

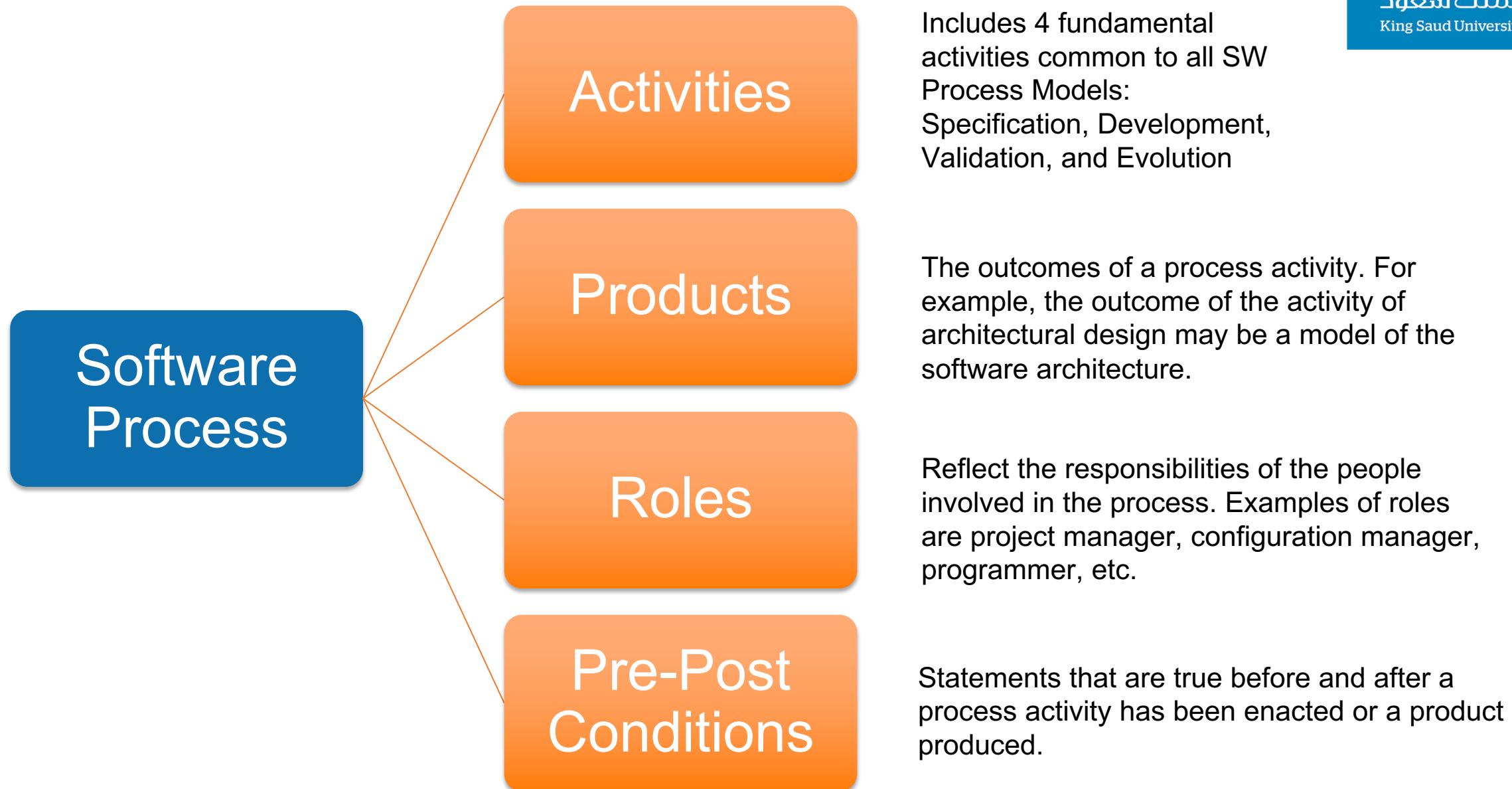
# Software Process Activities

*Chapter 1 + Chapter 2 (2.2)  
(Sommerville)*

Fall Semester 2021  
1st Semester 1443 H

# What is a Software Process?

- A software process is the **systematic approach** that is used in software engineering
- It is a **sequence of related activities** that leads to the production of a **software product**.
- There are **many different** software processes.
- However, there are 4 **fundamental activities** that are **common** to all software processes.



## **Software Specification (Requirements Engineering)**

Customers and engineers **define** the software that is to be produced and the **constraints** on it

## **Software Design & Development**

The software is **designed** and **programmed**.

## **Software Validation**

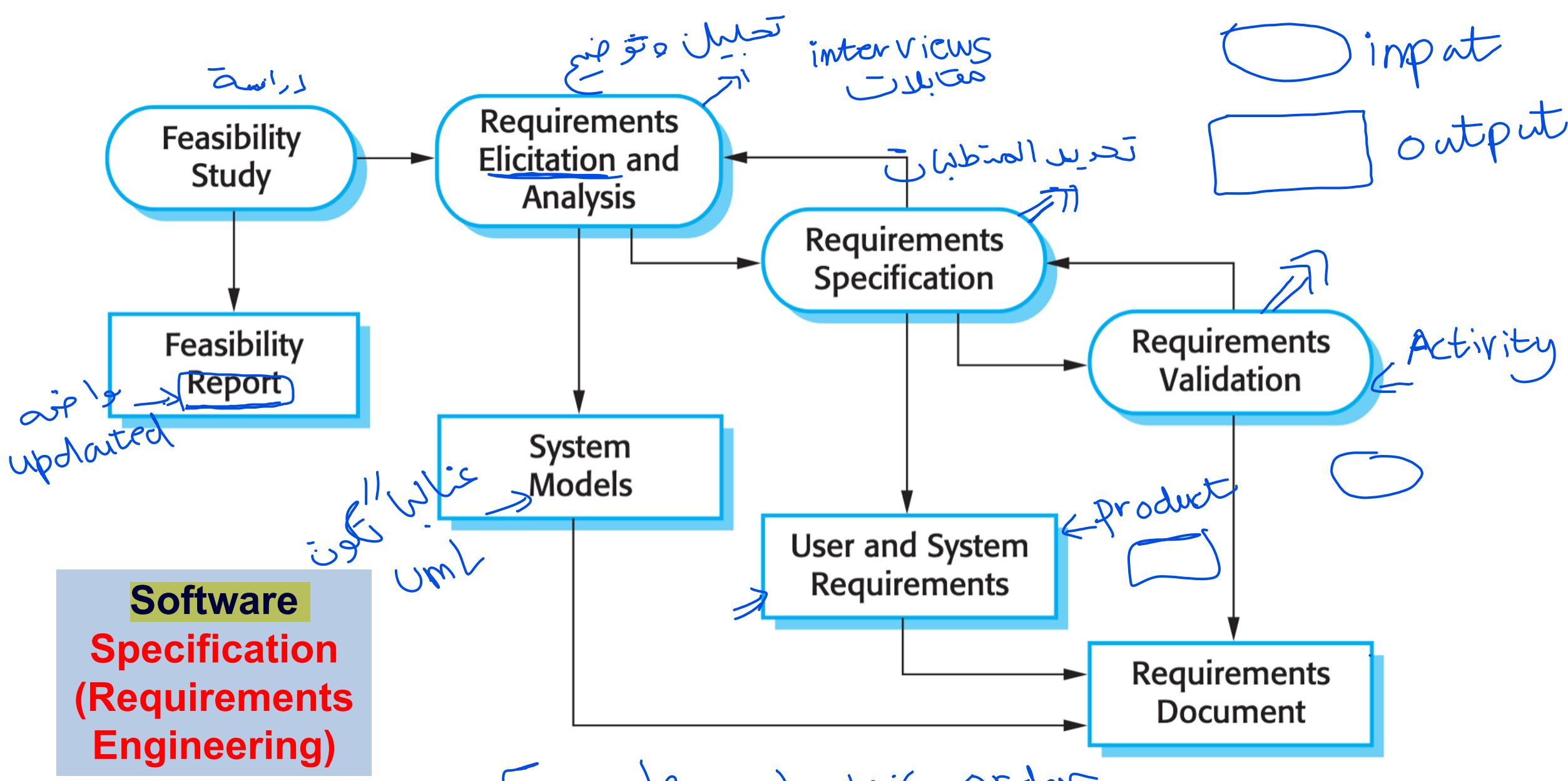
نوفق ليل دون مكتوب  
تحقق المترقبات  
① ②

The software is **checked** to ensure that it is what the customer requires.

## **Software Evolution**

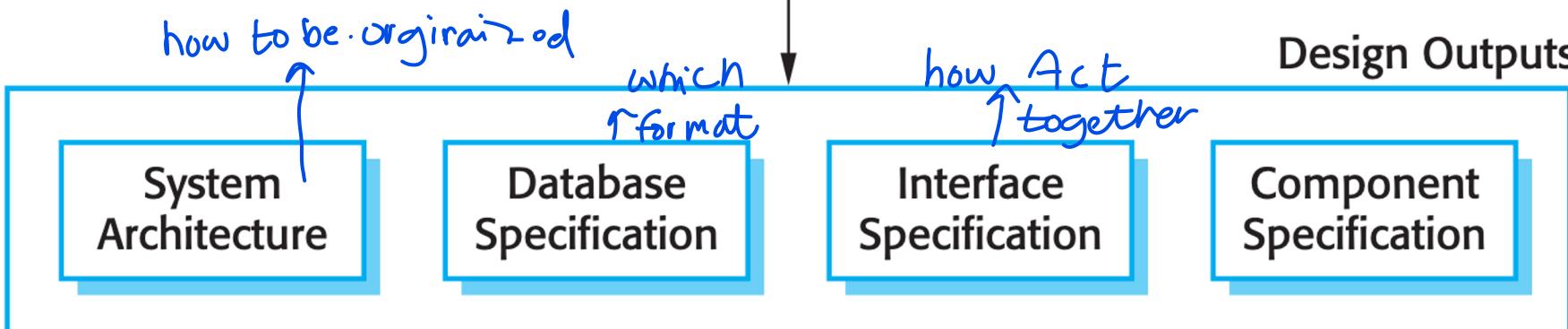
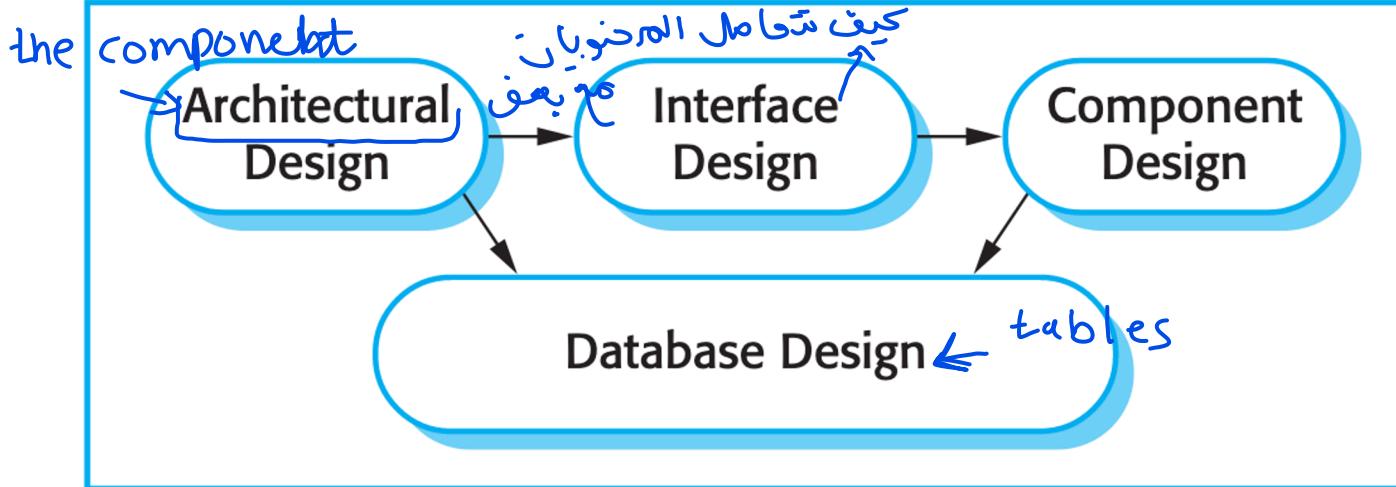
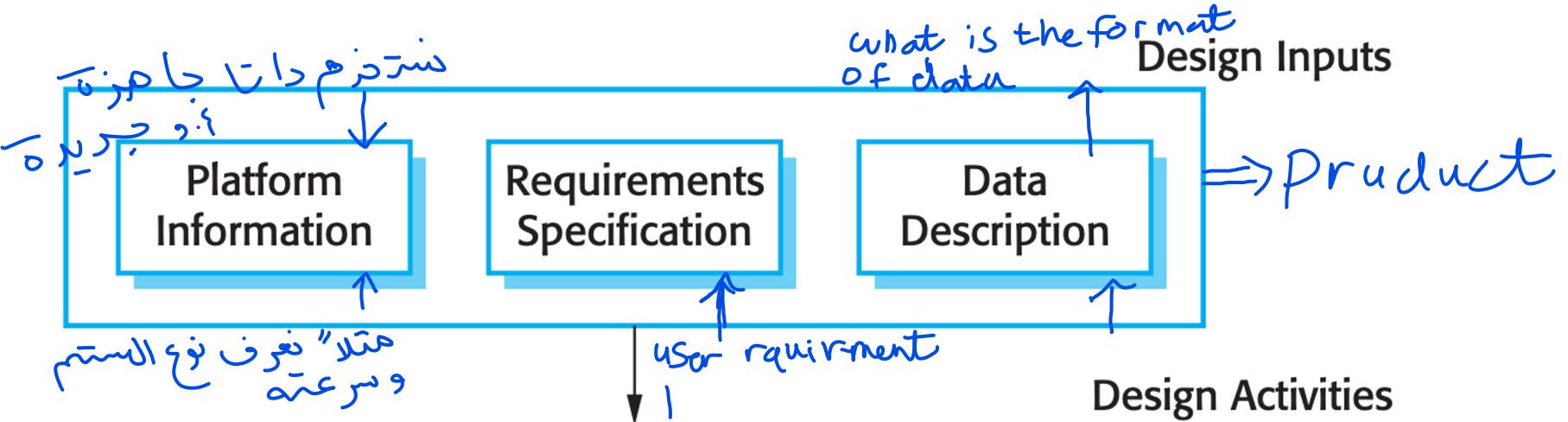
The software is **modified** to reflect changing customer and market requirements

**The 4 Fundamental SW Process Activities**



Example not this order

# Software Design & Development

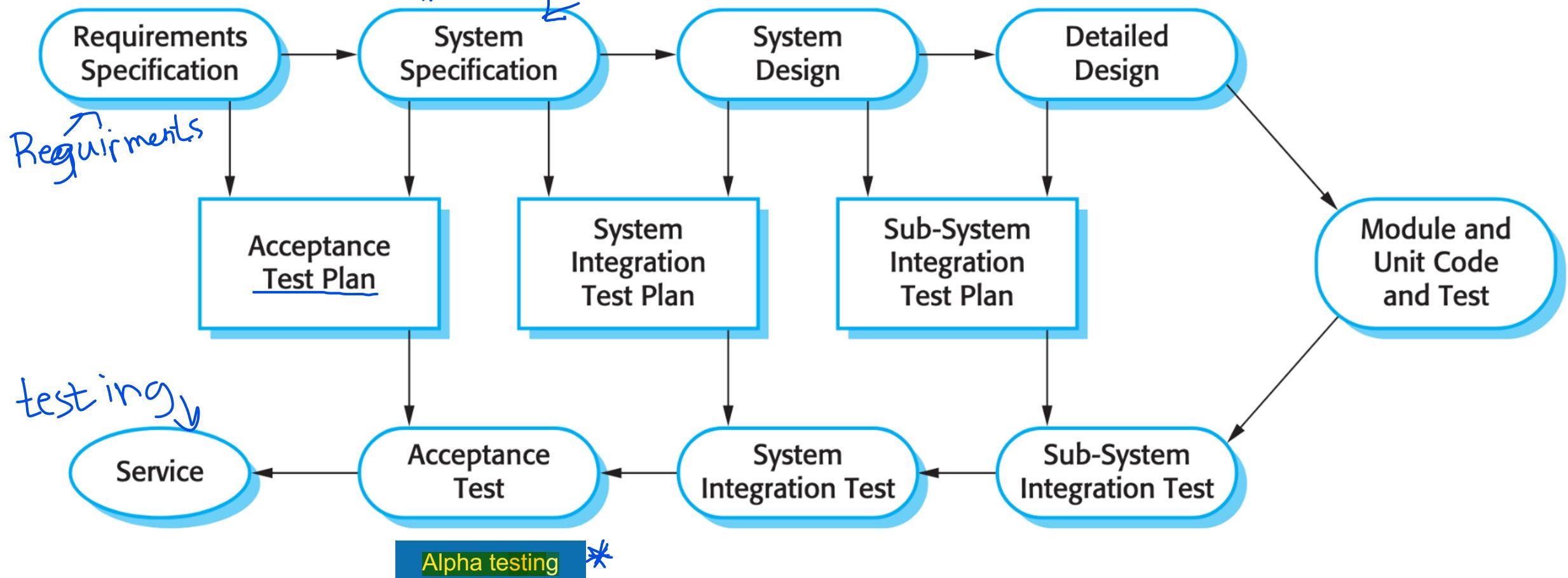


## Software Validation

=> verification or testing

System  
inte

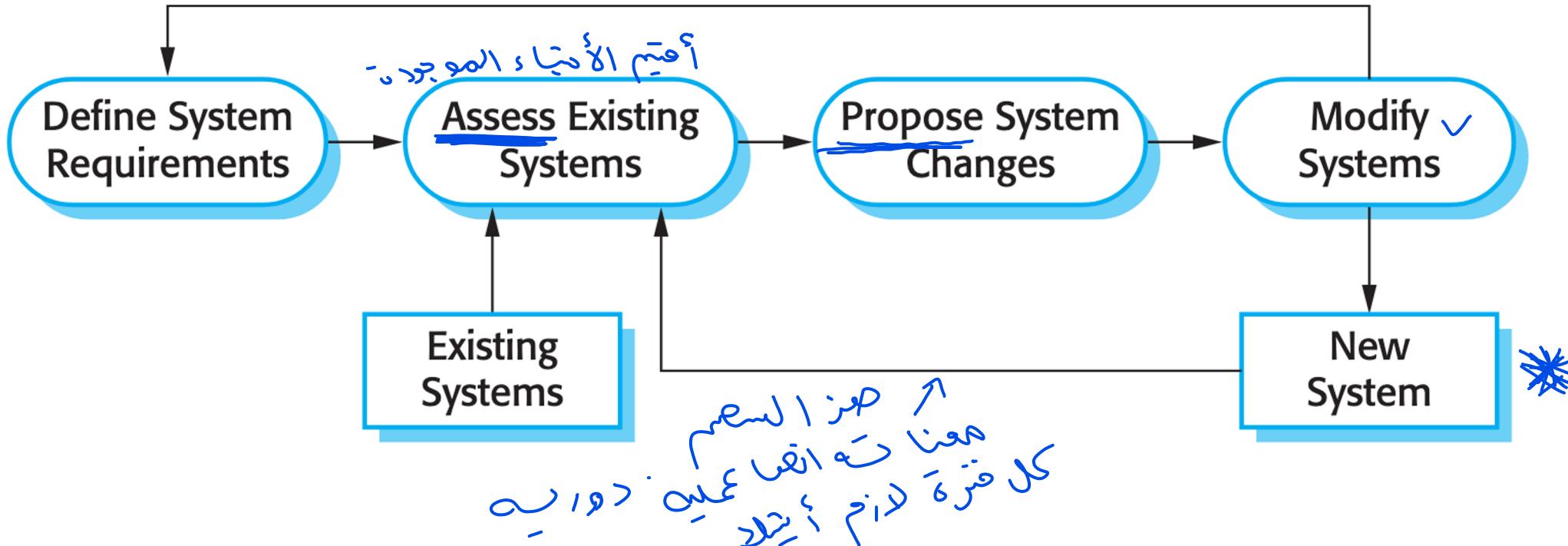
>> S



Testing phases in a software process

# Software Evolution

new requirement



# Categories of SW process Models

معندها اني احستى حسب البلان

## Plan-Driven Process

نهشى هوى ترى (مرور نهائى كـ)

## Agile Process

Processes where all of the process activities are planned in advance and progress is measured against this plan.

أقىس "تعدى بناءً" على معايير البلان

wyle Planning is incremental and it is easier to change the process to reflect changing customer requirements

ما عندي بلان واضحه دكل هوى  
أغير

# SW Process Choice

- There is **no ideal process** and most organizations have developed their own software development processes.
- It depends on the **type of software** to be developed.
- Two most popular **Waterfall** and **Agile Process Models**.

# Examples

News &gt; World &gt; Americas

# Tesla driver burnt to death in car because futuristic doors wouldn't open, prosecutors say

Destroyed vehicle that 'loves to burn' reignites again in pound

**Reis Thebault** | Thursday 24 October 2019 18:46 |



# *Self-Driving Uber Car Kills Pedestrian in Arizona, Where Robots Roam*



# Safety Critical Systems

- Safety-critical systems are those systems whose failure could result in loss of life, significant property damage or damage to the environment.
- Examples: medical devices, aircraft flight control, weapons and nuclear systems.

# Embedded Control System

- An embedded control system in an automobile is safety-critical and is burned into ROM when installed in the vehicle. It is therefore very expensive to change.
- Such a system needs very extensive **verification and validation** so that the chances of having to recall cars after sale to fix software problems are minimized.
- **User interaction** is minimal (or perhaps nonexistent) so there is no need to use a development process that relies on user interface prototyping.

# Web based systems and Mobile Apps

- For a web-based system or a mobile app, an approach based on iterative development and delivery may be appropriate, with the system being composed of reusable components.

# Software Engineering Code of Ethics

**Reading Section 1.2 (Sommerville)**

# Key points

- What is a Software Process?
- Software Process Activities (Fundamental, Supporting)
- Categories of SW Process Models (Plan-driven, Agile)
- Software Process Choice
- Software Engineering Code of Ethics

Thank you

