

Lesson 01

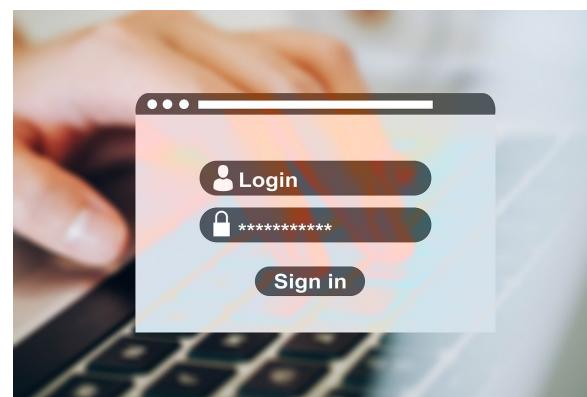
Introduction to Software Testing (P1)

Outline

- Basic Concept
 - Test Objectives
 - Test Case
 - Test Module
 - Test Suite
- Test Scope, Test Strategy, Test Plan
- Test Metrics, Dashboard, Test Design and Process
- Test Report

Basic Concept

- **1. Test Objectives**
- **Definition:** Test objectives define the purpose and goal of testing. They describe what needs to be achieved during testing, including what features or functionality are being verified, and what the expected outcomes should be.
- **Example:** Ensure the login functionality works correctly under normal and edge case conditions.



Basic Concept

- Login Feature Testing



Basic Concept

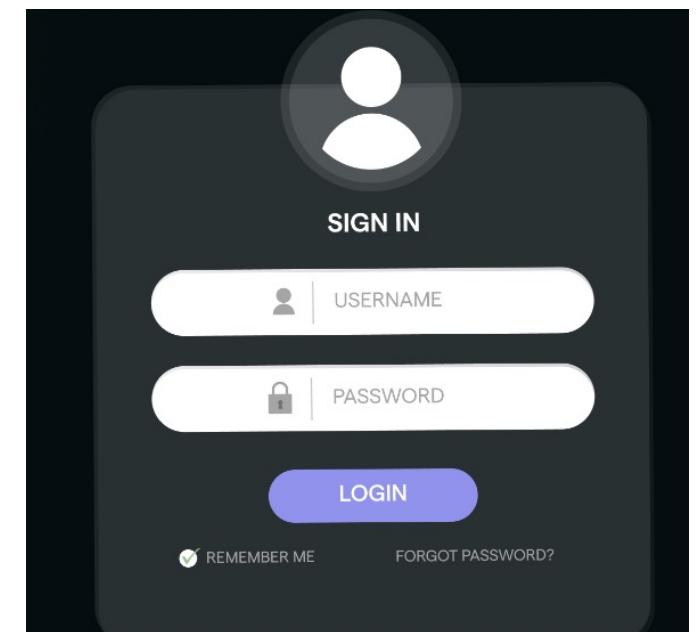
- **Login Feature Testing Characteristics**

- **Simple and clear-** The interface of the login page should be simple so that users can navigate the page and enter their login credentials.
- **Accessibility-** It should be accessible to every user, including those with disabilities. Hence, the login page must also adhere to the accessibility guidelines.
- **Secure-** Password encryption, automatic logout after prolonged periods of inactivity, and two-factor authentication, are the essential security features that every login page must have.
- **Scalability-** The login page should be able to handle a massive number of users; thus, the server needs to have sufficient resources to handle authentication and login requests.
- **Branding-** It must reflect the visual identity and branding of the particular application or the company. In this way, you can achieve brand recognition and uniform consistency across the world.
- **Customization-** The login page should be easy to customize so you can add additional features such as CAPTCHA verification, password recovery, etc. After understanding the login page and its functionalities, let's quickly understand the test cases

Basic Concept

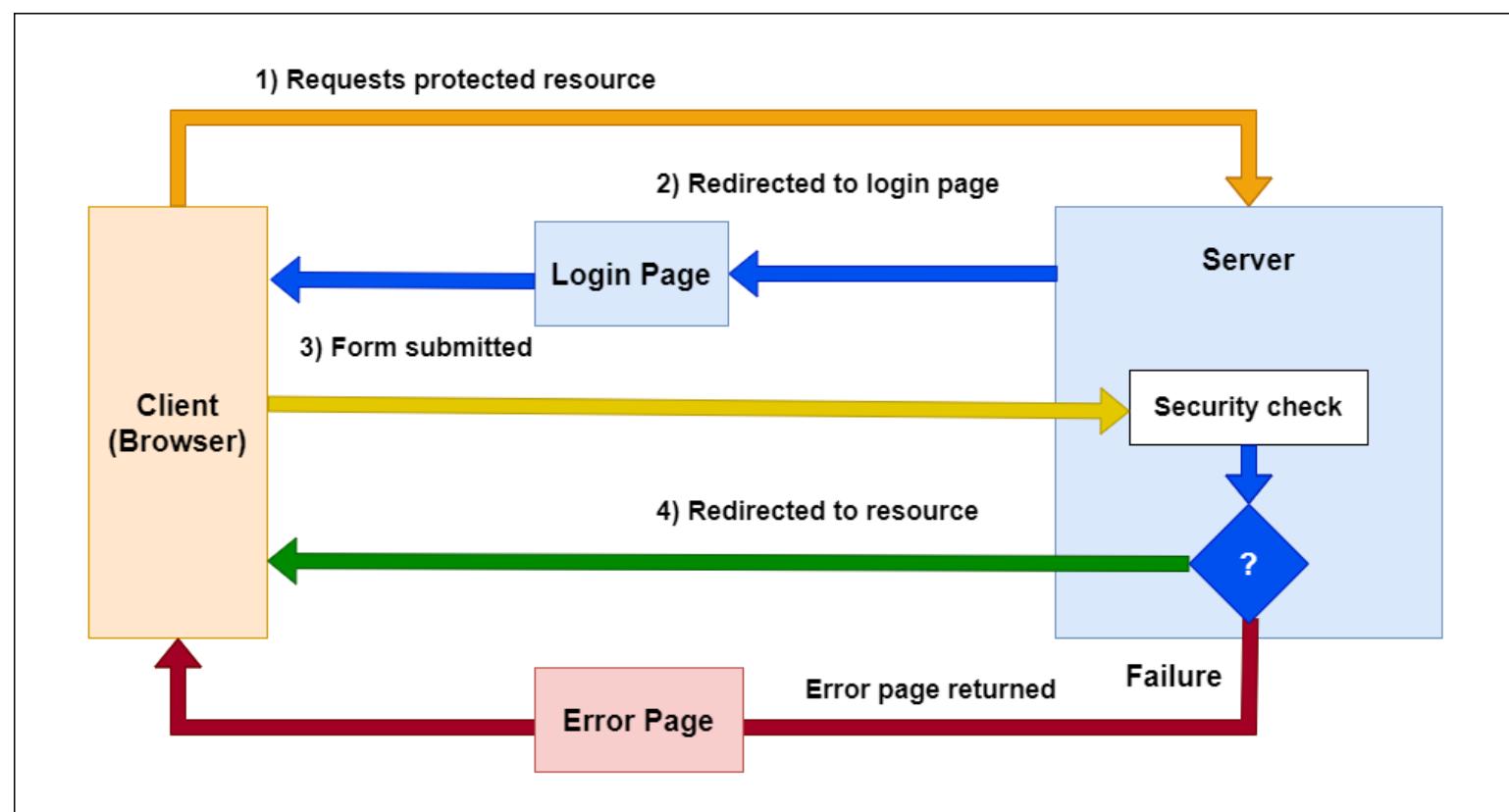
- **Login Feature Testing**

- **Objective 1:** Verify that users can log in with valid credentials and are restricted with invalid credentials.
- **Objective 2:** Ensure the login page functions correctly across different browsers and devices.
- **Objective 3:** Check the behavior of the "Forgot Password" feature when the user inputs incorrect or non-registered emails.



Basic Concept

- Login Feature Testing



Basic Concept

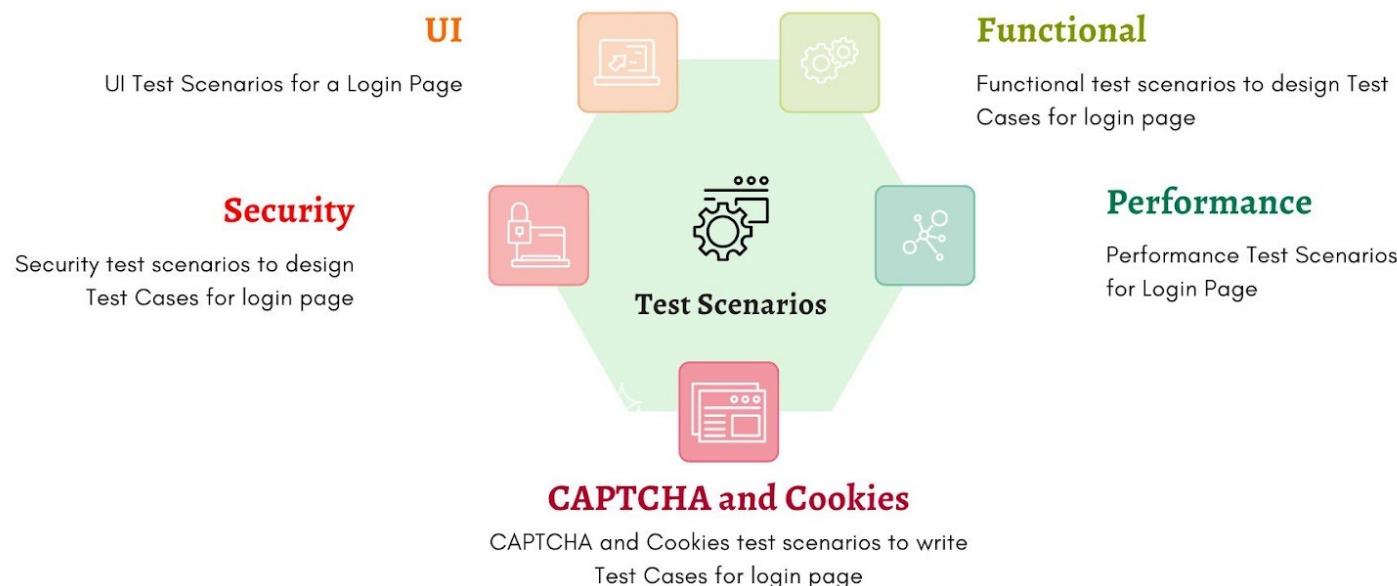
- Login Feature Testing



Basic Concept

- **Login Feature Testing** <https://testsigma.com/blog/test-cases-for-login-page/>

Test Scenarios for a Login Page



Basic Concept

- **E-commerce Website Checkout Process**

- **Objective 1:** Confirm that users can add products to the cart and proceed to checkout successfully.
- **Objective 2:** Validate that the system applies discounts and promotional codes correctly during the checkout process.
- **Objective 3:** Ensure payment methods (credit card, PayPal, etc.) are integrated and functioning properly.



Basic Concept

- E-commerce Website Checkout Process



Choose payment method

Payment Information

Credit Card

Credit Card Number Security Code ⓘ

Expiration Date Using an [Office Depot Credit Card?](#)



Order summary		Edit cart
Subtotal	\$408.28	
Coupons/delivery fee adjustments/other discounts	(\$0.41)	
Sales tax	\$0.00	
Delivery	FREE	
Total	\$407.87	
You are saving \$85.41 on this order.		
Store pickup	(1 item)	

Basic Concept

- **Mobile App Performance Testing**
 - **Objective 1:** Verify that the app's load time does not exceed 3 seconds on various network speeds.
 - **Objective 2:** Ensure the app uses minimal battery consumption during normal usage.
 - **Objective 3:** Check the app's response time when handling a high number of concurrent users.



Basic Concept

- **Mobile App Performance Testing**

Types of Performance Testing



Load Testing



Stress Testing



Capacity Testing



Volume Testing



Spike Testing



Scalability Testing



Endurance Testing



<https://devathon.com/blog/detailed-guide-on-mobile-app-performance-testing/>

Basic Concept

- **Data Security Testing**
 - **Objective 1:** Ensure that sensitive user data, such as passwords and payment details, is encrypted in transit and at rest.
 - **Objective 2:** Verify that unauthorized users cannot access restricted areas of the application.
 - **Objective 3:** Confirm that the system locks user accounts after multiple failed login attempts (brute force protection).



Basic Concept

- **Data Security Testing**



- Vulnerability Scanning
- Security Scanning
- Penetration testing
- Risk Assessment
- Security Auditing
- Posture Assessment
- Ethical hacking

Basic Concept

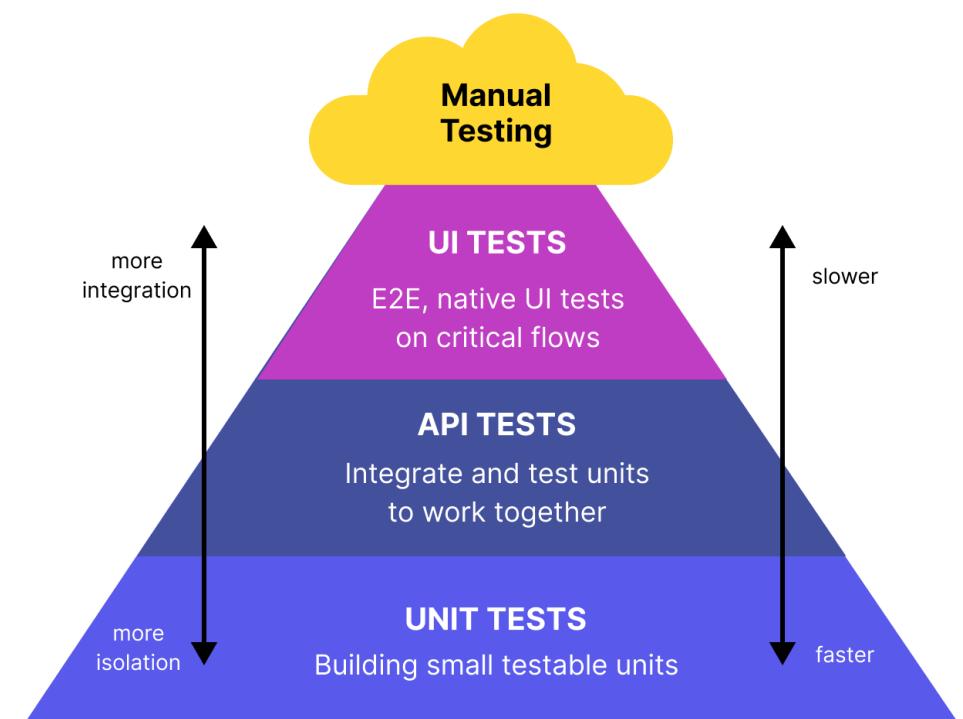
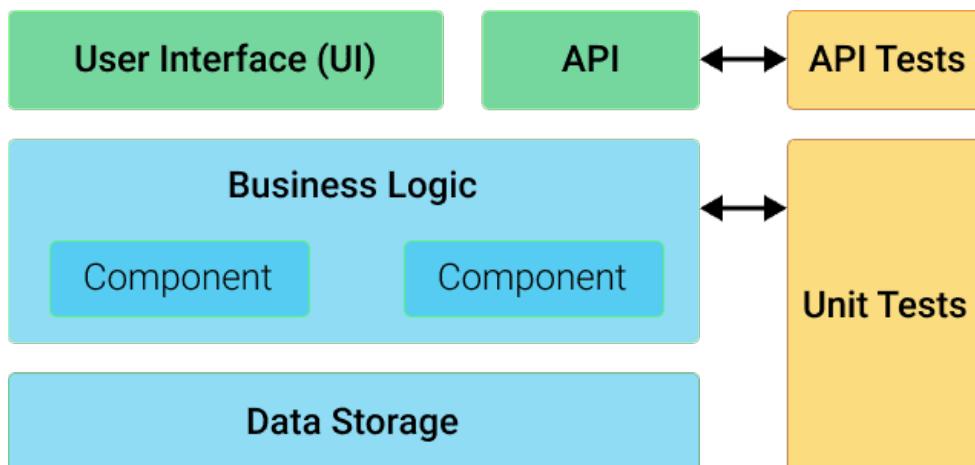
- **API Integration Testing**

- **Objective 1:** Validate that the API returns the correct data when called with valid inputs.
- **Objective 2:** Ensure the API handles invalid inputs gracefully, returning appropriate error messages.
- **Objective 3:** Confirm that the API's response time meets the performance standards for high-traffic scenarios.



Basic Concept

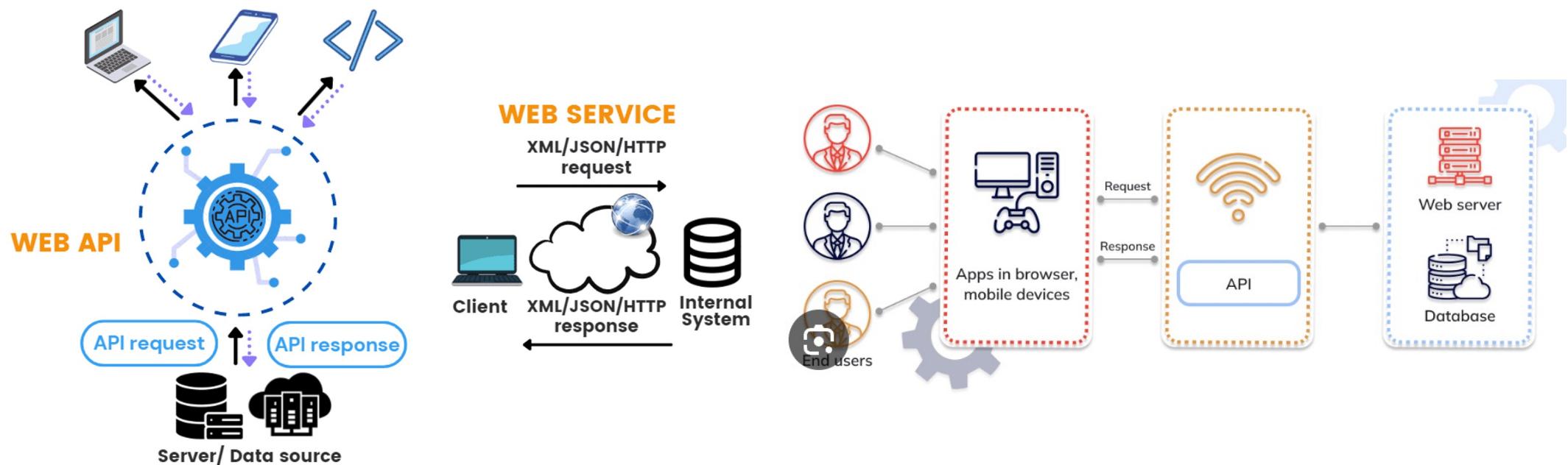
- API Integration Testing



Basic Concept

- **API Integration Testing**

https://www.shekhali.com/what-is-web-api/#google_vignette



Basic Concept

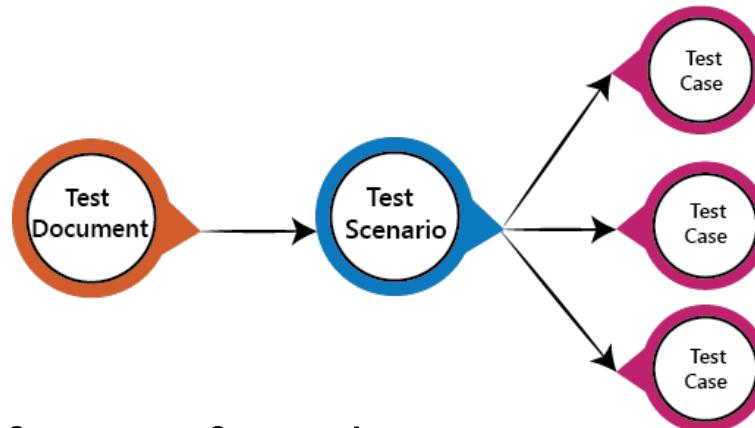
- **2. Test Case**
- **Definition:** A test case is a specific set of conditions, actions, or inputs that are used to verify a particular feature or functionality of an application. It includes the expected result, making it clear whether the test has passed or failed.

- **Components:**

- Test case ID
- Pre-conditions
- Test steps
- Expected result
- Actual result

Example:

- Test Case ID: TC001
- Pre-condition: User must be on the login page
- Test Steps: Enter username and password, click login
- Expected Result: User should be redirected to the dashboard page



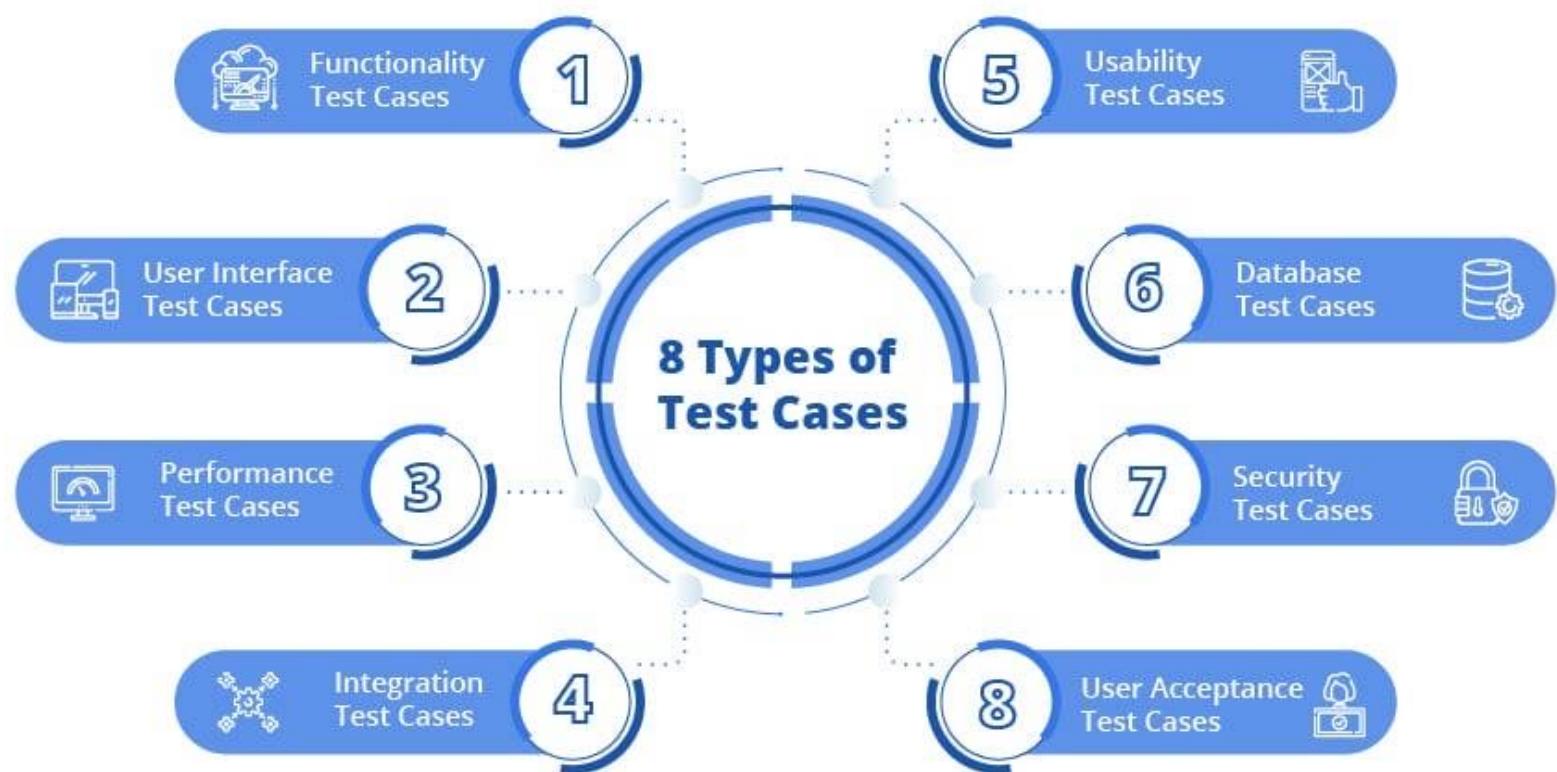
Basic Concept

- **2. Test Case**



Basic Concept

- **2. Test Case**



Basic Concept

- **2. Test Case**
- **Test Case for Login Functionality**
 - **Test Case ID:** TC001
 - **Test Case Title:** Verify successful login with valid credentials
 - **Test Case Description:** Ensure that the user can log in to the application with correct username and password.
- **Pre-conditions:**
 1. User must be on the login page (e.g., <https://www.example.com/login>)
 2. The user has already registered and has valid login credentials (username and password).

Basic Concept

- **2. Test Case**

- **Test Steps:**

1. Open the browser and navigate to the login page.
2. Enter a valid **username** in the username field (e.g., testuser).
3. Enter a valid **password** in the password field (e.g., password123).
4. Click the **Login** button.

- **Expected Result:**

- The user should be successfully logged in and redirected to the dashboard page (e.g., <https://www.example.com/dashboard>).
- A welcome message such as "Welcome, Test User!" should be displayed on the dashboard.

Basic Concept

- **2. Test Case**
- **Actual Result:**
 - (*Leave this blank until the test is executed and results are documented*)
- **Post-conditions:**

The user is logged in, and the session is active.
- **Test Data:**
 - Username: testuser
 - Password: password123
- **Status:**
 - **Pass / Fail** (*Select one based on actual test result*)

Basic Concept

- **2. Test Case**

Header

Test Case Name/ID :- **Release - Version - Application Name - Module**

Test Case Type:- **F.T.C I.T.C S.T.C**

Requirement Number:-

Module:-

Severity:- **Critical/Major/Minor**

Status:-

Release:-

Version:-

Pre-condition:-

Test Data:-

Summary:-

Body

Step No.	Description	Inputs	Expected Result	Actual Reasult	Status	Comments
...
...

Footer

{ Author:-

Reviewd By:-

Date:-

Approved By:-

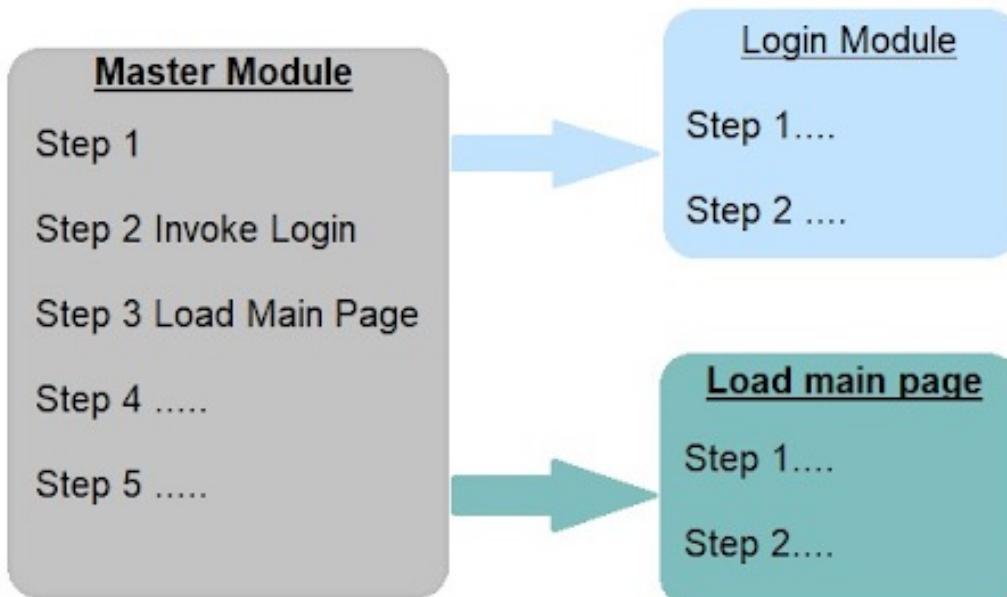
Basic Concept

- **3. Test Module**
- **Definition:** A test module is a logical grouping of related test cases that focus on testing a particular feature or part of the software. Each module typically corresponds to a functional or non-functional area of the system.
- **Example:** A test module for "User Authentication" could contain test cases for login, logout, password reset, and account lockout functionalities.



Basic Concept

- **3. Test Module**



Example:

- **Test Module:** "User Authentication"
- **Test Cases:**
 1. Verify successful login with valid credentials
 2. Verify login failure with incorrect password
 3. Verify password reset functionality
 4. Verify account lockout after multiple failed login attempts
- This module focuses on all functionalities related to the user authentication process.

Basic Concept

- **3. Test Module**

Key Differences:

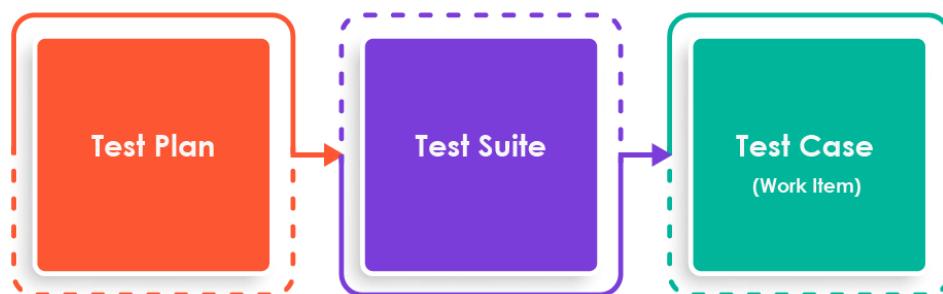
A **Test Module** focuses on testing a specific feature or component of the system and includes multiple related test cases.

A **Test Scenario** describes a specific user interaction or workflow that needs to be validated, leading to the creation of test cases to cover that scenario.

Aspect	Test Module	Test Scenario
Focus	Group of related test cases for a specific module	A high-level user story or workflow to be tested
Scope	Broader, focused on system features/components	Narrower, focused on specific user interactions
Purpose	Ensure all aspects of a module are tested	Validate user-centric workflows and interactions
Example	Testing user authentication as a whole	Testing how users log in to the system

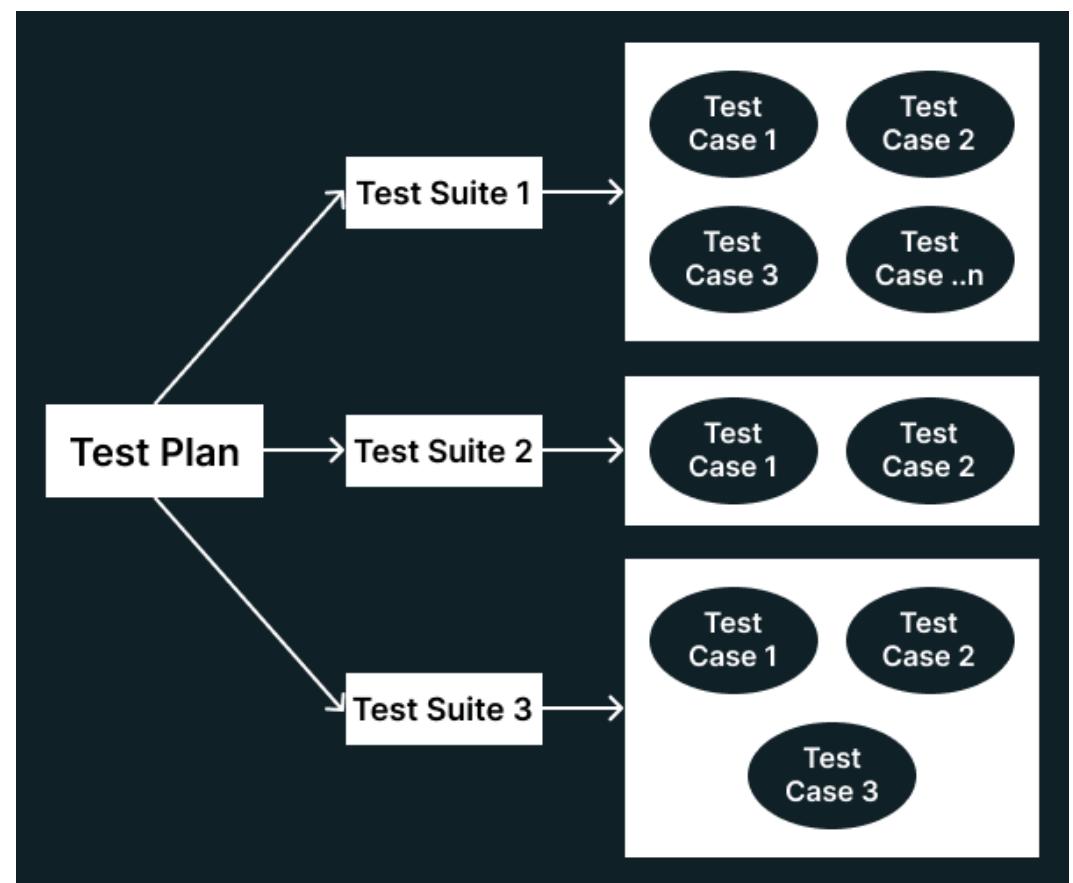
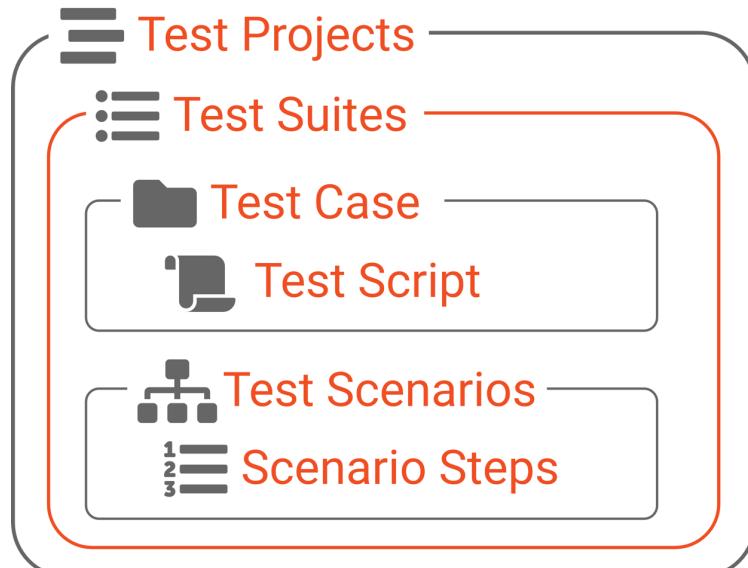
Basic Concept

- **4. Test Suite**
- **Definition:** A test suite is a collection of test cases or test modules grouped together to be executed as a whole. It is often organized to cover specific objectives such as regression testing, functional testing, or integration testing.
- **Example:** A regression test suite may include test cases for core functionalities like user registration, login, payment processing, and data export.



Basic Concept

- **4. Test Suite**



Basic Concept

- **Test Scope:**
- **Definition:** Test scope defines the boundaries of testing activities. It specifies what features, functionalities, and components of the software will be included or excluded from the testing process. It provides clarity on the extent of testing and the areas of the application that need validation.
- **Purpose:** To outline the areas of the application that need testing, ensuring the team knows exactly what to focus on. It also helps manage resources by specifying what will be tested and what won't.
- **Example:**
 - **Included:** Functional testing of login, registration, and payment processing.
 - **Excluded:** Testing of non-functional areas like performance or security.



Basic Concept

- **Test Scope:**
- **Example 1: Test Scope for an E-commerce Website**
- **Included:**
 - Functional testing of the user registration, login, and password reset features.
 - Functional testing of the product search, filtering, and sorting functionalities.
 - Functional testing of the shopping cart and checkout process, including payment gateway integration.
 - Testing of the order history and order tracking features.
 - Cross-browser compatibility testing (Chrome, Firefox, Safari).
 - Mobile responsiveness testing for Android and iOS devices.
- **Excluded:**
 1. Performance and load testing of the website.
 2. Security testing of the payment gateway.
 3. Non-functional testing such as usability or accessibility.



Basic Concept

- **Test Scope:**
- **Example 2: Test Scope for a Mobile Banking App**
- **Included:**
 - Functional testing of user login, registration, and password recovery.
 - Functional testing of money transfers, bill payments, and account balance inquiries.
 - Verification of notification system (push notifications and in-app notifications).
 - Mobile compatibility testing on Android and iOS platforms.
 - Testing integration with third-party services like SMS for two-factor authentication.
- **Excluded:**
 - Backend services (APIs and database) will not be directly tested.
 - Performance testing for high-load conditions.
 - Integration with external banking systems for loan applications and investments



Basic Concept

- **Test Scope:**
- **Example 3: Test Scope for a Healthcare Management System**
- **Included:**
 - Functional testing of patient registration, appointment scheduling, and billing modules.
 - Testing of data input validation for patient medical records.
 - Functional testing of the doctor's dashboard and prescription management.
 - Testing of email notifications sent to patients about appointments.
 - Role-based access control testing for admin, doctors, and patients.
- **Excluded:**
 - Non-functional testing (e.g., performance, scalability, and security testing).
 - Testing of API interactions with third-party health services.
 - Usability testing of the user interface.



Basic Concept

- **Test Scope:**
- **Example 4: Test Scope for a SaaS CRM Application**
- **Included:**
 - Functional testing of contact management, lead generation, and customer segmentation features.
 - Testing the reporting and analytics dashboard for sales data visualization.
 - Integration testing with email services (for sending campaigns) and cloud storage.
 - Testing user access control for different user roles (admin, sales rep, manager).
- **Excluded:**
 - Load testing of the CRM application with thousands of concurrent users.
 - Security testing for data encryption and user authentication.
 - Cross-browser testing for older versions of browsers.

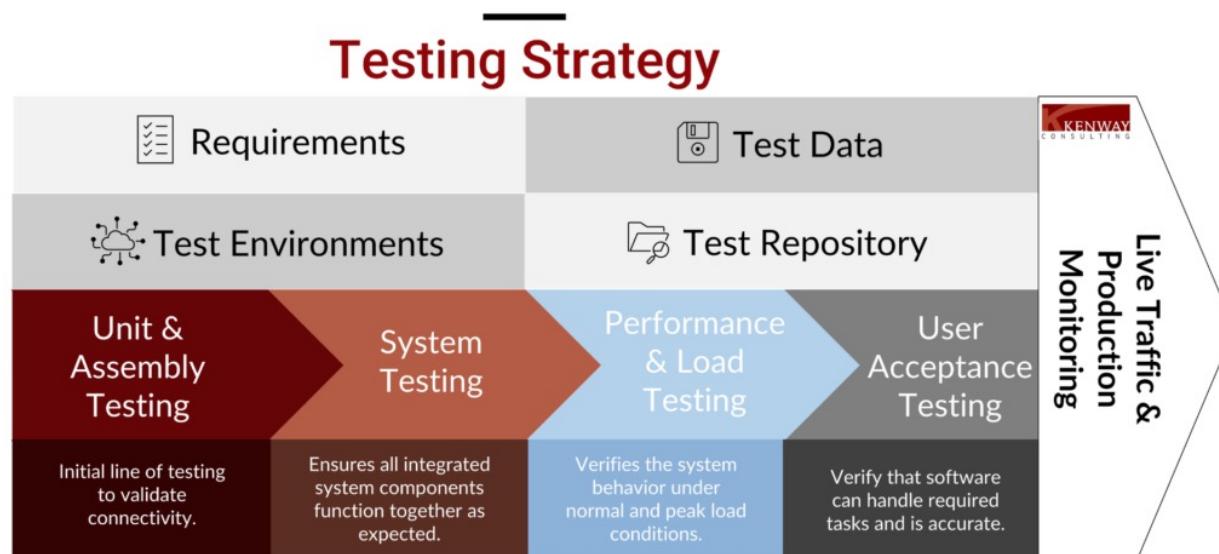


Basic Concept

- **Test Strategy:**
- **Definition:** A test strategy is a high-level document that outlines the overall approach to testing. It defines the methods, techniques, and types of testing that will be used to validate the software. This document sets the direction for testing and ensures consistency in the testing process across the team.
- **Purpose:** To define a standardized and systematic approach to testing. It includes the testing objectives, testing methods, tools to be used, levels of testing, and resource allocation.
- **Components of a Test Strategy:**
 - **Testing Objectives:** What is to be achieved through testing.
 - **Testing Types:** Functional, non-functional, regression, performance, etc.
 - **Test Levels:** Unit testing, integration testing, system testing, acceptance testing.
 - **Test Tools:** Tools like Selenium, JUnit, or manual testing approaches.
 - **Risk and Mitigation:** Identified risks in the software and how to handle them.

Basic Concept

- **Test Strategy Example:** Lesson 01 - Test Strategy Example for an E-commerce Website
 - **Approach:** Use automated regression tests for the core functionalities and manual exploratory tests for new features.
 - **Tools:** Selenium for automated UI tests, JIRA for bug tracking.



Basic Concept

- **Test Plan:**
- **Definition:** A test plan is a detailed document that outlines the scope, objectives, resources, schedule, and activities required for testing. It is specific to a project or release and serves as the roadmap for the testing process. The test plan defines how testing will be conducted, who will perform it, what resources are needed, and when testing activities will occur.
- **Purpose:** To provide a detailed, actionable document that guides the testing process for a particular project or release. It ensures that testing is carried out systematically and that all necessary tasks are completed.
- **Components of a Test Plan:**
 - **Test Scope:** What features will be tested.
 - **Test Objectives:** What to accomplish through testing.
 - **Test Schedule:** Timelines and deadlines for testing activities.
 - **Resources and Tools:** Testers involved, tools used, and any hardware/software requirements.
 - **Risk Management:** Identified risks and how they'll be managed.
 - **Deliverables:** Test cases, test reports, defect logs.

Basic Concept

- **Test Plan:**

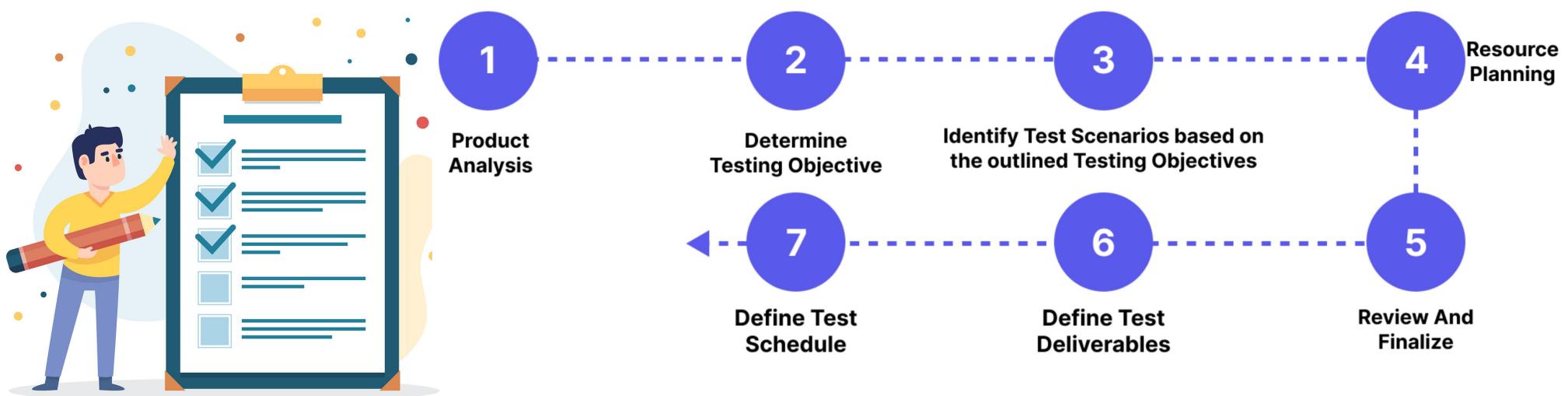
- Comparison:**

- **Test Scope** focuses on what will and will not be tested.
- **Test Strategy** defines the overall approach and methods for testing.
- **Test Plan** is a detailed document that outlines how testing will be carried out, including schedules, resources, and specific test activities.

Aspect	Test Scope	Test Strategy	Test Plan
Definition	Defines what features will be tested or excluded	High-level document outlining the testing approach	Detailed roadmap for how testing will be conducted
Purpose	Defines the boundaries of testing	Defines the overall methodology	Provides an actionable plan for specific projects/releases
Detail Level	Focuses on specific features or components	High-level and generalized for consistency	Detailed, including resources, timelines, and test scope
Example	Focus on testing login and checkout functionality	Use automated regression and manual exploratory tests	Test login functionality with 2 testers over 2 weeks

Basic Concept

- **Test Plan Example:** Lesson 01 - Test Plan Example for an E-commerce Website
 - **Scope:** Testing the login and payment functionality for the upcoming release.
 - **Schedule:** Testing will start on October 1st and finish by October 15th.
 - **Resources:** Two testers assigned, using Selenium and Postman for testing.



Basic Concept

- **Test Plan:**



THANK YOU