# \*Software Testing Principles:-

**\* 7 different testing principles**

**1.Testing shows the presence of defects:-** By doing testing on any application, we can decrease the number of bugs, which does not mean that the application is defect-free, But at the time of deployment in the production server, if the end-user encounters those bugs which are not found in the testing process.

**2.Exhaustive Testing is not possible**:- ( Exhaus. Testing:-all possible data combinations are used for testing)

**3.Early Testing:-** All the testing activities should start in the early stages, which may cost us very less.

**4.Defect Clustering:-** Throughout the testing process, we can detect the numbers of bugs which are correlated to a small number of modules.

**5.Pesticide Paradox:-** Executing the same set of test cases again and again, these kinds of the test will not be able to find the new bugs in the software. New and different tests are necessary to be written for the implementation of multiple parts of the application, which helps to find more bugs.

**6. Testing is context-dependent:-** E-commerce websites, commercial websites, and so on are available in the market, because every application has its own needs, features, and functionality. For checking this type of application, we can apply various kinds of testing, different technique, approaches, and multiple methods.

**7.Absence of errors fallacy:-** The absence of error fallacy means identifying and fixing the bugs would not help if the application is impractical and not able to accomplish the client's requirements and needs.

# \*Software Development Life Cycle (SDLC):-

**Different phases of the software development cycle:-**

Software Development Life Cycle

**Phases of software development cycle:-**

**1.[Requirement Phase](https://www.javatpoint.com/software-development-life-cycle" \l "requirement-phase)**:- The client states requirements, specifications, expectations, and any other special requirement related to the product or software are gathered by the business manager or project manager or analyst.

**2.[Design Phase](https://www.javatpoint.com/software-development-life-cycle" \l "design-phase)**:- In this phase, the logical designing of the system is converted into physical designing.

There are several techniques and tools, such as data flow diagrams, flowcharts, decision tables, and decision trees, Data dictionary, and the structured dictionary are used for describing the system design.

3.**[Build /Development Phase](https://www.javatpoint.com/software-development-life-cycle" \l "build-development-phase)**:- In this phase, implement the design into the development of a software system. Coding starts by the team of developers according to the design discussed in the previous phase and according to the requirements of the client.

Front-end developers:-Develop easy and attractive GUI and necessary interfaces to interact with back-end operations.

back-end developers:-Develop back-end coding according to the required operations.

**4.[Testing Phase](https://www.javatpoint.com/software-development-life-cycle" \l "testing-phase):**-After getting the developed GUI and back-end combination, it is tested against the requirements stated in the requirement phase. Testing determines whether the software is actually giving the result as per the requirements or not.

Integration testing, unit testing, acceptance testing, and system testing are carried out. If there are any defects in the software or it is not working as per expectations, then the testing team gives information to the development team.

**5.[Deployment/ Deliver Phase](https://www.javatpoint.com/software-development-life-cycle" \l "deployment-deliver-phase):-** When software testing is completed with a satisfying result, it is delivered to the customer for their use. As soon as customers receive the product, they are recommended first to do the beta testing. If it is having a severe issue, then the development team solves it in a short time; otherwise, if it is less sevior, then it will wait for the next version.

After the solution of all types of bugs and changes, the software finally deployed to the end-user.

**6.[Maintenance](https://www.javatpoint.com/software-development-life-cycle" \l "maintenance):-** The maintenance phase is the last and long-lasting phase of SDLC because it is the process which continues until the software's life cycle comes to an end. This phase also includes making changes in hardware and software to maintain its operational effectiveness like to improve its performance, enhance security features and according to customer's requirements with upcoming time. This process to take care of product time to time is called maintenance.

**\*STLC phases:-**

**\*There are 6 phases for STLC:-**

**1. Requirement Phase :- (Documents prepare in this phase:- RTM, Automation feasibility report.)**

**\*Activities:-**

* Identify types of tests to be performed.
* Gather details about testing priorities and focus.
* Prepare [Requirement Traceability Matrix (RTM)](https://www.guru99.com/traceability-matrix.html).
* Identify test environment details where testing is supposed to be carried out.
* Automation feasibility analysis (if required).

**2**. **Test Planning :-( Documents prepare in this phase:-Test Plan, Effort Estimation Document)**

**\*Activities:-**

* Preparation of test plan/strategy document for various types of testing
* Test tool selection
* Test effort estimation
* Resource planning and determining roles and responsibilities.
* Training requirement

**3. Test Case Development :-( Documents prepare in this phase:-Test cases/script, Test data)**

**\* Activities:-**

* Create test cases, automation scripts (if applicable)
* Review and baseline test cases and scripts
* Create test data (If Test Environment is available)

**4. Test Environment Setup:-(Documents prepare in this phase:-Environment ready with test data set up, Smoke Test Results)**

**\*Activities:-**

* Understand the required architecture, environment set-up and prepare hardware and software requirement list for the Test Environment.
* Setup test Environment and test data
* Perform smoke test on the build

**5. Test Execution :-( Documents prepare in this phase:-Completed RTM with the execution status, Test cases updated with results, Defect reports)**

**\*Activities:-**

* Execute tests as per plan
* Document test results, and log defects for failed cases
* Map defects to test cases in RTM
* Retest the[Defect](https://www.guru99.com/defect-management-process.html)fixes.
* Track the defects to closure.

**6.Test Cycle Closure:-(Documents prepare in this phase:-Test Closure report, Test metrics**)

**\*Activities:-**

* Evaluate cycle completion criteria based on Time, Test coverage, Cost, Software, Critical Business Objectives, Quality
* Prepare test metrics based on the above parameters.
* Document the learning out of the project
* Prepare Test closure report
* Qualitative and quantitative reporting of quality of the work product to the customer.
* Test result analysis to find out the defect distribution by type and severity.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

# \*\*\*\*\*HTTP vs HTTPS:

## \*\*\*What is HTTP?

Full form of HTTP is **Hypertext Transfer Protocol**. HTTP offers set of rules and standards which govern how any information can be transmitted on the World Wide Web. HTTP provides standard rules for web browsers & servers to communicate.

HTTP is an application layer network protocol which is built on top of TCP. HTTP uses Hypertext structured text which establishes the logical link between nodes containing text. It is also known as “stateless protocol” as each command is executed separately, without using reference of previous run command.

## \*\*\*What is HTTPS?

HTTPS stands for **Hyper Text Transfer Protocol Secure**. It is highly advanced and secure version of HTTP. It uses the port no. 443 for Data Communication. It allows the secure transactions by encrypting the entire communication with SSL. It is a combination of SSL/TLS protocol and HTTP. It provides encrypted and secure identification of a network server.

HTTP also allows you to create a secure encrypted connection between the server and the browser. It offers the bi-directional security of Data. This helps you to protect potentially sensitive information from being stolen.

**\*\*\*\*\*KEY DIFFERENCE**

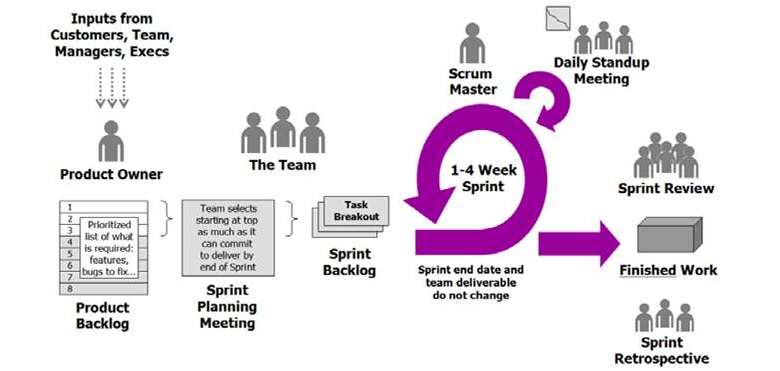
* HTTP lacks security mechanism to encrypt the data whereas HTTPS provides SSL or TLS Digital Certificate to secure the communication between server and client.
* HTTP operates at Application Layer whereas HTTPS operates at Transport Layer.
* HTTP by default operates on port 80 whereas HTTPS by default operates on port 443.
* HTTP transfers data in plain text while HTTPS transfers data in cipher text (encrypt text).
* HTTP is fast as compared to HTTPS because HTTPS consumes computation power to encrypt the communication channel.

## Difference Between HTTP and HTTPS:-

|  |  |  |
| --- | --- | --- |
| **Parameter** | **HTTP** | **HTTPS** |
| **Protocol** | It is hypertext transfer protocol. | It is hypertext transfer protocol with secure. |
| **Security** | It is less secure as the data can be vulnerable to hackers. | It is designed to prevent hackers from accessing critical information. It is secure against such attacks. |
| **Port** | It uses port 80 by default | It was use port 443 by default. |
| **Starts with** | HTTP URLs begin with http:// | HTTPs URLs begin with https:// |
| **Used for** | It’s a good fit for websites designed for information consumption like blogs. | If the website needs to collect the private information such as credit card number, then it is a more secure protocol. |
| **Scrambling** | HTTP does not scramble the data to be transmitted. That’s why there is a higher chance that transmitted information is available to hackers. | HTTPS scrambles the data before transmission. At the receiver end, it descrambles to recover the original data. Therefore, the transmitted information is secure which can’t be hacked. |
| **Protocol** | It operates at [TCP/IP](https://www.guru99.com/tcp-ip-model.html) level. | HTTPS does not have any separate protocol. It operates using HTTP but uses encrypted TLS/SSL connection. |
| **Domain Name Validation** | HTTP website do not need SSL. | HTTPS requires SSL certificate. |
| **Data encryption** | HTTP website doesn’t use encryption. | HTTPS websites use data encryption. |
| **Search Ranking** | HTTP does not improve search rankings. | HTTPS helps to improve search ranking. |
| **Speed** | Fast | Slower than HTTP |
| **Vulnerability** | Vulnerable to hackers | It Is highly secure as the data is encrypted before it is seen across a network. |

**\*\*\*\*\*Why choose Agile Scrum Methodology?**

Due to frequent change in requirement we work on Agile Scrum Methodology.



Its like an incremental model .In agile whole requirement of a software product divides according to priorities. These priorities are saved in a list which is called product backlog.

**Product owner:**

In Agile process product owner will decide all the requirements for a software.

Product owner is a scrum development role for a person who represents the business or user community and is responsible for working with the user group to determine what features will be in the product release.

**Product Backlog:**

All the user requirements are saved in product backlog. Product owner will decide which wants user story's he/she to complete first. Then according to that , there will be a sprint meeting.

**What is Sprint Meeting:**

In sprint meeting all the team member(developers, testers) will participate for each release of a product that is called sprint.

In sprint meeting all the team members understand the modules and requirements and give their estimate for each task.

**Sprint:**

Sprint is of 1-2weeks in which we complete 4-5 user stories according to software priorities.

**Scrum:**

Scrum is of multiple sprints in which we complete multiple user stories.

**Scrum Master:**

Scrum Master keeps the track of the Software Product.

Scrum Master conduct a daily stand up meetings with all the team members everyday for 20-30 mins.

The scrum master asks the team members these three questions:

1. What did you do yesterday?

2. What will you do today?

3. Are there any impediments in your way?

**Sprint Backlogs:**

The sprint backlog is a list of tasks identified by the Scrum team to be completed during the Scrum

sprint. During the sprint planning meeting, the team selects some number of product backlog items

usually in the form of user stories, and identifies the tasks necessary to complete each user story. All

the team members give their estimates how many hours will take to complete their tasks.

**Sprint BurnDownChart:**

The sprint burndown chart is a public displayed chart showing remaining work in the sprint backlog.

Updated every day, it gives a simple view of the sprint progress.

**Retrospective meeting:**

After the release of each sprint all the team members discuss how the sprint was. How can we improve our product quality.

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Shital concepts about Manual Testing:-**

**Severity & Priority examples(from guru99),Smoke & Sanity difference, Authentication & Authorization difference, http & https difference, retesting & regression testing ,Test scenario, Test Cases, Exploratory Testing, Ad hoc Testing, Practical examples of our project when u r handled that type of testing(for Testing type and for Severity & Priority), Real scenario related to Severity & Priority..**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*SQL Concepts:-**

**Difference between Drop, Delete &Truncate Command, Find 2nd highest salary from Emp table, Use of count, Group by with Where Clause ,Order by clause, Aggregation Function, DDL & DML Command, SQL queries from w3c school, Joins, Distinct Command, Count Command…**

### \*\*\*\*findElement and findElements:-

Most often, such automated testing is executed by using frameworks like [Selenium WebDriver](https://www.browserstack.com/guide/selenium-webdriver-tutorial).

[Selenium](https://www.browserstack.com/selenium) defines two methods for identifying web elements:

* **findElement:** A command used to uniquely identify a web element within the web page.
* **findElements**: A command used to identify a list of web elements within the web page.

Let’s understand the difference between these two methods in greater detail.

### Difference between findElement and findElements:-

|  |  |  |
| --- | --- | --- |
| Sr.No | **findElement** | **findElements** |
| 1 | Returns the first matching web element if multiple web elements are discovered by the locator | Returns a list of multiple matching web elements |
| 2 | |  |  | | --- | --- | | Throws **NoSuchElementException**  if the if element is not found. | Returns an empty list if no matching element is found | | |  |  | | --- | --- | | Throws **NoSuchElement Exception if** if the element is not found | Returns an empty list if no matching element is found | |
| Definition | driver.findElement() is used to find a webElement on a webpage. | driver.findElements() is used to find a List of webElements matching the locator passed as parameter. |
| Syntax | WebElement element = driver.findElement(By locator); | List<WebElement> elements = driver.findElements(By locator); |
| For multiple matches | In case the same locator matches multiple webElements then findElement method returns the first web element found. | In case of multiple matches the findElements method returns a list of webElements. For interacting with a particular element we have find the particular element by its index e.g. elements.get(0).click(); will perform the click operation on the first element of the ‘elements’ list. |
| If no element is found | In case the locator passed to findElement() method leads to no element then NoSuchElementException is thrown. | In case the locator passed to findElements() method leads to no element then a List of 0 size is returned instead of an exception. |
| Definition | driver.findElement() is used to find a webElement on a webpage. | driver.findElements() is used to find a List of webElements matching the locator passed as parameter. |