Software Testing Techniques

Equivalence Partitioning

Define equivalence classes for a name input field that accepts 5 to 20 characters. Only letters are allowed.

Equivalence Classes:

- (-∞, 5), [5, 20], (20, +∞)

- (-∞, 0), [0, 5], [5, 20], (20, +∞)

- Letters, special characters, digits, mixed input

On the website https://exe.ua/signup/ we enter data and in the password field test the following:
Field: Password

Class	Data	Expected Result
Valid;	QwertyABC!	Success
Invalid: too short;	abc	Error
Invalid: digits only	12345678	Error
Invalid: no special characters	Qwerty123	Error

Boundary Value Analysis

Define boundary values for a name input field that accepts 5 to 20 characters. Only letters are allowed.

Boundary values:
 0,1   4, 5, 6   19, 20, 21

On the website https://exe.ua/signup/ in the password field we test:

Test Case	Data	Character Count	Expected Result
Less than minimum	abcd	4	Error
Exactly minimum	abcde	5	Success
Middle value	abcdefghij	10	Success
Exactly maximum	abcdefghijklmnopqrst	20	Success
More than maximum	abcdefghijklmnopqrstu	21	Error

Pairwise Testing

The system should be tested on two browsers (Chrome, Safari), two operating systems (MacOS, Windows), and two screen resolutions (1024×768, 1900×1600).

Using pairwise testing, generate test combinations.

Table:

Test Case	Browser	OS	Resolution
1	Chrome	MacOS	1024×768
2	Chrome	Windows	1900×1600
3	Safari	MacOS	1900×1600
4	Safari	Windows	1024×768

Domain Analysis

The system provides a discount equal to (number of products × price per product) / 1000.

- **Quantity of products: 5 to 10**

- **Price per product: 50 to 1000**

Domain Table:

			1	2	3	4	5	6	7	8
Quantity of products	>=5	on	5							
		off		4						
	<=10	on			10					
		off				11				
	Typical	in					7	7	7	7
Price per product	>=50	on					50			
		off						49		
	<=1000	on							1000	
		off								1001
	Typical	in	500	500	500	500				

Decision Table Testing

The system gives a 20% discount if you are a woman, have children, and are not married.
 If you have no children but are over 60 years old, the system gives a 10% discount.
Using the decision table, generate a decision table. The result is in the form of a table.

Table:

Children	yes	yes	no	no
Married	yes	no	any	any
Age	Any	any	<60	>=60
Discount	0	20	0	10

State Transition Testing

State transition diagram for the login process:

- **If the user enters correct credentials → Logged In.**

- **If the user enters incorrect email or password → Error message.**

- **If the user enters incorrect credentials more than 3 times → Blocked.**

Result: State transition diagram (visual).

Visual