	Required, not in future
Address	String	Required, max 70 characters
Postal Code	String	Optional, max 10 characters
City	String	Required, max 40 characters
State	String	Optional, max 40 characters
Phone	String	Optional, digits only, max 24 characters.
Email	String	Required, follow email format, max 60 characters

Field	Valid Partitions	Invalid Partitions
First Name	NotNull Not empty String and Length ≤ 40	Null Length > 40 Non-string type String length = 0
Last Name	String and Length ≤ 20	Null Length > 20 Non-string type String length = 0
Date of Birth	Valid date in the past from the current test date Not empty Not null	Valid date in the future from the current test date Empty Null
Address	Not empty Not null String and length ≤ 70	Empty Null Non-string type String and length > 70
Postal Code	Null String length ≤ 10	String length > 10 Non-string type
Phone	Null Digits-only string Empty Length ≤ 24	Contains letters Non-string type Length > 24
City	Not Null Not empty String length ≤ 40	Null Empty String length > 40
State	Null Empty String length ≤ 40	Null Empty String length > 40
Email	Not Null Not Empty Valid email format and Length ≤ 60	Null Empty Invalid email format Valid email format Length > 60

Bảng 2: Equivalence Partitioning for Selected Fields

- Apply Boundary Value Analysis

Field	Valid Boundary Values	Invalid Boundary Values
First Name	1 character 40 characters	0 characters (41 characters
Last Name	1 character 20 characters	0 characters 21 characters
Date of Birth	Valid date in the past (e.g., today - 1 day) Current date	Empty Future date (e.g., today + 1 day)
Address	1 character 70 characters	0 characters 71 characters
Postal Code	0 characters (nullable) 10 characters	11 characters
City	1 character 40 characters	0 characters 41 characters
State	0 characters (nullable) 40 characters	41 characters
Phone	1 digit 24 digits	0 characters (non-digit or empty) 25 digits Non-digit characters (e.g., "123abc")
Email	Valid email format (e.g., "a@b.com") 60 characters	61 characters Invalid email format (e.g., "abc@", "abc") Empty

1.2.2 Feature 2. Change Password (Registered User)

- Input description and Constraints

Input	Input Type	Constraints
Current Password	String	Required, must match the user's existing password on the system
New Password	String	Required, must be different from current password, minimum 8 characters, should include letters and digits (or follow password policy)
Confirm New Password	String	Required, must match the new password exactly

Bảng 3: Input Fields and Constraints for Change Password Form

- Apply Equivalence Partitioning
- Apply Boundary Value Analysis

Field	Valid Partitions	Invalid Partitions
Current Password	Typical correct password	Empty string Wrong password
New Password	8 characters (min allowed) Very long but accepted length (e.g., 64)	0–7 characters (too short) Same as current password
Confirm New Password	Exact match with new password	Mismatch with new password Empty string

Bảng 4: Boundary Value Analysis for Change Password Form

Field	Valid Boundary Values	Invalid Boundary Values
Current Password	Typical correct password (e.g., "Old-Pass123")	Empty string Incorrect password
New Password	8 characters	7 characters Same as current password
Confirm New Password	Exact match with new password	Mismatch with new password Empty string

Bảng 5: Boundary Value Analysis for Change Password Form

1.2.3 Feature 3. Edit product (Admin)

- Input description and Constraints
- Apply Equivalence Partitioning
- Apply Boundary Value Analysis

Input	Input Type	Constraints
Product Name	String	Required, max 120 characters
Description	String	Required, max 1250 characters
Stock	Integer	Required, must be ≥ 0
Price	Decimal	Required, must be a non-negative number if provided

Bảng 6: Input Constraints for Edit Product Form

Field	Valid Equivalence Classes	Invalid Equivalence Classes
Product Name	Non-empty string, length ≤ 120 characters	Empty string String > 120 characters Non-string type (e.g., number, array)
Description	Non-empty string, length ≤ 1250 characters	Empty string String > 1250 characters Non-string type
Stock	Integer ≥ 0 Not null Not empty	Negative number Non-integer type (e.g., string, float, null) Null Empty
Price	Decimal ≥ 0 Null (if optional)	Negative number Non-numeric (e.g., string, array)

Bảng 7: Equivalence Partitioning for Edit Product Form

Field	Valid Boundary Values	Invalid Boundary Values
Product Name	1 character 120 characters	0 characters (empty) 121 characters
Description	1 character 1250 characters	0 characters (empty) 1251 characters
Stock	0 Non-empty integer Not-null integer	-1 Non-integer (e.g., "ten") Empty integer Null integer
Price	0.0 Small positive (e.g., 0.01)	-0.01 Non-numeric (e.g., "free")

Bảng 8: Boundary Value Analysis for Edit Product Form

2 Test Case Documentation

2.1 Feature 1. Update User Profile

2.1.1 First Name

Test Case ID	TC_FN_EP_001
Title	First Name - Valid input
Preconditions	Individual has already logged in successfully

Inputs: First Name = "Nguyen"

Test Steps:

- Navigate to the form
- Enter "Nguyen" in First Name field

Expected Result: Accepted without error.

Actual Result: (To be filled after execution)

Result: Pass

Type: EP

Test Case ID	TC_FN_BVA_001
Title	First Name - Min boundary (1 char)
Preconditions	Individual has already logged in successfully

Inputs: First Name = "A"

Test Steps:

- Open the form
- Enter "A" in First Name field

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_FN_BVA_002
Title	First Name - Max boundary (40 chars)
Preconditions	Individual has already logged in successfully

Inputs: First Name = "AA"

Test Steps:

- Navigate to the form
- Input 40-character string in First Name

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_FN_BVA_003
Title	First Name - Exceed max (41 chars)
Preconditions	Individual has already logged in successfully

Inputs: First Name = "AAA"

Test Steps:

- Navigate to the form
- Input 41-character string in First Name
-

Expected Result: Validation error is displayed.

Actual Result: The First name must not greater than 40 chars

Result: Pass

Type: BVA

Test Case ID	TC_FN_EP_002
Title	First Name - Empty string
Preconditions	Individual has already logged in successfully

Inputs: First Name = ""

Test Steps:

- Navigate to the form
- Leave First Name empty

Expected Result: Validation error for required field.

Actual Result: The First Name must no be empty

Result: Pass

Type: EP

Test Case ID	TC_FN_EP_003
Title	First Name - Null value
Preconditions	Individual has already logged in successfully

Inputs: First Name = null

Test Steps:

- Navigate to the form
- Do not provide First Name input (simulate null)

Expected Result: Validation error for required field.

Actual Result: The first name must not be empty

Result: Pass

Type: EP

2.1.2 LastName

Test Case ID	TC_LN_EP_001
Title	Last Name - Valid input
Preconditions	Individual has already logged in successfully

Inputs: Last Name = "Tran"

Test Steps:

- Navigate to the form
- Input "Tran" into Last Name field
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_LN_BVA_001
Title	Last Name - Min boundary (1 char)
Preconditions	Individual has already logged in successfully

Inputs: Last Name = "B"

Test Steps:

- Navigate to the form
- Input "B" into Last Name field

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_LN_BVA_002
Title	Last Name - Max boundary (20 chars)
Preconditions	Individual has already logged in successfully

Inputs: Last Name = "BBBBBBBBBBBBBBBBBBBBBB" (20 chars)

Test Steps:

- Navigate to the form
- Input 20-character string into Last Name

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_LN_BVA_003
Title	Last Name - Exceed max (21 chars)
Preconditions	Individual has already logged in successfully

Inputs: Last Name = "BBBBBBBBBBBBBBBBBBBBBBB" (21 chars)

Test Steps:

- Navigate to the form
- Input 21-character string into Last Name

-

Expected Result: Validation error is displayed.

Actual Result: Last name must not be greater 21 chars

Result: Pass

Type: BVA

Test Case ID	TC_LN_EP_002
Title	Last Name - Empty string
Preconditions	Individual has already logged in successfully

Inputs: Last Name = ""

Test Steps:

- Navigate to the form
- Leave Last Name field empty

-

Expected Result: Validation error for required field.

Actual Result: Last Name must not be empty

Result: Pass

Type: EP

Test Case ID	TC_LN_EP_003
Title	Last Name - Null value
Preconditions	Individual has already logged in successfully

Inputs: Last Name = null

Test Steps:

- Do not provide Last Name input (simulate null)

-

Expected Result: Validation error for required field.

Actual Result: Last Name must not be empty

Result: Pass

Type: EP

2.1.3 Date of Birth

Test Case ID	TC_DOB_EP_001
Title	Date of Birth - Valid date in the past
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = (today - 1 day)

Test Steps:

- Open the form
- Enter a valid date in the past in the Date of Birth field

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_DOB_EP_002
Title	Date of Birth - Valid current date
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = today

Test Steps:

- Navigate to the form
- Enter today's date in the Date of Birth field

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: (Pass/Fail)

Type: EP

Test Case ID	TC_DOB_EP_003
Title	Date of Birth - Future date (Invalid)
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = (today + 1 day)

Test Steps:

- Navigate to the form
- Enter a future date in the Date of Birth field

-

Expected Result: Validation error for future date.

Actual Result: Accepted without error

Result: Fail

Type: EP

Test Case ID	TC_DOB_EP_004
Title	Date of Birth - Empty value
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = ""

Test Steps:

- Navigate to the form
- Leave the Date of Birth field empty

Expected Result: Validation error for required field.

Actual Result: Date of Birth is required

Result: Pass

Type: EP

Test Case ID	TC_DOB_EP_005
Title	Date of Birth - Null value
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = null

Test Steps:

- Navigate to the form
- Do not provide any value to Date of Birth field
-

Expected Result: Validation error for required field.

Actual Result: Date of Birth is required

Result: Pass

Type: EP

Test Case ID	TC_DOB_BVA_001
Title	Date of Birth - in the past
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = 2/2/2010

Test Steps:

- Navigate to the form
- Enter date
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_DOB_BVA_002
Title	Date of Birth - Current date
Preconditions	Individual has already logged in successfully

Inputs: Date of Birth = 14/06/2025 (the date wrote this document)

Test Steps:

- Navigate to the form
- Enter a date in the current date

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_DOB_BVA_003
Title	Date of Birth - Date in the future
Preconditions	Form is accessible

Inputs: Date of Birth = 20/06/2026

Test Steps:

- Navigate to the form
- Enter a date in the future
-

Expected Result: Date of Birth must not be in the future

Actual Result: Accepted without error

Result: Fail

Type: BVA

2.1.4 Address

Test Case ID	TC_ADDR_EP_001
Title	Address - Valid input with normal length
Preconditions	Individual has already logged in successfully

Inputs: Address = "123 Main Street"

Test Steps:

- Navigate to the form
- Enter a valid address with length < 70 characters
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_ADDR_EP_002
Title	Address - Valid input exceeds normal length
Preconditions	Individual has already logged in successfully

Inputs: Address = "AAA" (>70 chars)

Test Steps:

- Navigate to the form
- Enter a valid address with length > 70 characters
-

Expected Result: Error validation.

Actual Result: Address must not be greater than 70 chars

Result: Pass

Type: EP

Test Case ID	TC_ADDR_EP_003
Title	Address - Empty input
Preconditions	Individual has already logged in successfully

Inputs: Address = ""

Test Steps:

- Navigate to the form
- Leave the address field empty

-

Expected Result: Validation error for required field.

Actual Result: Address must not be empty

Result: Pass

Type: EP

Test Case ID	TC_ADDR_EP_004
Title	Address - Null input
Preconditions	Individual has already logged in successfully

Inputs: Address = null

Test Steps:

- Navigate to the form
- Do not provide any value to the address field

-

Expected Result: Validation error for required field.

Actual Result: Address must not be empty

Result: Pass

Type: EP

Test Case ID	TC_ADDR_BVA_001
Title	Address - Minimum valid length (1 character)
Preconditions	Individual has already logged in successfully

Inputs: Address = "A"

Test Steps:

- Navigate to the form
- Enter an address with one character

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_ADDR_BVA_002
Title	Address - Maximum valid length (70 characters)
Preconditions	Individual has already logged in successfully

Inputs: Address = "A string exactly seventy characters long for testing valid input case"

Test Steps:

- Enter an address with exactly 70 characters

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_ADDR_BVA_003
Title	Address - Exceeds maximum length (71 characters)
Preconditions	Individual has already logged in successfully

Inputs: Address = "A string that is deliberately made to be seventy-one characters long!"

Test Steps:

- Navigate to the form
- Enter an address longer than 70 characters

-

Expected Result: Validation error for exceeding max length.

Actual Result: Address must not be greater than 70 chars

Result: Pass

Type: BVA

2.1.5 Postal Code

Test Case ID	TC_POSTAL_EP_001
Title	Postal Code - Null value
Preconditions	Individual has already logged in successfully

Inputs: Postal Code = null

Test Steps:

- Navigate to the form
- Do not enter a postal code

-

Expected Result: Accepted with no error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_POSTAL_BVA_001
Title	Postal Code - Exactly 10 characters
Preconditions	Individual has already logged in successfully

Inputs: Postal Code = "1234567890"

Test Steps:

- Navigate to the form
- Enter a 10-character postal code

-

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_POSTAL_BVA_002
Title	Postal Code - Exceeds maximum length (11 characters)
Preconditions	Individual has already logged in successfully

Inputs: Postal Code = "12345678901"

Test Steps:

- Navigate to the form
- Enter an 11-character postal code

-

Expected Result: Validation error for length > 10.

Actual Result: Postal code must not be greater than 10 chars

Result: Pass

Type: BVA

Test Case ID	TC_POSTAL_EP_002
Title	Postal Code - Non-string type (e.g., integer input)
Preconditions	Individual has already logged in successfully

Inputs: Postal Code = 12345 (integer)

Test Steps:

- Navigate to the form
- Enter a numeric value without quotes
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_POSTAL_BVA_003
Title	Postal Code - 0 characters (empty string)
Preconditions	Individual has already logged in successfully

Inputs: Postal Code = ""

Test Steps:

- Navigate to the form
- Leave the postal code field empty
-

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

Type: BVA

2.1.6 City

Test Case ID	TC_CITY_EP_001
Title	City - Valid non-empty string under 40 characters
Preconditions	Individual has already logged in successfully

Inputs: City = "Ho Chi Minh"

Test Steps:

- Navigate to the form
- Enter "Ho Chi Minh" in the City field
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_CITY_EP_002
Title	City - Null value
Preconditions	Individual has already logged in successfully

Inputs: City = null

Test Steps:

- Navigate to the form
- Do not enter any value in the City field
-

Expected Result: Validation error for required field.

Actual Result: City must not be empty

Result: Pass

Type: EP

Test Case ID	TC_CITY_EP_003
Title	City - Empty string value
Preconditions	Individual has already logged in successfully

Inputs: City = ""

Test Steps:

- Navigate to the form
- Leave the City field empty
-

Expected Result: Validation error for empty input.

Actual Result: City must not be empty

Result: Pass

Type: EP

Test Case ID	TC_CITY_BVA_001
Title	City - Exceeds maximum length (41 characters)
Preconditions	Individual has already logged in successfully

Inputs: City = "AAAAA" (41 CHARS)

Test Steps:

- Navigate to the form
- Enter a string longer than 40 characters in the City field
-

Expected Result: Validation error for input exceeding 40 characters.

Actual Result: City must not be greater than 40 chars

Result: Pass

Test Case ID	TC_CITY_BVA_002
Title	City - Max boundary (40 chars)
Preconditions	Individual has already logged in successfully

Inputs: City = "AAAAA" (40 CHARS)

Test Steps:

- Navigate to the form
- Enter a 40-characters string in the City field
-

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_CITY_BVA_003
Title	City - Min boundary (1 characters)
Preconditions	Individual has already logged in successfully

Inputs: City = "A"

Test Steps:

- Navigate to the form
- Enter a single character in the City field

-

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

2.1.7 State

Test Case ID	TC_STATE_EP_001
Title	State - Valid string with length <= 40
Preconditions	Individual has already logged in successfully

Inputs: State = "California"

Test Steps:

- Navigate to the form
- Enter "California" in the State field

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_STATE_EP_002
Title	State - Null value
Preconditions	Individual has already logged in successfully

Inputs: State = null

Test Steps:

- Navigate to the form
- Do not enter any value in the State field

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_STATE_EP_003
Title	State - Empty string value
Preconditions	Individual has already logged in successfully

Inputs: State = ""

Test Steps:

- Navigate to the form
- Leave the State field empty

-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_STATE_BVA_001
Title	State - Exceeds maximum length (41 characters)
Preconditions	Individual has already logged in successfully

Inputs: State = "A string that exceeds forty characters in total."

Test Steps:

- Navigate to the form
- Enter a string longer than 40 characters in the State field
-

Expected Result: Validation error for input exceeding 40 characters.

Actual Result: State must not be greater than 40 chars

Result: Pass

Type: BVA

2.1.8 Phone

Test Case ID	TC_PHONE_EP_001
Title	Phone - Valid digits-only string (<= 24 chars)
Preconditions	Individual has already logged in successfully

Inputs: Phone = "012345678901234567890123"

Test Steps:

- Navigate to the form
- Enter a valid 24-digit phone number
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_PHONE_EP_002
Title	Phone - Null value
Preconditions	Individual has already logged in successfully

Inputs: Phone = null

Test Steps:

- Navigate to the form
- Leave the phone field unset (null)
-

Expected Result: Validation error for required field.

Actual Result: Phone must not be empty

Result: Pass

Type: EP

Test Case ID	TC_PHONE_EP_003
Title	Phone - Contains letters
Preconditions	Individual has already logged in successfully

Inputs: Phone = "01234abc567"

Test Steps:

- Navigate to the form
- Enter a phone number with alphabetic characters
-

Expected Result: Validation error for invalid characters.

Actual Result: Accepted without error

Result: Fail

Type: EP

Test Case ID	TC_PHONE_BVA_001
Title	Phone - Over 24-digit limit
Preconditions	Individual has already logged in successfully

Inputs: Phone = "0123456789012345678901234" (25 digits)

Test Steps:

- Navigate to the form
- Enter a 25-digit phone number
-

Expected Result: Validation error for exceeding length.

Actual Result: Phone must not be greater than 24 chars

Result: Pass

Type: BVA

2.1.9 Email

Test Case ID	TC_EMAIL_EP_001
Title	Email - Valid email format (length <= 60)
Preconditions	Individual has already logged in successfully

Inputs: Email = "user@example.com"

Test Steps:

- Navigate to the form
- Enter "user@example.com" in the Email field
-

Expected Result: Accepted without error

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_EMAIL_EP_002
Title	Email - Null value
Preconditions	Individual has already logged in successfully

Inputs: Email = null

Test Steps:

- Navigate to the form
- Do not enter a value in the Email field
-

Expected Result: Validation error for required field.

Actual Result: Email is required **Result:** Pass

Type: EP

Test Case ID	TC_EMAIL_EP_003
Title	Email - Invalid email format
Preconditions	Individual has already logged in successfully

Inputs: Email = "abc@"

Test Steps:

- Navigate to the form

- Enter "abc@" in the Email field

-

Expected Result: Validation error for email format.

Actual Result: Blocks to submit

Result: Pass

Type: EP

Test Case ID	TC_EMAIL_BVA_001
Title	Email - Length = 60 characters
Preconditions	Individual has already logged in successfully

Inputs: Email = "abcdefghijklmnopqrstuvwxy1234567890abcdefghijklmnop@example.com"

Test Steps:

- Navigate to the form
- Enter an email with 60 characters
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_EMAIL_BVA_002
Title	Email - Length = 61 characters
Preconditions	Individual has already logged in successfully

Inputs: Email = "abcdefghijklmnopqrstuvwxy1234567890abcdefghijklmnop@example.com"

Test Steps:

- Navigate to the form
- Enter an email with 61 characters
-

Expected Result: Validation error for exceeding 60 characters.

Actual Result: Email must not be greater than 60 chars

Result: Pass

Type: BVA

Test Case ID	TC_EMAIL_BVA_003
Title	Email - Length = 1 characters
Preconditions	Individual has already logged in successfully

Inputs: Email = "a" or "@" or "." (any single character)

Test Steps:

- Navigate to the form
- Enter an email with 1 character
-

Expected Result: Validation error for not valid character.

Actual Result: Blocks to submit

Result: Pass

Type: BVA

2.2 Change Password (Registered User)

2.2.1 Current Password

Test Case ID	TC_PWD_EP_001
Title	Current Password - Valid existing password
Preconditions	User is logged in

Inputs: Current Password = "OldPass123"

Test Steps:

- Navigate to the form
- Enter correct current password
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_PWD_EP_002
Title	Current Password - Empty
Preconditions	User is logged in

Inputs: Current Password = ""

Test Steps:

- Navigate to the form
- Leave current password empty
-

Expected Result: Validation error for required field.

Actual Result: Current password must not be empty

Result: True

Type: EP

Test Case ID	TC_PWD_EP_003
Title	Current Password - Incorrect password
Preconditions	User is logged in

Inputs: Current Password = "WrongOldPass"

Test Steps:

- Navigate to the form
- Enter incorrect current password
-

Expected Result: Error message displayed: "Current password is incorrect."

Actual Result: Error message displayed: "Current password is incorrect."

Result: Pass

Type: EP

2.2.2 New Password

Test Case ID	TC_PWD_BVA_001
Title	New Password - Length = 8 characters
Preconditions	User is logged in

Inputs: New Password = "abc123XY"

Test Steps:

- Navigate to the form

- Enter new password with exactly 8 characters

-

Expected Result: Password accepted.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_PWD_BVA_002
Title	New Password - Length = 7 characters
Preconditions	User is logged in

Inputs: New Password = "abc123X"

Test Steps:

- Navigate to the form
- Enter new password with 7 characters
-

Expected Result: Validation error for minimum password length.

Actual Result: New Password must be 8-characters minium

Result: Pass

Type: BVA

Test Case ID	TC_PWD_EP_004
Title	New Password - Same as current password
Preconditions	User is logged in

Inputs: Current Password = "OldPass123", New Password = "OldPass123"

Test Steps:

- Navigate to the form
- Enter same value for current and new password
-

Expected Result: Error displayed: "New password cannot be the same as the current password."

Actual Result: New password cannot be the same as the current password.

Result: Pass

Type: EP

2.2.3 Confirm Password

Test Case ID	TC_PWD_EP_003
Title	Confirm Password - Mismatch with new password
Preconditions	User is logged in

Inputs: New Password = "NewPass123", Confirm Password = "WrongPass"

Test Steps:

- Navigate to the form
- Enter new password and mismatched confirm password
-

Expected Result: Validation error for password mismatch.

Actual Result: Confirm Password doesn't match new password

Result: pass

Type: EP

2.3 Edit Product (Admin)

2.3.1 Product Name

Test Case ID	TC_EDIT_PNAME_EP_001
Title	Product Name - Valid non-empty string (<=120 characters)
Preconditions	Edit product Individual has already logged in successfully

Inputs: Product Name = "Valid Product Name"
--

Test Steps:

- Navigate to the form
- Enter valid product name (<=120 characters)
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_EDIT_PNAME_EP_002
Title	Product Name - Empty input
Preconditions	Edit product Individual has already logged in successfully

Inputs: Product Name = ""

Test Steps:

- Navigate to the form
- Leave Product Name field empty
-

Expected Result: Validation error for required field.

Actual Result: Product Name must not be empty

Result: Pass

Type: EP

Test Case ID	TC_EDIT_PNAME_BVA_001
Title	Product Name - Length = 120 characters
Preconditions	Edit product Individual has already logged in successfully

[illegible]

Test Steps:

- Navigate to the form
- Enter a product name with exactly 120 characters
-

Expected Result: Product updated successfully.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_EDIT_PNAME_BVA_002
Title	Product Name - Length = 121 characters
Preconditions	Edit product Individual has already logged in successfully

[illegible]

Test Steps:

- Navigate to the form

- Enter a product name with 121 characters
-

Expected Result: Validation error for exceeding 120 characters.

Actual Result: Product name must not be greater than 120 chars

Result: Pass

Type: BVA

2.3.2 Description

Test Case ID	TC_EDIT_DESC_EP_001
Title	Description - Valid non-empty string (<=1250 characters)
Preconditions	Edit product Individual has already logged in successfully

Inputs: Description = "This is a valid product description."

Test Steps:

- Navigate to the form
- Enter a valid product description
-

Expected Result: Product updated successfully.

Actual Result: Accepted without error

Result: Pass **Type:** EP

Test Case ID	TC_EDIT_DESC_EP_002
Title	Description - Empty input
Preconditions	Edit product Individual has already logged in successfully

Inputs: Description = ""

Test Steps:

- Navigate to the form
- Leave the Description field empty
-

Expected Result: Validation error for required field.

Actual Result: Description must not be empty

Result: Pass

Type: EP

Test Case ID	TC_EDIT_DESC_BVA_001
Title	Description - Length = 1250 characters
Preconditions	Edit product Individual has already logged in successfully

Inputs: Description = (String of 1250 characters)

Test Steps:

- Navigate to the form
- Enter a description with 1250 characters
-

Expected Result: Product updated successfully.

Actual Result: Accepted without error

Result: Pass

Type: BVA

Test Case ID	TC_EDIT_DESC_BVA_002
Title	Description - Length = 1251 characters
Preconditions	Edit product Individual has already logged in successfully

Inputs: Description = (String of 1251 characters)

Test Steps:

- Navigate to the form
- Enter a description with 1251 characters
-

Expected Result: Validation error for exceeding 1250 characters.

Actual Result: Description must not be greater than 1250 chars

Result: Pass

Type: BVA

2.3.3 Stock

Test Case ID	TC_EDIT_STOCK_EP_001
Title	Stock - Valid integer ≥ 0
Preconditions	Edit product Individual has already logged in successfully

Inputs: Stock = 10

Test Steps:

- Navigate to the form
- Enter 10 into the Stock field
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_EDIT_STOCK_EP_002
Title	Stock - Negative number
Preconditions	Edit product Individual has already logged in successfully

Inputs: Stock = -5

Test Steps:

- Navigate to the form
- Enter -5 into the Stock field
-

Expected Result: Validation error for invalid stock quantity.

Actual Result: Accepted without error

Result: Fail

Type: EP

Test Case ID	TC_EDIT_STOCK_EP_003
Title	Stock - Non-integer type (e.g., string, float, null)
Preconditions	Edit product Individual has already logged in successfully

Inputs: Stock = "ten" or 5.5 or null

Test Steps:

- Navigate to the form
- Enter non-integer values into the Stock field (e.g., "ten", 5.5, null)
-

Expected Result: Validation error for invalid data type.

Actual Result: Accepted without error

Result: Fail

Type: EP

Test Case ID	TC_EDIT_STOCK_EP_004
Title	Stock - Null value
Preconditions	Edit product Individual has already logged in successfully

Inputs: Stock = null

Test Steps:

- Navigate to the form
- Leave Stock field empty or assign null programmatically
-

Expected Result: Validation error for required field.

Actual Result: Blocks to submit

Result: Pass

Type: EP

Test Case ID	TC_EDIT_STOCK_EP_005
Title	Stock - Empty value
Preconditions	Edit product Individual has already logged in successfully

Inputs: Stock = ""

Test Steps:

- Navigate to the form
- Leave Stock field empty or assign null programmatically
-

Expected Result: Validation error for required field.

Actual Result: Blocks to submit

Result: Pass

Type: EP

Test Case ID	TC_EDIT_PRICE_EP_001
Title	Price - Valid decimal ≥ 0
Preconditions	Edit product Individual has already logged in successfully

Inputs: Price = 19.99

Test Steps:

- Navigate to the form
- Enter 19.99 into the Price field
-

Expected Result: Accepted without error.

Actual Result: Accepted without error

Result: Pass

Type: EP

Test Case ID	TC_EDIT_PRICE_EP_002
Title	Price - Empty
Preconditions	Edit product Individual has already logged in successfully

Inputs: Price = ""

Test Steps:

- Navigate to the form
- Leave the Price field empty (if allowed)

-

Expected Result: Error validation.

Actual Result: Price is required

Result: Pass

Type: EP

Test Case ID	TC_EDIT_PRICE_EP_003
Title	Price - Negative number
Preconditions	Edit product Individual has already logged in successfully

Inputs: Price = -5.00

Test Steps:

- Navigate to the form
- Enter -5.00 into the Price field

-

Expected Result: Validation error for invalid price.

Actual Result: Accepted without error

Result: Fail

Type: EP

Test Case ID	TC_EDIT_PRICE_EP_004
Title	Price - Non-numeric value
Preconditions	Edit product Individual has already logged in successfully

Inputs: Price = "twenty" or [20] or null **Test Steps:**

- Navigate to the form
- Enter non-numeric values into the Price field (e.g., "twenty", [20], null)

-

Expected Result: Validation error for invalid data type.

Actual Result: Alerts "Something went wrong"

Result: Pass

Type: EP

3 Use of AI

Tool Name: ChatGPT (GPT-4o, OpenAI)

Prompts Used: (in vietnamese)

- Đề xuất cho tôi 1 số test case cho feature edit product.
- Evidence:

đề xuất cho tôi 1 số test case cho feature edit product

Dưới đây là 10 test case đề xuất cho chức năng **Edit Product**, được thiết kế dựa trên các trường thông thường như Product Name, Description, Stock, Price. Các test case bao gồm trường hợp hợp lệ (valid) và không hợp lệ (invalid), áp dụng nguyên tắc Equivalence Partitioning (EP), Boundary Value Analysis (BVA), và cả kiểm thử chức năng tích hợp.

✓ 1. Edit Product - All Valid Fields

- **Test Case ID:** TC_EDIT_PRODUCT_001
- **Title:** Edit Product - All fields valid
- **Preconditions:** User is logged in, product exists
- **Inputs:**
 - Product Name = "Bluetooth Speaker"
 - Description = "High-quality portable speaker"
 - Stock = 15
 - Price = 199.99



Validation and Refinement:

- Each test case will be validated through manual testing based on AI-generated inputs and constraints. If the software's output does not match with the expected output from the test case, the incorrect test cases are reported to bug reporting list for further discussion.
- Comparing AI-generated test cases with my test cases allow to cover all of the potential cases need testing and refine for clarity.

Test Case Sources:

- **AI-generated:** Here are some of the AI-generated test cases and manual test cases:
 - + Test case for Edit product features (AI generated).
 - + Update User Profile and change password (Manual)

4 Self-evaluation

Criteria	Description	Max Points
Feature Selection	2 important features selected	1.0
EP Technique	Correct and complete partition identification	2.0
BVA Technique	Correct identification of boundaries and rationale	1.0
Test Case Design	Test cases are clear, traceable, professional	2.0
Use of AI Tools	Prompt transparency, critical validation, added value	1.0
Test Execution	All designed test cases executed, results logged	1.0
Bug Reporting	Clear and complete bug report(s), if applicable	1.0
Merging and Final Review	Proper combination and deduplication of test cases	0.5
Presentation & Clarity	Document is well-organized, readable, with self-assessment	0.5
Total		10.0 points