Software Testing Life Cycle

TUJUAN PEMBELAJARAN

1. Mahasiswa dapat memahami perbedaan **tahapan** pada **SDLC Vs STLC**
2. Mahasiswa dapat memahami **tahapan** , **aktivitas** dan **workproduct** dari **STLC**

1 **REQUIREMENT ANALYSIS**

RTM (REQUIREMENT TRACEABILITY MATRIX)

Diperolah dari

2 **TEST PLAN**

- ✓ TIPE TEST
- ✓ LEVEL TEST
- ✓ TOOLS YANG DIGUNAKAN
- ✓ EFFORT ESTIMATION
- ✓ PRIORITAS TESTING
- ✓ TESTING ENVIRONMENT
- ✓ TEST SKENARIO
  - ✓ TEST CASE

RENDANG

AYAM KALEO

Software Testing Life Cycle

1st Requirement Analysis

2nd Test Planning

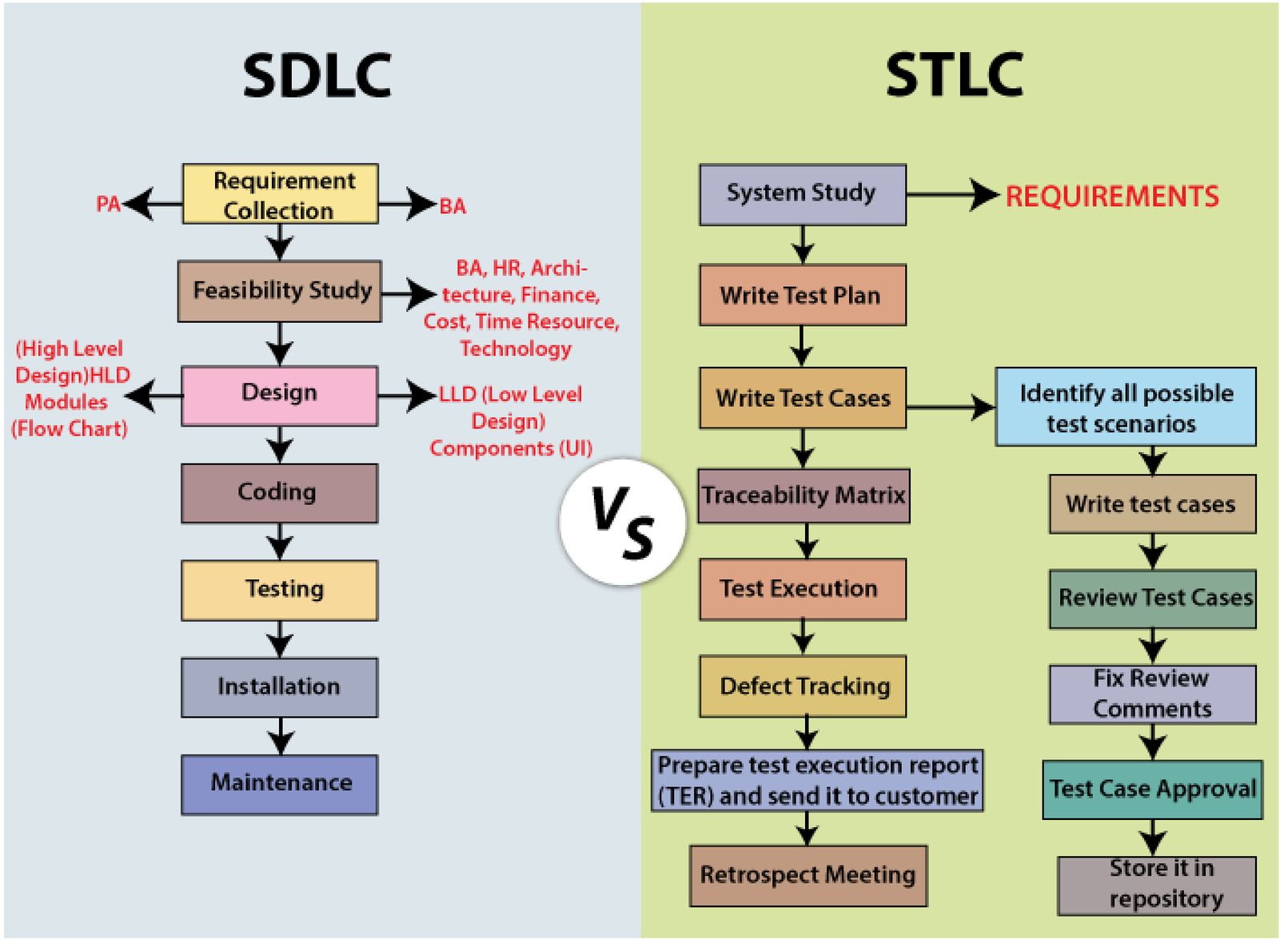
3rd Test case development

4th Test Environment Setup

5th Test Execution

6th Test Cycle closure

AKTIVITAS DAN WORKPRODUCT



https://www.javatpoint.com/sdlc-vs-stlc

SDLC VS STLC

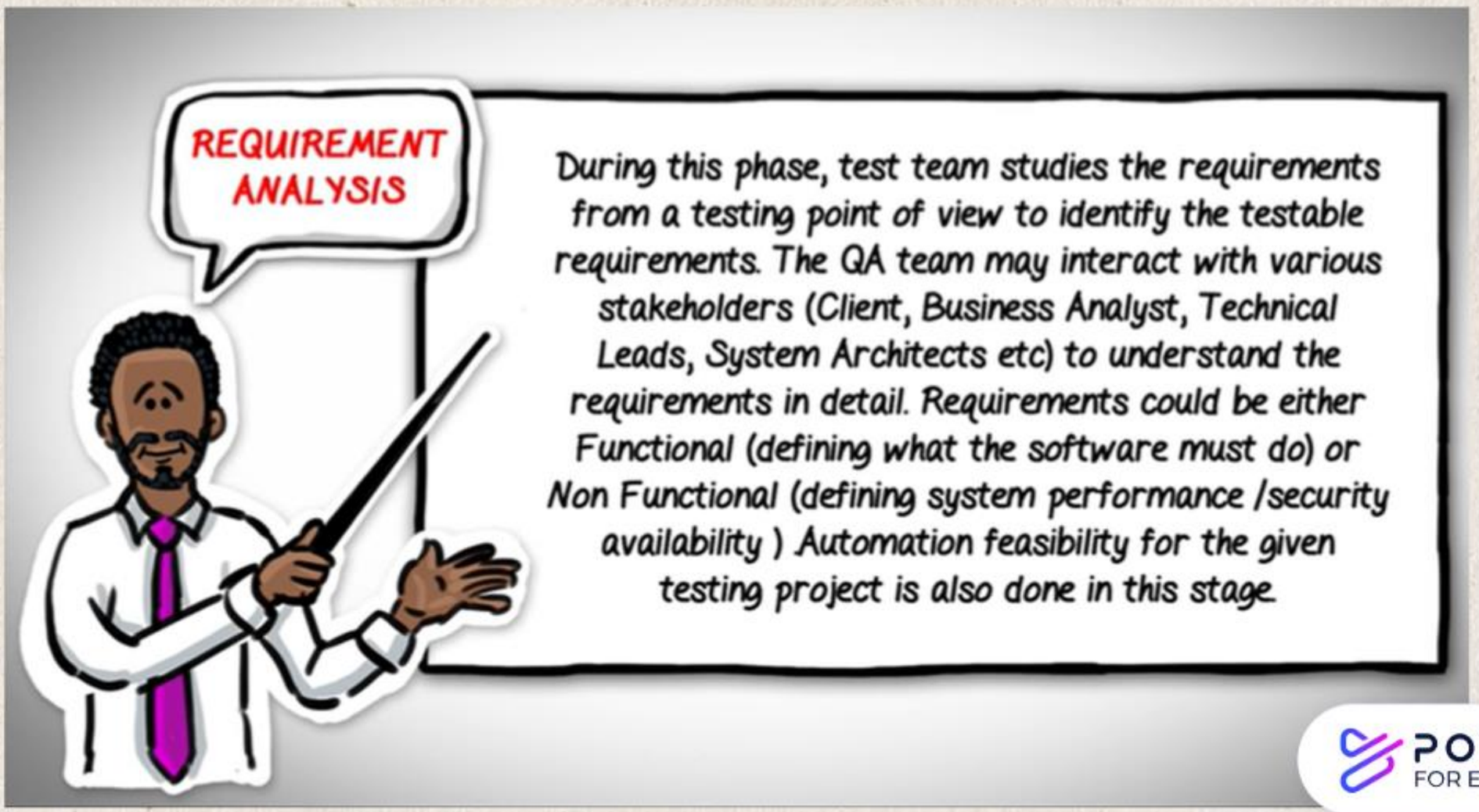
S.NO	Comparison basis	SDLC	STLC
1.	**Explanations**	It is primarily connected to software development, which means that it is the procedure of developing a software application.	It is mainly linked to software testing, which means that it is a software testing process that contains various phases of the testing process.
2.	**Representation**	SDLC stands for ***Software Development Life Cycle***.	STLC stands for ***Software Testing Life cycle***.
3.	**Resources**	While performing the SDLC process, we needed a greater number of developers to complete the development process.	The STLC process needed a smaller number of testers to complete the testing process.
4.	**Focuses on**	Besides the development phase, other phases like testing are also included.	The STLC concentrate only on testing the software.
5.	**Objective**	The objective of the **Software development life cycle** is to complete the development of software successfully.	The objective of the **Software testing life cycle** is to complete the testing of software successfully.
6.	**Help in**	The SDLC will help us to develop a good quality software product.	The STLC will helps to create the software bug-free.

[No Title]

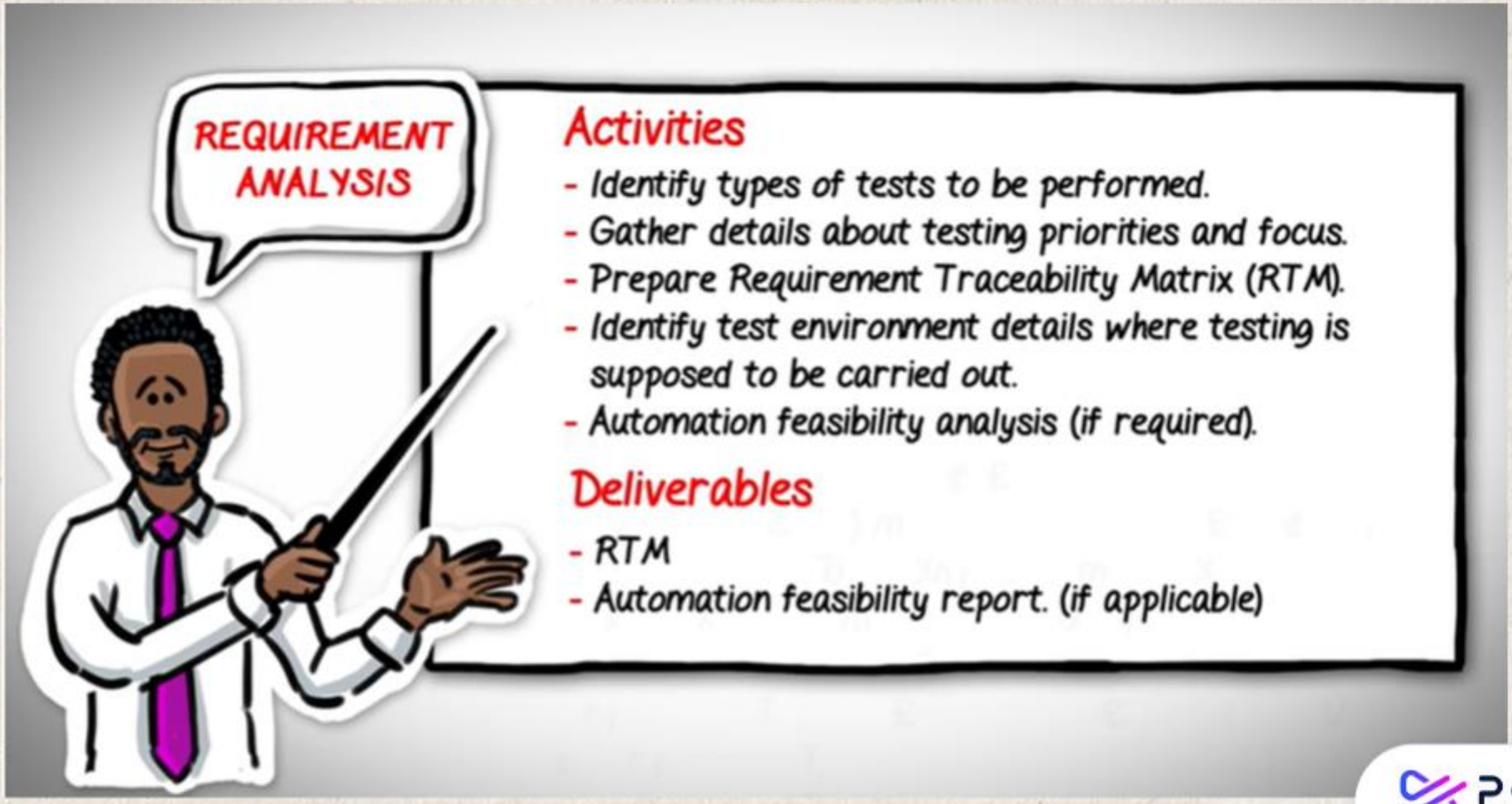
7.	**Different phases**	The various phase includes in **Software Development Life Cycle** are as follows: ○ Requirements Collection ○ Feasibility Study ○ Design ○ Programming or Coding ○ Testing ○ Installation ○ Maintenance	The various phase includes in **Software Testing Life Cycle** are as follows: ○ Requirement collection or System study ○ Test Plan ○ Write test case ○ Traceability Matrix ○ Defect Tracking ○ Test Execution Report ○ Retrospect meeting
8.	**Requirement collection phase**	In the SDLC Requirement collection phase, **the BA [Business Analyst] and PA [Product Analyst]** will collect the requirements and interpret business language into software language.	In the Requirement Analysis phase of the STLC, **the QA [Quality Assurance] team** will study requirement documents and prepare the System Test Plan.
9.	**Designing phase**	Based on the requirement understanding, the development team will develop the **HLD [High-Level Design] and LLD [Low-Level Design]** of the software.	Generally, in STLC, the **Test Architect or a Test Lead** plan the test strategy. And also finds the testing points.
10.	**Coding phase**	In the SDLC coding phase, the developer will start writing the code as per the designed document and beginning of building the software.	In STLC, the QA team writes the test scenarios to authenticate the quality of the product.

11.	**Environment Set up**	After writing the code, the development team sets up a test environment with the developed product to validate the code.	Based on the prerequisites, the Test team confirms the environment set up. And do one round of smoke testing to ensure that the environment is stable for the product and ready for testing.
12.	**Testing Phase**	Once the environment has been set, the test engineer will perform various types of testing, such as Unit, Integration, System, **Retesting**, Regression testing, and so on. And the development team is also involving to fixing the bugs and report back to the tester.	Based on the test cases, the tester will do one round of integration and system testing. While performing the testing, if they encounter with any bugs, it will be reported and fixed after the retesting.
13.	**Deployment/ Product Release phase**	In the SDLC deployment phase, when we received sign-off from various testing teams, the application is deployed or installed in a production environment for real end-users.	In STLC, the Smoke and **sanity testing** are performed in the production environment as soon as the product is deployed. And the testing team will prepare the test reports and matrix to analyze the product.
14.	**Maintenance Phase**	Once the product has been deployed, the development team includes support and release updates.	To check maintenance code deployed, the QA team performs the regression suites.
15.	**Performed**	The SDLC phases are done before the STLC phases.	The STLC phases are completed after SDLC phases.

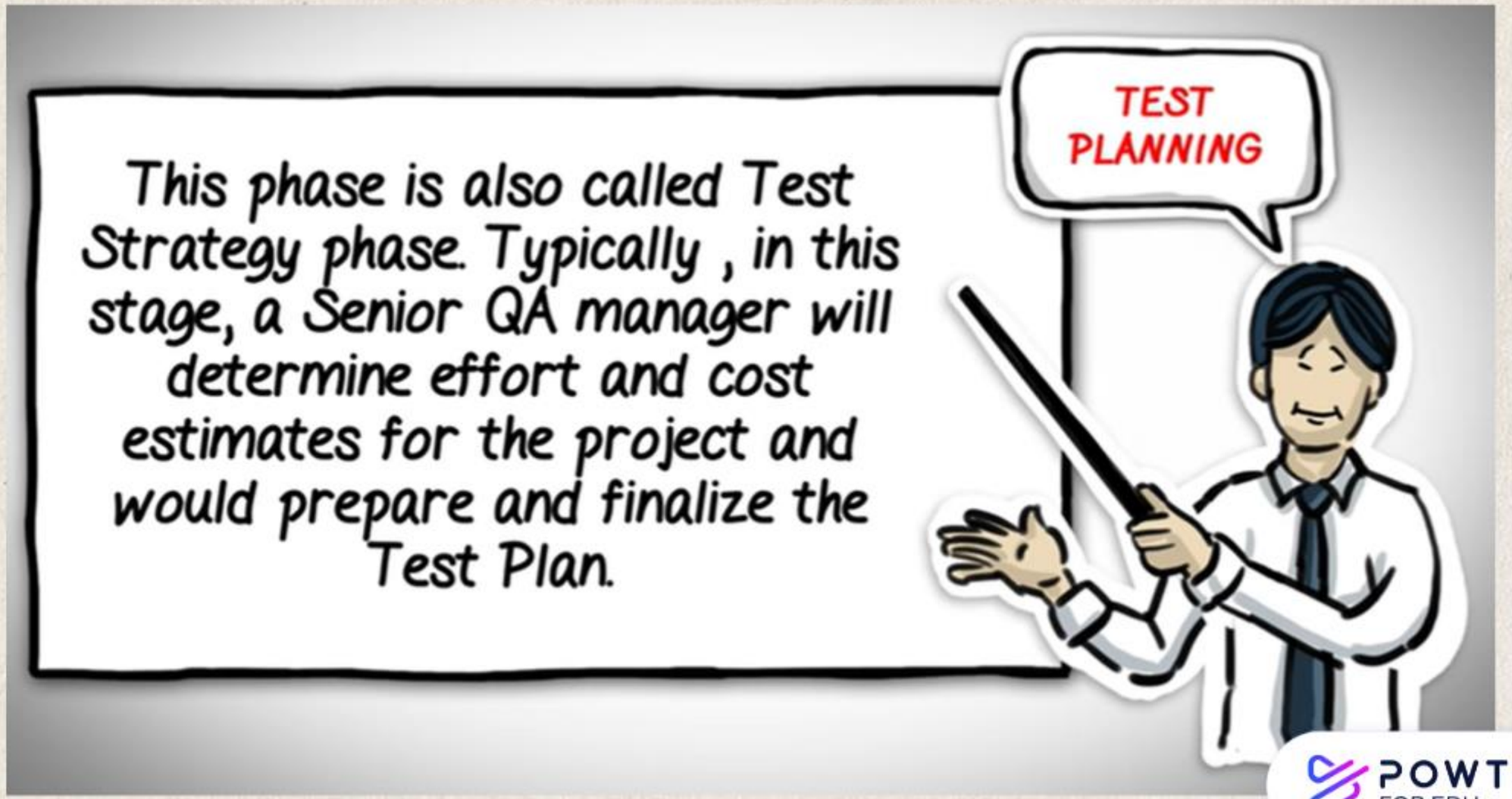
STLC: Requirement analysis



STLC: Requirement analysis



STLC: Test Planning



STLC: Test Planning

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

Deliverables

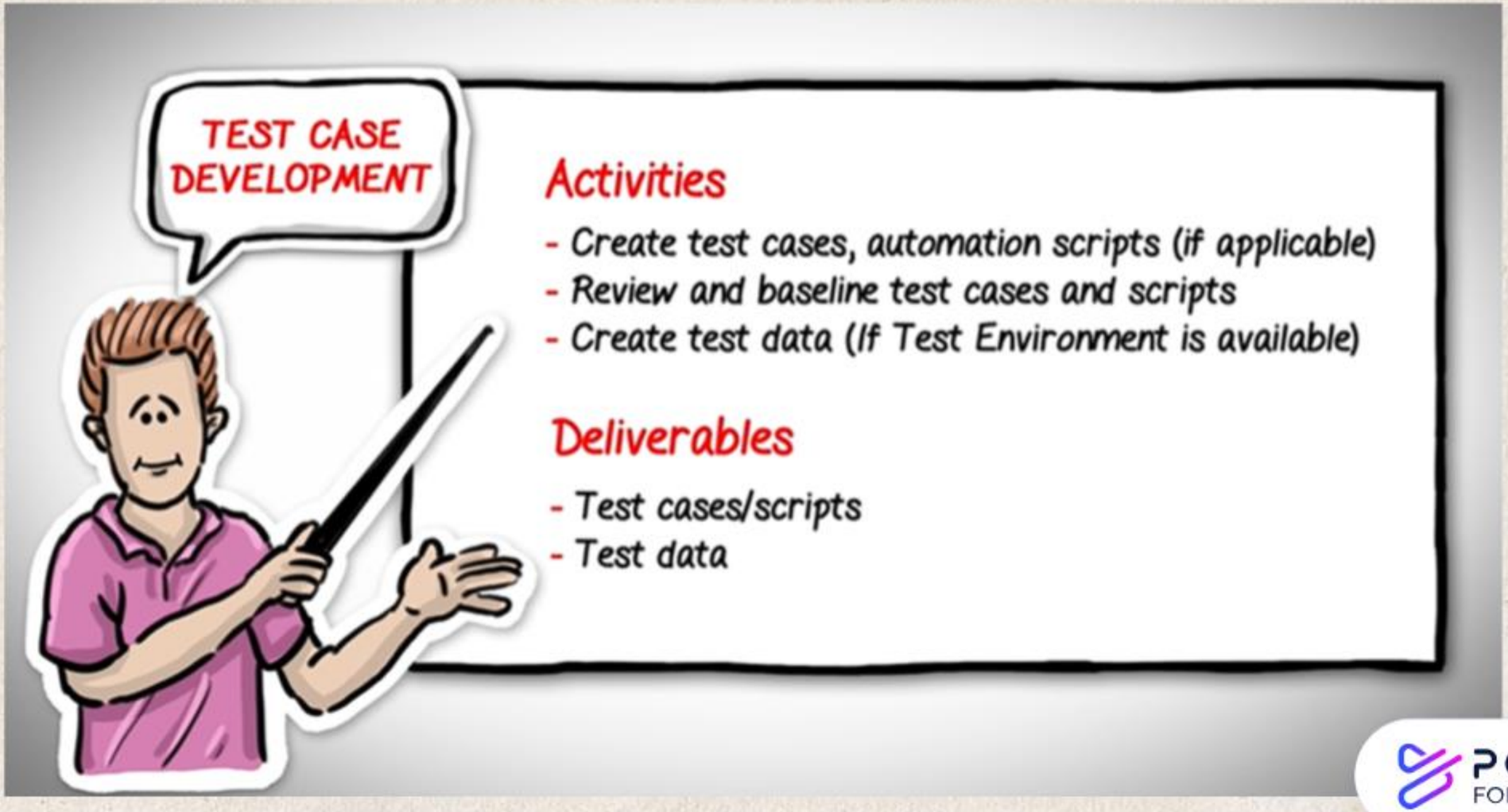
- Test plan /strategy document.
- Effort estimation document.

STLC:

TEST CASE DEVELOPMENT

STLC:

TEST CASE DEVELOPMENT



STLC

TEST ENVIRONMENT SETUP

Test environment decides the software and hardware conditions under which a work product is tested. Test environment set-up is one of the critical aspects of testing process and can be done in parallel with Test Case Development Stage. Test team may not be involved in this activity if the customer/development team provides the test environment in which case the test team is required to do a readiness check (smoke testing) of the given environment.

STLC

TEST ENVIRONMENT SETUP

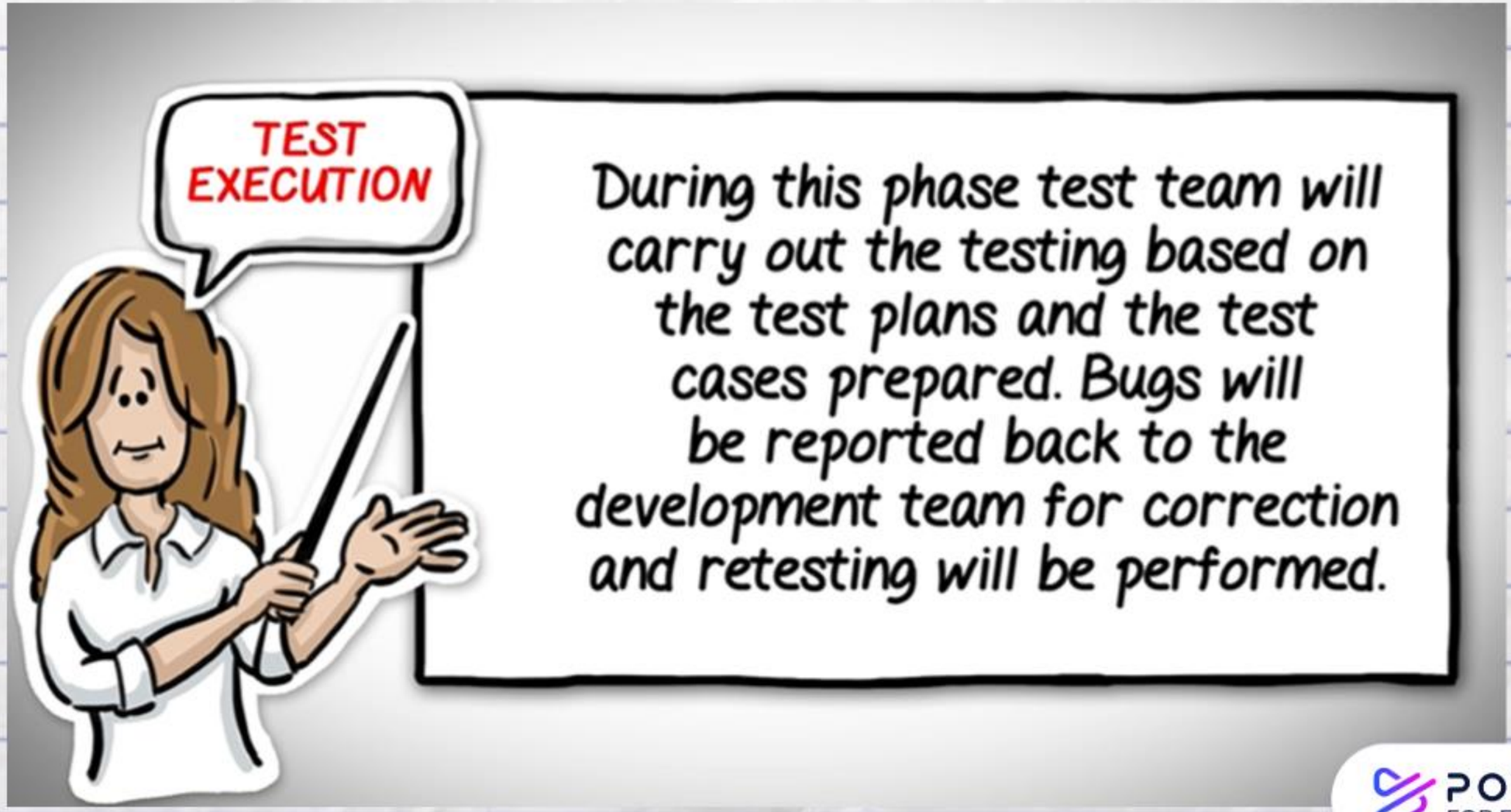
Activities

- 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

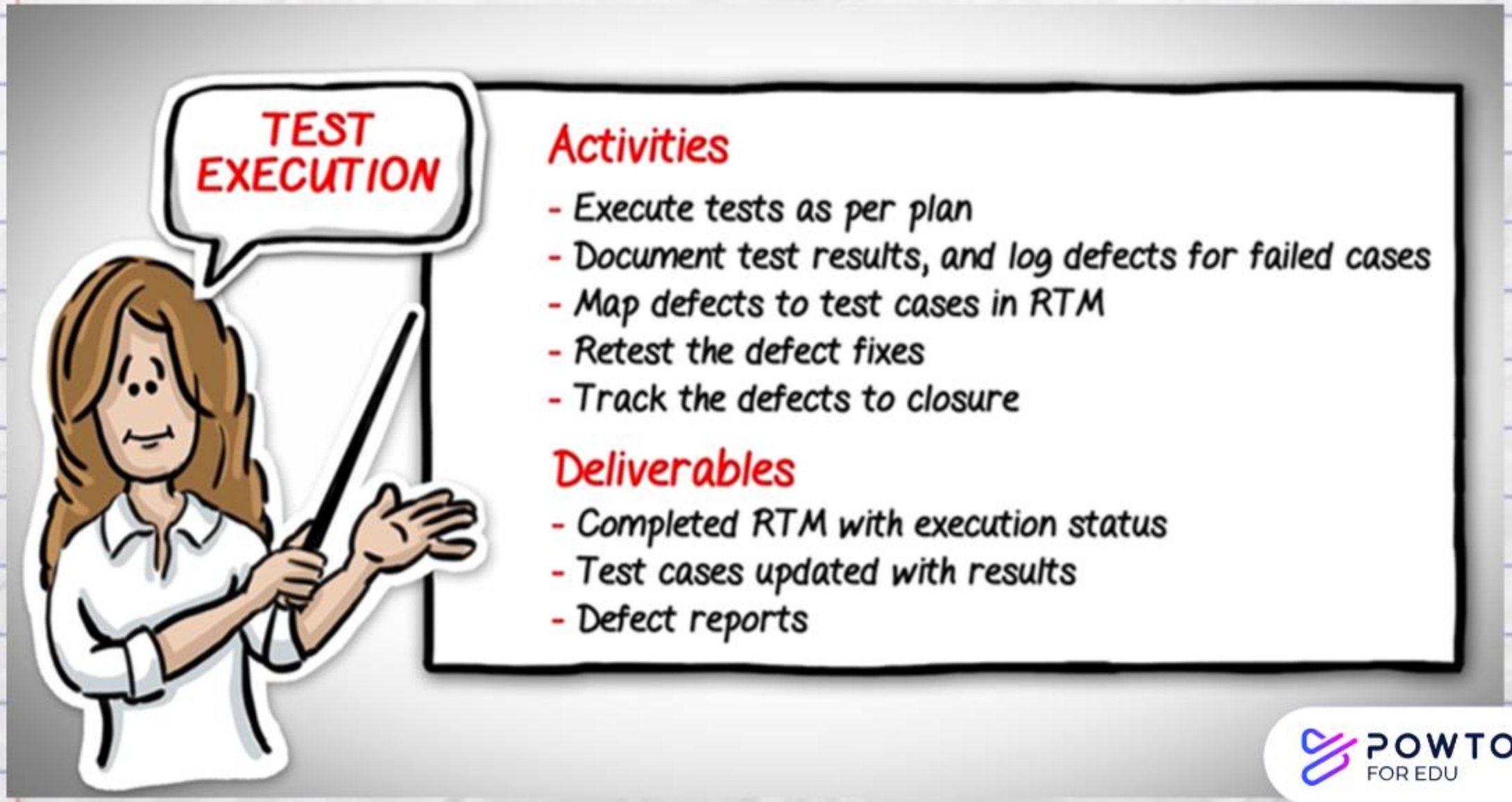
Deliverables

- Environment ready with test data set up.
- Smoke Test Results.

STLC: Test Execution



STLC: Test Execution



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 fixes
- Track the defects to closure

Deliverables

- Completed RTM with execution status
- Test cases updated with results
- Defect reports

STLC: Test Cycle Closure

Testing team will meet , discuss and analyze testing artifacts to identify strategies that have to be implemented in future, taking lessons from the current test cycle. The idea is to remove the process bottlenecks for future test cycles and share best practices for any similar projects in future.

STLC: Test Cycle Closure

Activities

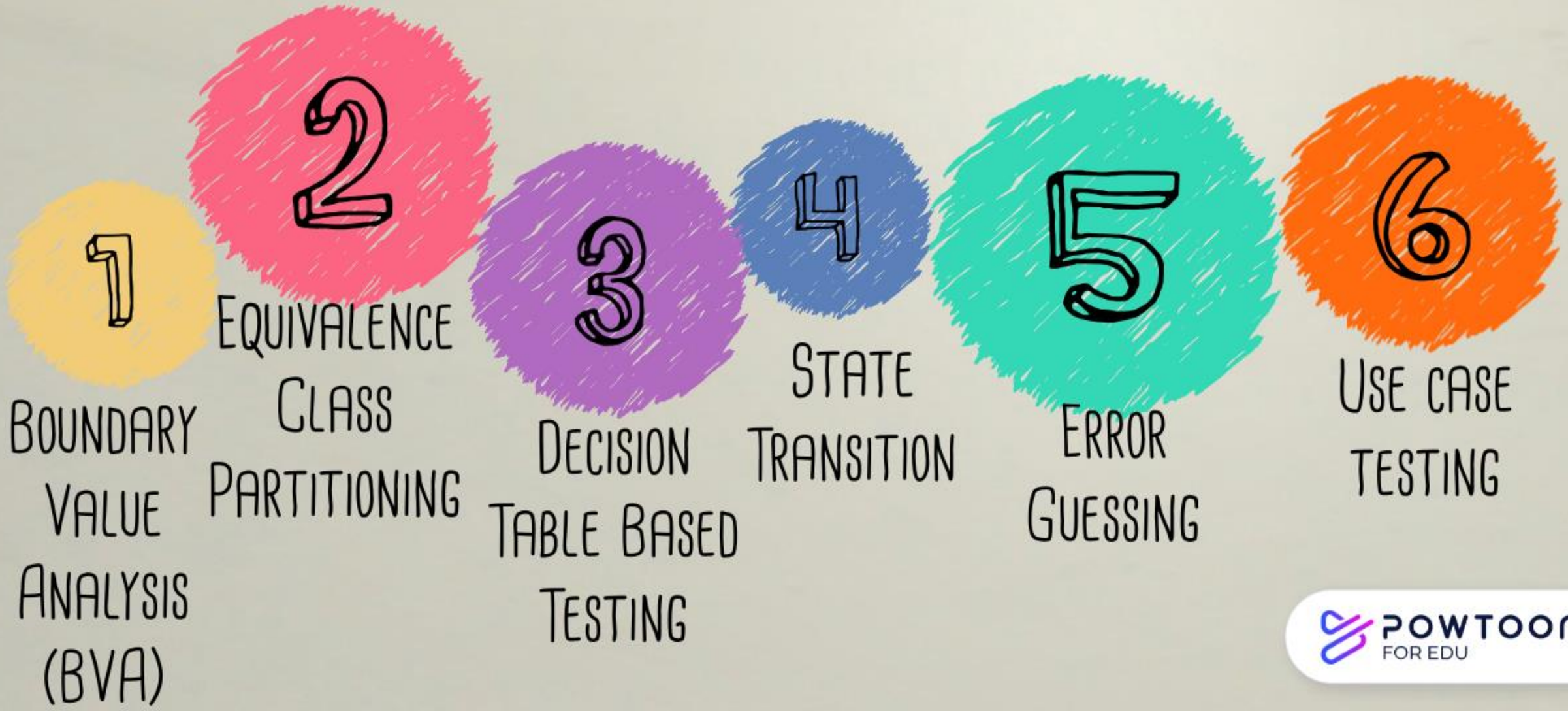
- Evaluate cycle completion criteria based on Time,Test coverage,Cost,Software,Critical Business Objectives , Quality.
- Prepare test metrics based on the above parameters.
- Document the learning out of the project
- Prepare Test closure report
- Qualitative and quantitative reporting of quality of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

Deliverables

- Test Closure report
- Test metrics

TEKNIK TESTING DALAM TEST CASE

Teknik testing dalam test case



Boundary value analysis(BVA)

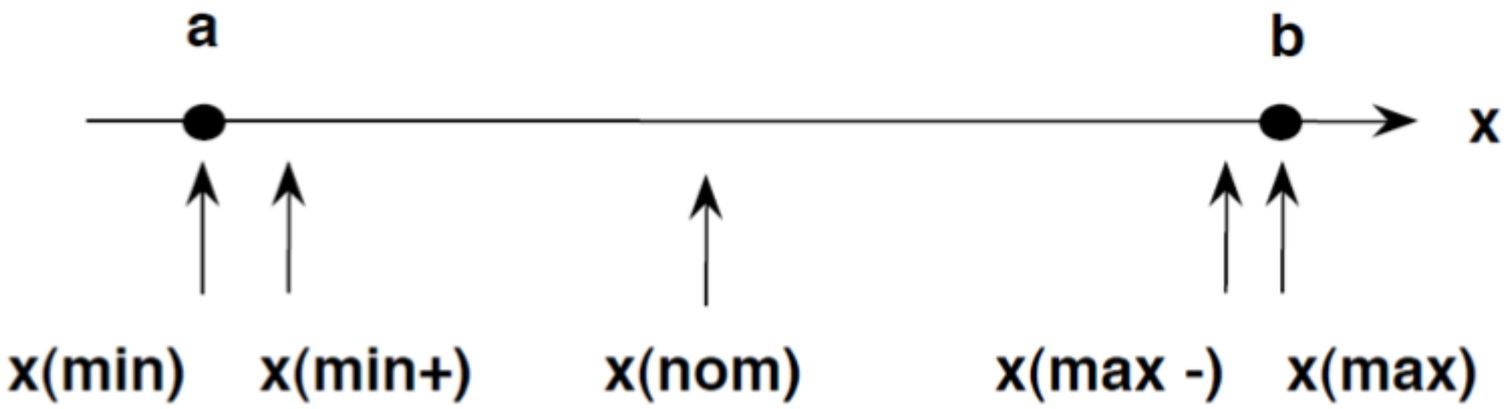
BATASAN AKHIR

- start end
- lower upper
- max min
- just inside
- just outside

Ide awal dari boundary value testing adalah memilih input variable sesuai dengan :

* Minimum
* diatas minimum
* Sebuah value ditengah
* Dibawah maximum
* Maximum

Boundary value analysis(BVA)

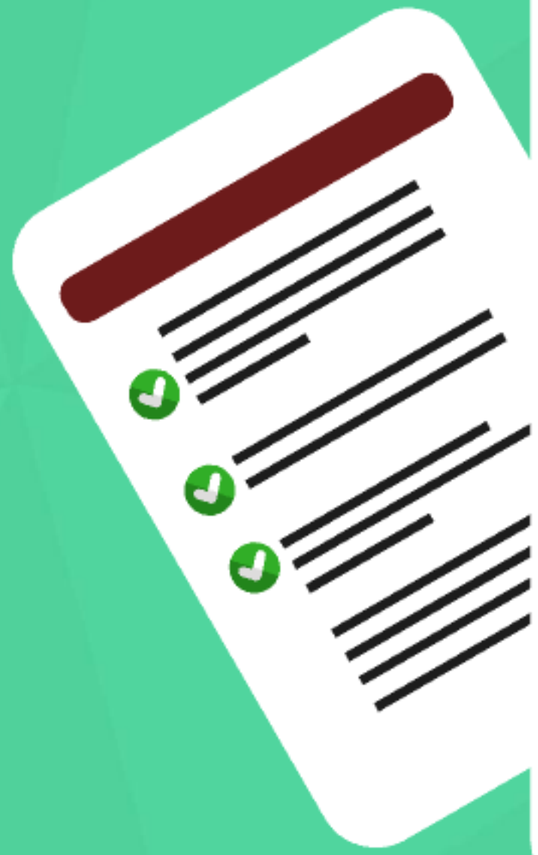


Contoh:

* Input value valid ketika nilai antara 1 hingga 10
* Boundary valuenya adalah: 0,1,2, 5 dan 9,10,11

Equivalent Class Partitioning

Equivalent Class Partitioning adalah teknik black box yang dapat diaplikasikan dalam level unit, integration, system, dll.



Membagi data input menjadi class equivalence data yang berbeda.

Ketika ada batasan input data, maka dapat di identifikasi valid dan invalidnya.

Equivalent Class Partitioning

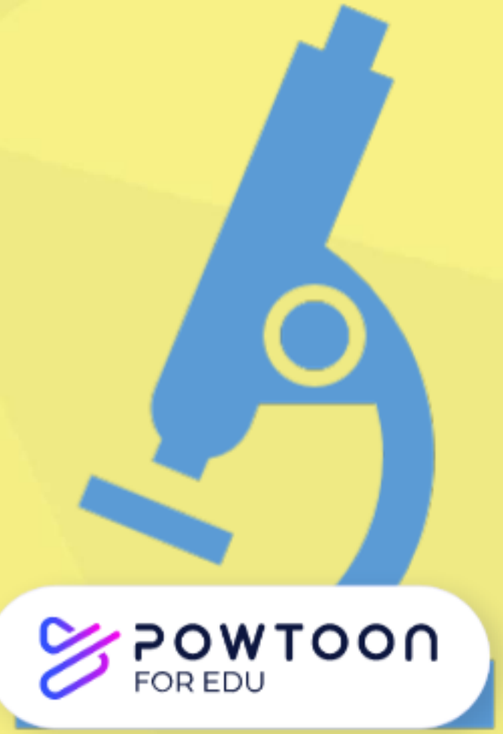
Kondisi input valid antara 1-10 dan 20-30

Dan 5 class equivalence nya adalah:

* --- hingga 0 (invalid)
* 1 hingga 10 (valid)
* 11 hingga 19 (invalid)
* 20 hingga 30 (valid)
* 31 hingga ---(invalid)

Kemudian dipilih dari tiap kelasnya:

* -2,3, 15, 25, 45



Decision

table based testing

Decision table testing

adalah teknik testing yang digunakan untuk mengetes system behavior untuk kombinasi dari input yang berbeda.

Teknik Table Cost Effect

Sebab ▶ Akibat

Decision table based testing

Conditions	Rule 1	Rule 2	Rule 3	Rule 4
Username (T/F)	F	T	F	T
Password (T/F)	F	F	T	T
Output (E/H)	E	E	E	H

* T – Correct username/password
* F – Wrong username/password
* E – Error message is displayed
* H – Home screen is displayed

Decision table based testing

Case 1:

Username dan password keduanya salah. User melihat error message.

Case 2:

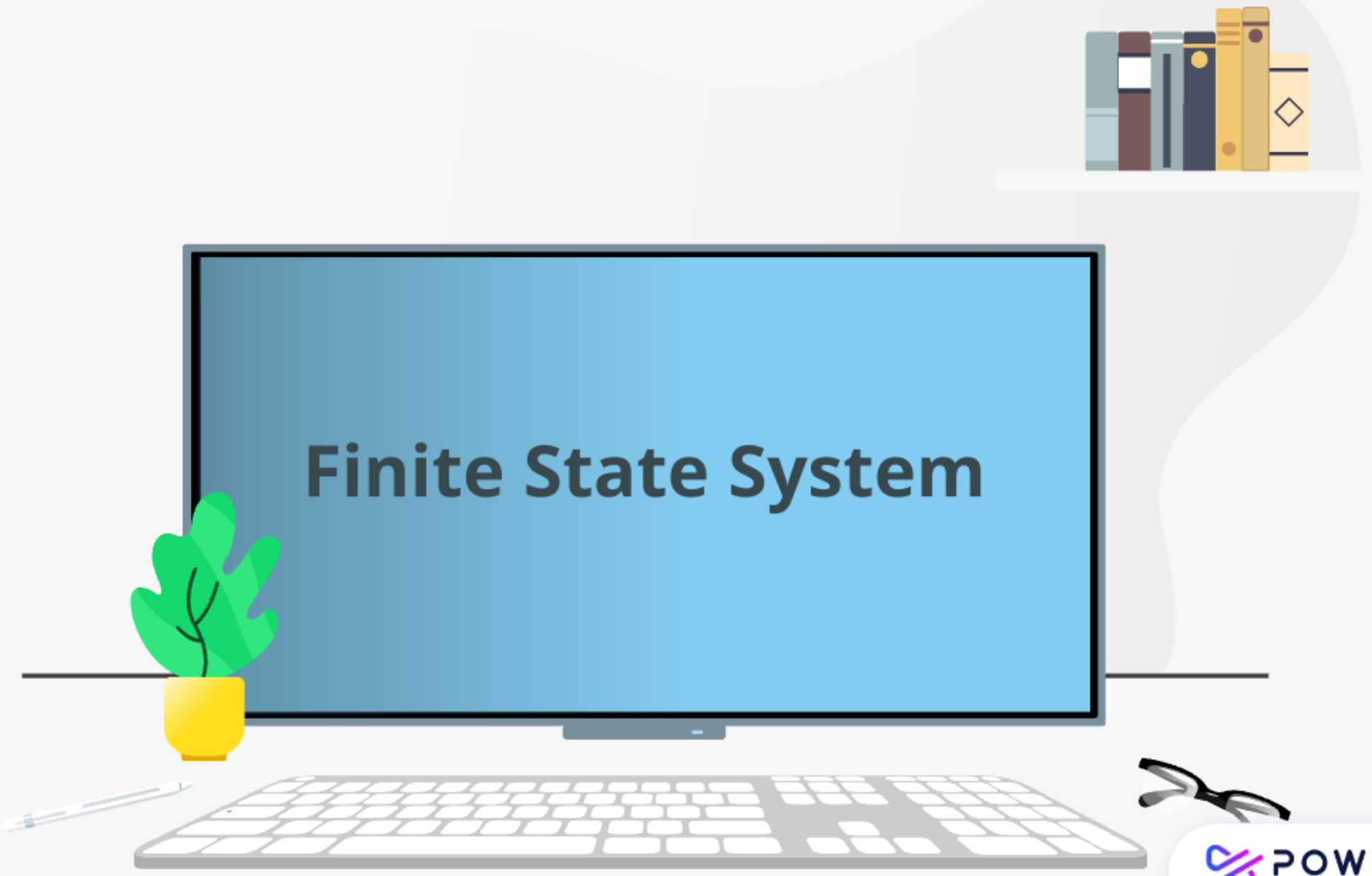
username benar dan password salah. User melihat error message.

Case 3:

Username salah dan password benar. User melihat error message.

Case 4:

Username dan password benar, dan user bisa masuk ke homepage

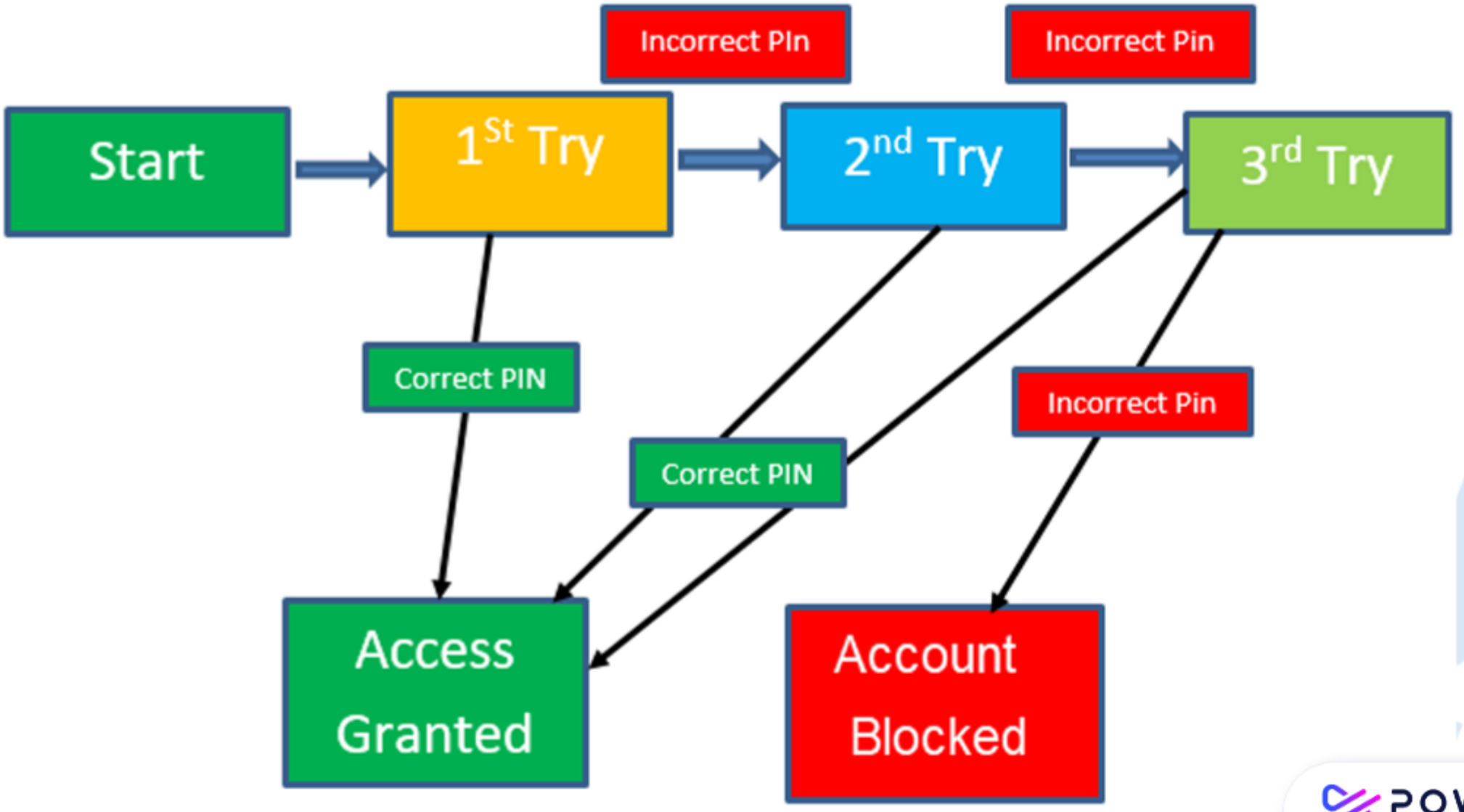

Finite State System

Guideline for State Transition :

digunakan ketika tim testing mengetes untuk limited set dari input.

Digunakan ketika tim testing ingin mengetes event yang berurutan yang terjadi dalam AUT

State Transition Testing



State Transition Testing

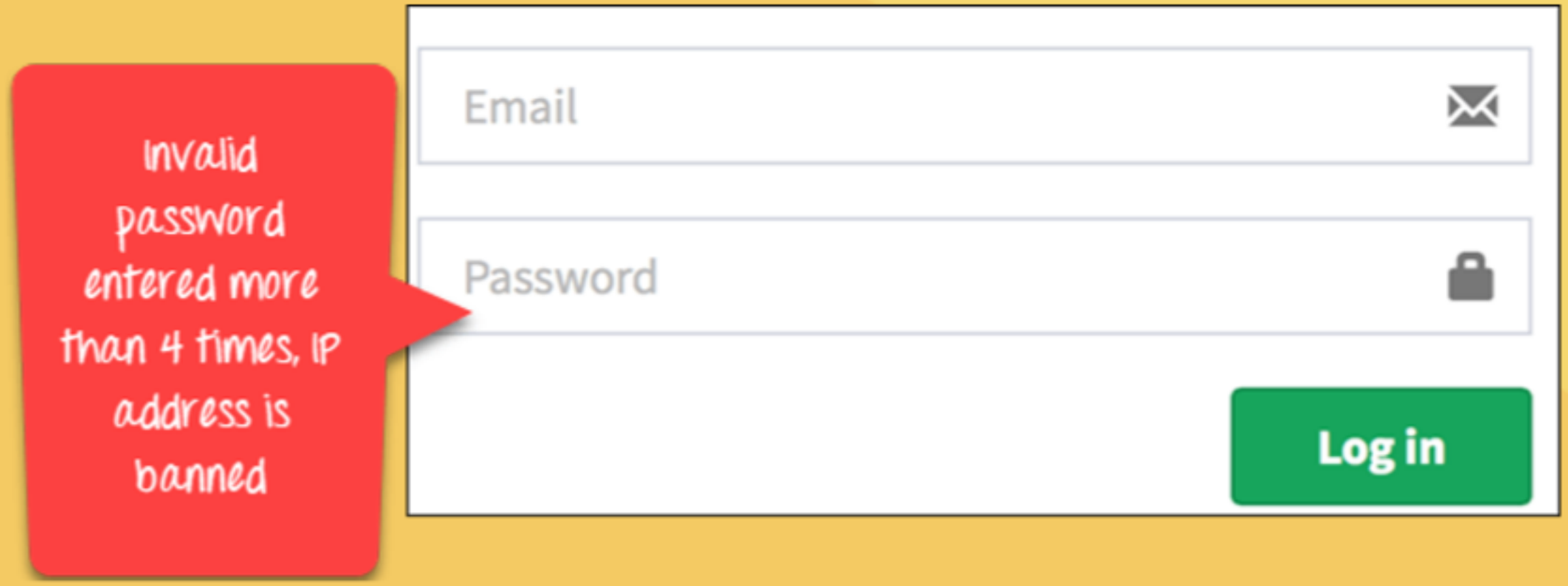
	Correct PIN	Incorrect PIN
S1) Start	S5	S2
S2) 1stÂ attempt	S5	S3
S3) 2ndÂ attempt	S5	S4
S4) 3rdÂ attempt	S5	S6
S5) Access Granted	-	-
S6) Account blocked	-	-

Error Guessing Guidelines

- Test harus menggunakan pengalaman sebelumnya
- Memahami implementasi eror yang ada
- Mengerti sistem yang akan dites
- Mengenal area yang sering terjadi eror
- Mengevaluasi data historical dan hasil tes

Use case testing

Use Case Testing adalah teknik testing yang membantu mengidentifikasi test case yang dapat mengcover keseluruhan sistem dari transaksi per transaksi dari awal hingga akhir.



Use case testing

Main Success Scenario	Step	Description
A:ActorS:System	1	A: Enter Agent Name & Password
	2	S: Validate Password
	3	S: Allow Account Access
Extensions	2a	Password not validS: Display Message and ask for re-try 4 times
	2b	Password not valid 4 timesS: Close Application

Use case testing

* Anggaplah percobaan pertama dari end to end scenario untuk fungsi login dimana user mengisi email dan password.

* Selanjutnya, sistem memvalidasi password dan kemudian, jika password benar akses dipenuhi.

* Terdapat ekstensi dari use case. Jika password tidak valid maka akan menampilkan pesan dan meminta hingga 4 kali.

* Jika password tidak valid hingga 4 kali maka sistem akan menutup IP address yang digunakan.