SCSD2613
System Analysis and Design

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

TOPIC VI
Systems Implementation
Part Two: System Construction (Coding) and Testing

MAJOR TOPICS

SYSTEM IMPLEMENTATION	• System implementation process
SYSTEM CONSTRUCTION (CODING) & TESTING	• System construction • Types of system testing
INSTALLATION	• Types of system installation • Planning the installation
DOCUMENTING THE SYSTEM	• Generic guidelines
TRAINING AND SUPPORT	• Types of training • Support
ORGANIZATIONAL ISSUES	• Factors • Security issues • Project closure

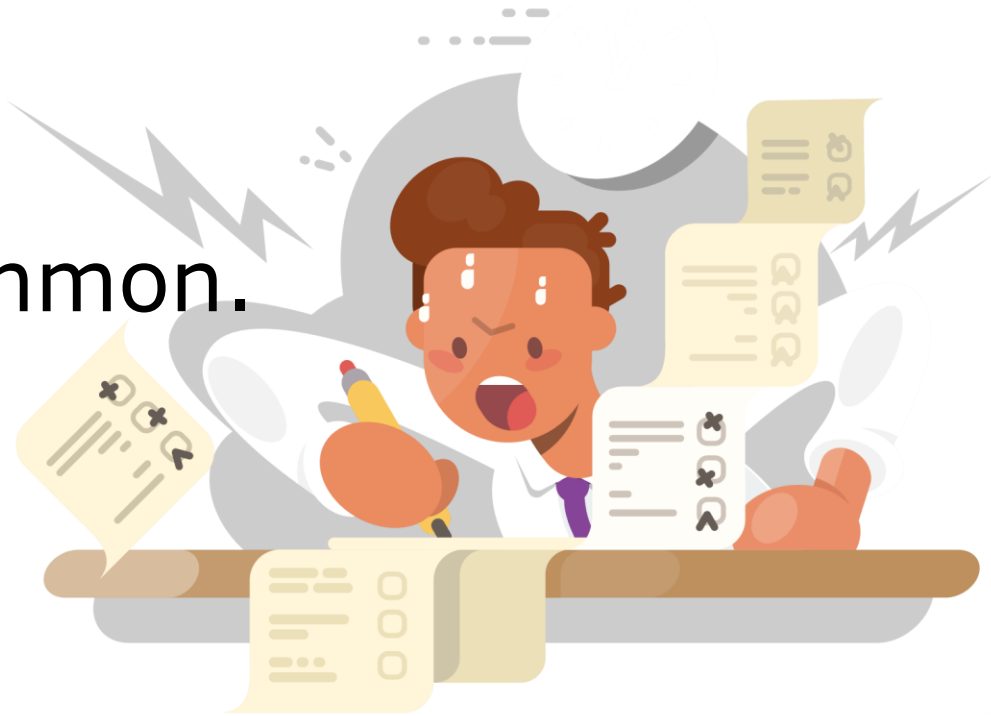
MAJOR TOPICS

SYSTEM CONSTRUCTION (CODING) & TESTING

- System construction
- Types of system testing

SYSTEM CONSTRUCTION AND TESTING

- Labor intensive activity.
- Tools are required.
- Blueprints are essential.
- Mistakes can be deadly.
- Weariness and Stress are common.



SYSTEM CONSTRUCTION

- System construction is the development of all parts of the system, including the software itself, documentation, and new operating procedures.
- **Programming** is often seen as the focal point of system development.
- Programming and testing are **tightly coupled.**

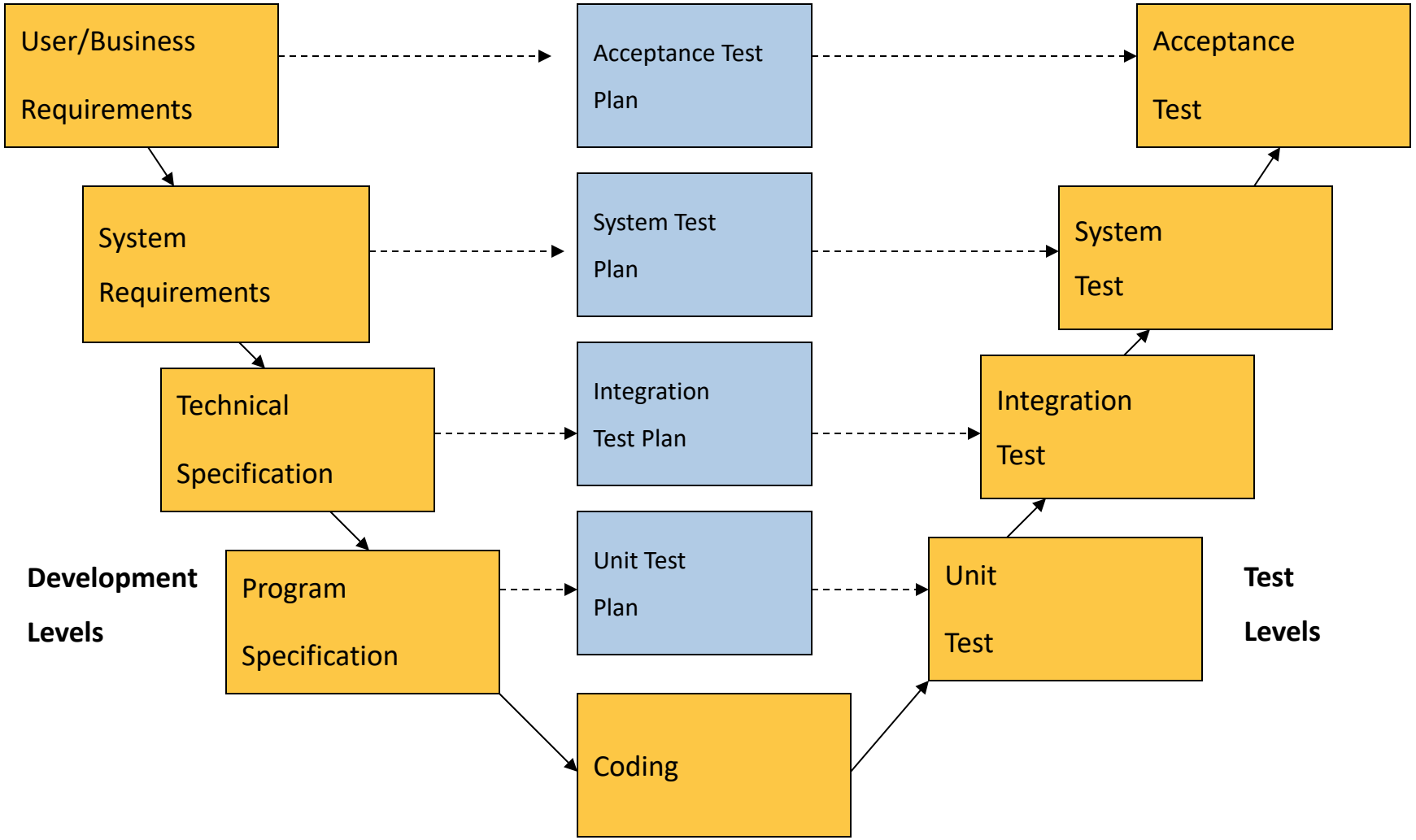
SYSTEM TESTING

- A process of analyzing a software item to detect the differences between existing and required conditions (i.e., defects) and to evaluate the features of the software item.
- An activity in which a system or component is executed under specified conditions, the results are observed or recorded, and an evaluation is made of some aspect of the system or component

SYSTEM TESTING

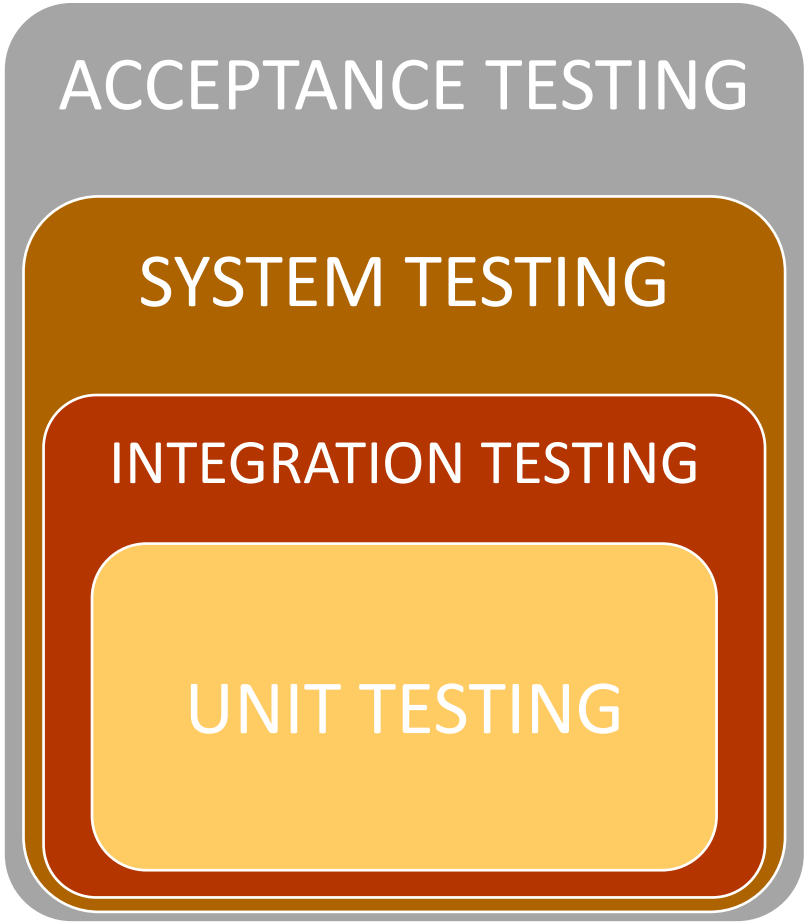
- **Testing** – *'The process consisting of all life cycle activities, both static and dynamic, concerned with planning, preparation and evaluation of software products and related work products to determine that they satisfy specified requirements, to demonstrate that they are **fit for purpose** and **to detect defects**.'*
- Test execution is only a part of testing, but not all of the testing activities
- Test activities exist before and after test execution

Testing through the Life Cycle: V-Model



Test Levels

- Generally, there are 4 testing levels:
  - Unit Testing.
  - Integration Testing.
  - System Testing.
  - Acceptance Testing.



TEST LEVELS

Level	Definition
Component/Unit	The testing of individual hardware or software components. (ISO 24765)
Integration	Testing performed to expose defects in the interfaces and in the interactions between integrated components or systems.
System	Testing an integrated system to verify that it meets specified requirements.
Acceptance	Formal testing with respect to user needs, requirements, and business processes conducted to determine whether or not a system satisfies the acceptance criteria and to enable the user, customers or other authorized entity to determine whether or not to accept the system. (ISO 24765)

Defect-directed testing

Conformance-directed testing

Sources: http://glossary.istqb.org/search/

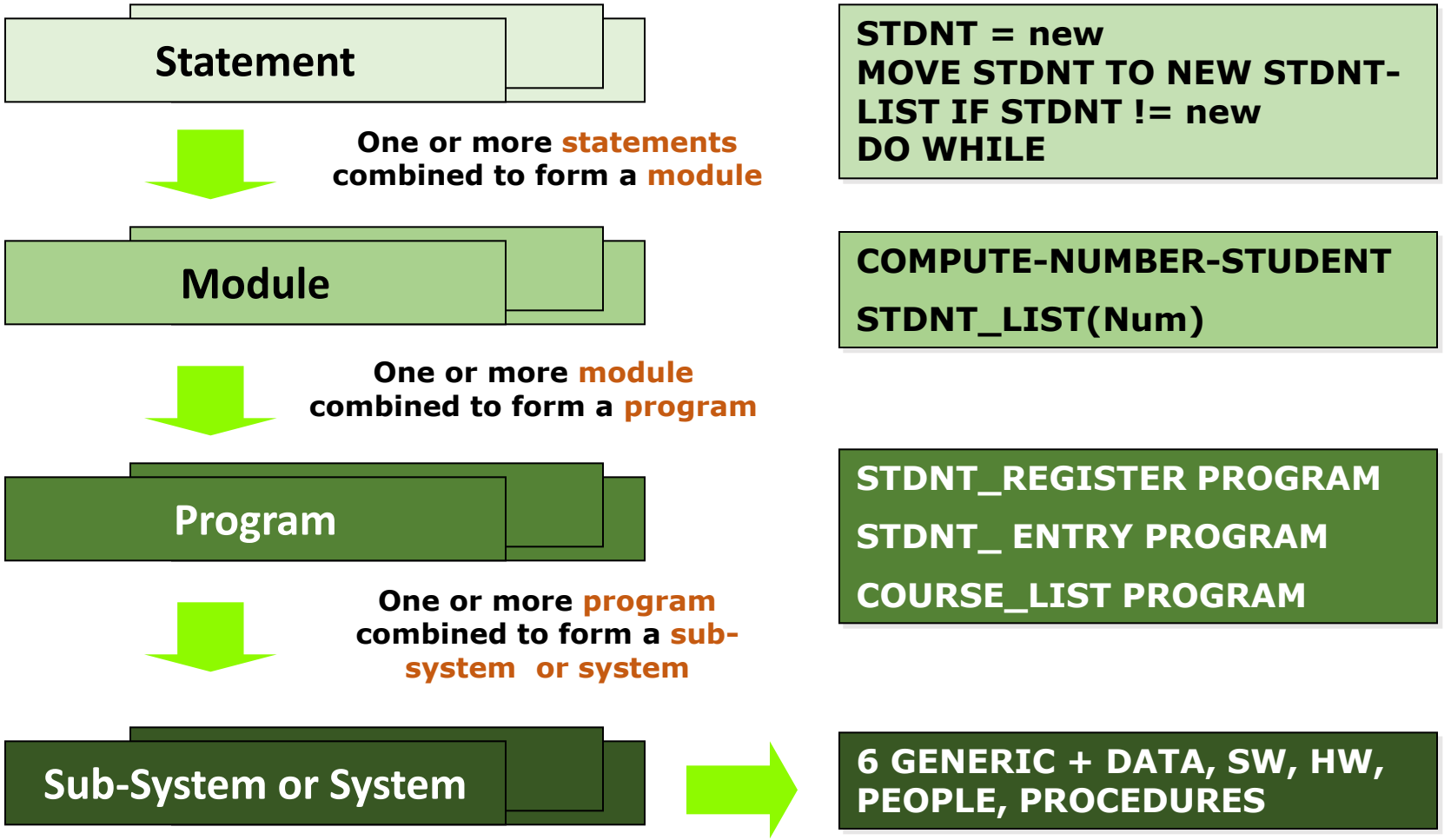
Tasks for Test Levels

Level	Aim of task to detect
Component/Unit	Coding problems, problems in detailed design, algorithms.
Integration	Problems in interfaces, working together, design, architecture.
System	Problems in requirements, problems with system attributes.
Acceptance	Deviations from the customer interpretation of requirements and needs. The system does not work on the customer platform and in the customer environment.

Defect-directed testing

Conformance-directed testing

SYSTEM TESTING HIERARCHICAL VIEW



ACCEPTANCE TESTING BY USERS

- **Acceptance testing**: *Formal testing with respect to user needs, requirements, and business processes conducted to determine whether or not a system satisfies the acceptance criteria and to enable the user, customers or other authorized entity to determine whether or not to accept the system.*

User Acceptance Testing

- conducted by or visible to the end user and customer
- testing is based on the defined user requirements

Operational Acceptance Testing

- The Acceptance of the system by those who have to administer it.
- Features covered include:
  - testing of backup/restore
  - disaster recovery

Regulation Acceptance Testing

- testing is performed against any regulations which must be adhered to, such as governmental, legal or safety regulations

Alpha Testing

- early testing of stable product by customers/users
- tests performed at developer's site by customer

Beta Testing

- early testing of stable product by customers/users
- conducted at the customer site by end user/customer

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Thank You

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