ĐẠI HỌC TÔN ĐỨC THẮNG
TON DUC THANG UNIVERSITY

502045

Software Engineering

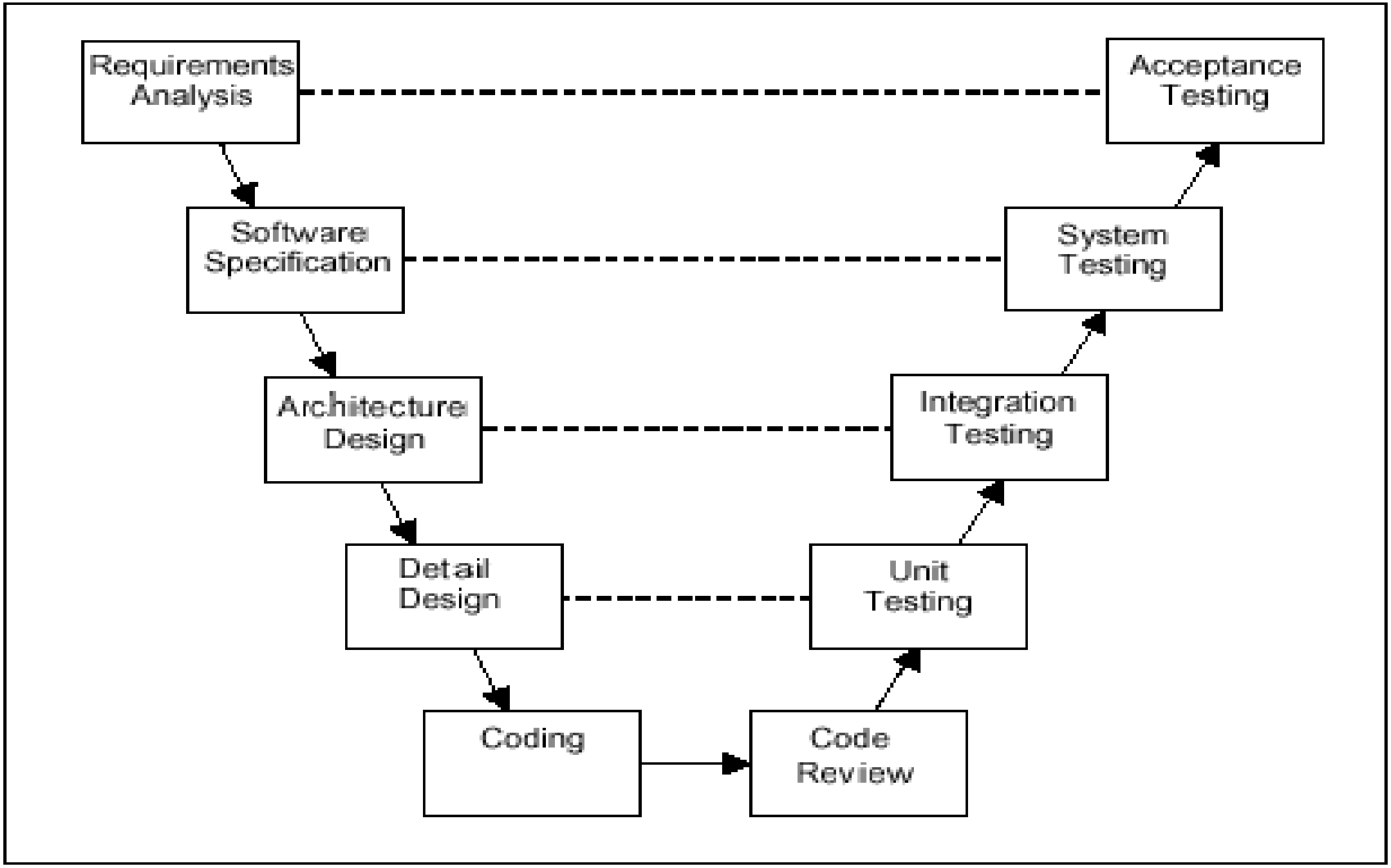
Chapter 07

Lesson 08: Coding Process and Convention

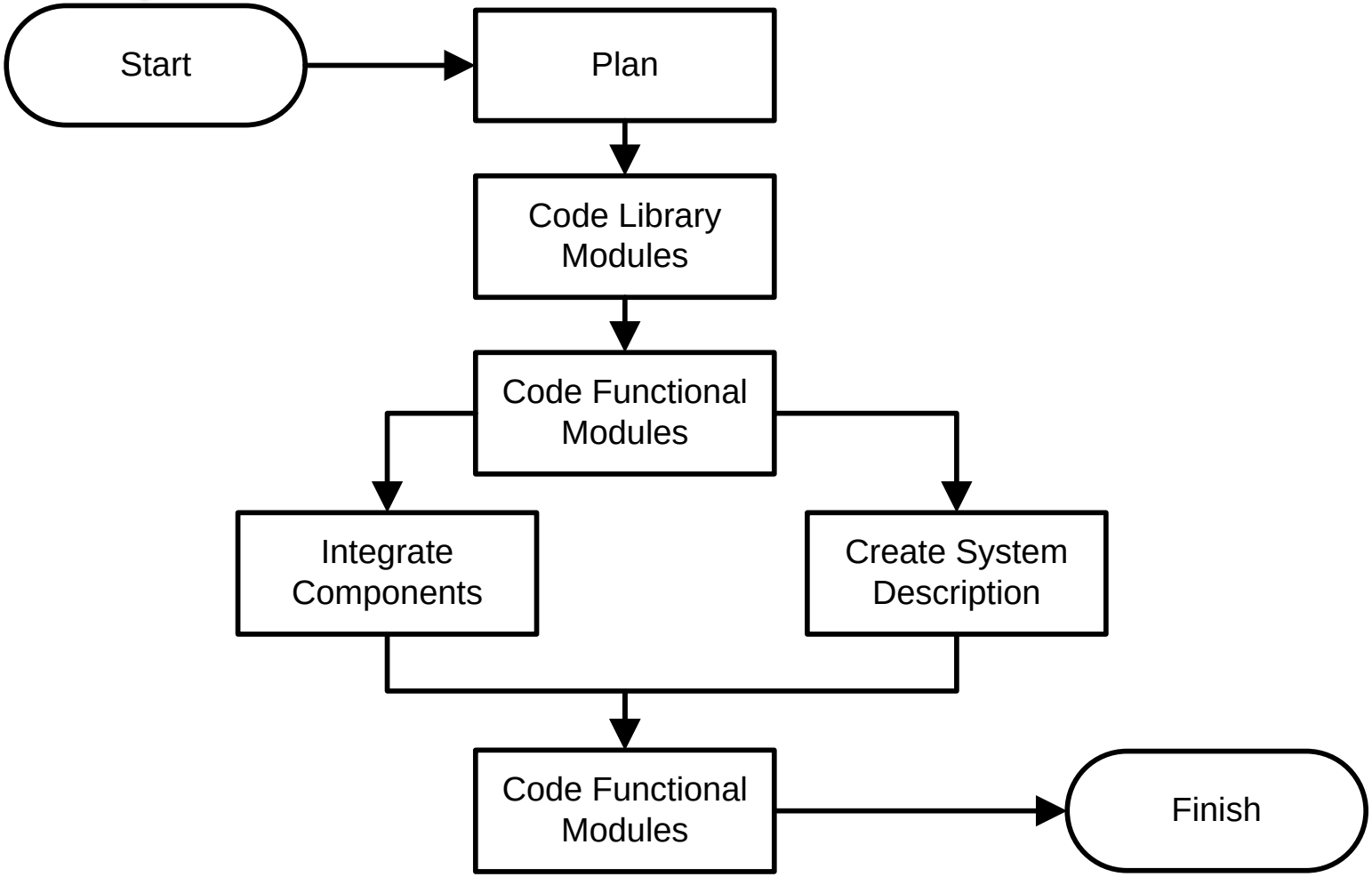
Coding Process and Convention

- Agenda
  - Coding Process
  - Coding Convention

Coding Process - Where the Coding is?



Coding Process - Coding Workflow



Coding Process - Code Planning

- Purpose: To plan and prepare for coding
- Steps:
  - Study design documents.
  - Define and prepare resources and infrastructure for coding, unit test and integration, if necessary.
  - Create coding plan including targets, scope, required deliverables and acceptance criteria.
  - Task and schedule, responsibilities.
  - Review and obtain agreement on coding plan.
  - Develop/customize coding convention.
  - Review & conduct training on coding convention.
  - Verify tools support for coding (if any).

Coding Process - Coding Library Modules

- Purpose: To build, construct and/or develop library modules
- Steps:
  - Create detail design for library modules.
  - Review code of library modules.
  - Fix defects of library modules.
  - Summarize related documents.

Coding Process - Coding Functional Modules

- Purpose: To build, construct and/or develop functional modules
- Steps:
  - Create detail design for modules and program units, if required in design documents.
  - Code modules and program units.
  - Review code.
  - Fix defects for modules and program units.
  - Summarize and submit result to Team Lead.

Coding Process - Integrate Software Modules

- Purpose: assemble the software package from the software modules, ensure that the software package, as integrated and functions properly
- Steps:
  - Create integration plan (if needed)
  - Integrate modules
  - Evaluate integration results, conduct cause analysis, raise change request (if needed)
  - Review and approve results of integration

Coding Process - Create System Description

- Purpose: To develop System Description / User Manual documents that support in software operation
- Steps:
  - Make overview on system
  - Describe sub-systems and main functions
  - Describe system requirements
  - Describe software structure
  - Develop User Manual
  - Review and approve System Description/User Manual

Coding Process - Deliver & Summarize

- Purpose: To deliver software package
- Steps:
  - Review, do final inspection [carefully check] and summarize software products including documents
  - Deliver to test team
  - Create coding summary report
  - Maintain documents, records

Coding Convention - Introduction

- Be specific to each programming language
- Recommend programming style, practices, and methods for each aspect of a piece program
- Common conventions may cover the following areas:
  - file organization
  - naming conventions
  - indentation, white space
  - comments, declarations, statements
  - programming practices, principles, rules of thumb

Coding Convention - Importance

- Code conventions are important to programmers for a number of reasons:
  - 80% lifetime software cost is for maintenance
  - People maintain the software may be changed
  - Following coding convention strictly helps:
    - Improve the readability of the software
    - Allowing engineers to understand new code more quickly and thoroughly

Coding Convention - Some Common Standards 1/3

- Tab and Indent
  - 4 spaces should be used as the unit of indentation
  - Tab characters should be avoided
- Line Length: avoid lines longer than 80 or 120 characters
- Wrapping Lines: When an expression will not fit on a single line, break it according to below principles:
  - Break after a comma
  - Break after a logical operator
  - Break before an operator
  - Prefer higher-level breaks to lower-level breaks
- Comments: beginning, block, single-line, trailing
- Number of declarations per line: same types, different types

Coding Convention - Some Common Standards 2/3

- Blank Lines improve readability by setting off sections of code that are logically related
  - Two blank lines should always be used:
    - Between sections of a source file
    - Between class and interface definitions
  - One blank line should always be used:
    - Between methods
    - Between the local variables in a method and its first statement
    - Before a block or single-line comment
    - Between logical sections inside a method

Coding Convention - Some Common Standards 3/3

- Blank spaces should be used in the following circumstances
  - A keyword followed by a parenthesis should be separated by a space
  - A blank space should appear after commas in argument lists
  - All binary operators except . should be separated from their operands by spaces

Coding Convention - Naming Conventions 1/2

- General naming rules:
  - Should be functionally meaningful, & indicate identifier's purpose
  - Use terminology applicable to the domain
  - Identifiers must be as short as possible (<=20 characters)
  - Avoid names that are similar or differ only in case
  - Abbreviations in names should be avoided

Coding Convention - Naming Conventions 2/2

- Use a noun or noun phrase to name a class or code module
- Variables names must start with lowercase
- Constants: named in uppercase letters, might have underscore
- Method names must start with lowercase letter, usually use “active verb” as the first word of method name
- Instance /object names follow rules of variable names


Q&
A