

# Embedded Software development Process and Tools:

## Lesson-1

### Introduction to Embedded Software Development Process and Tools

# 1. Development Process and Hardware— Software

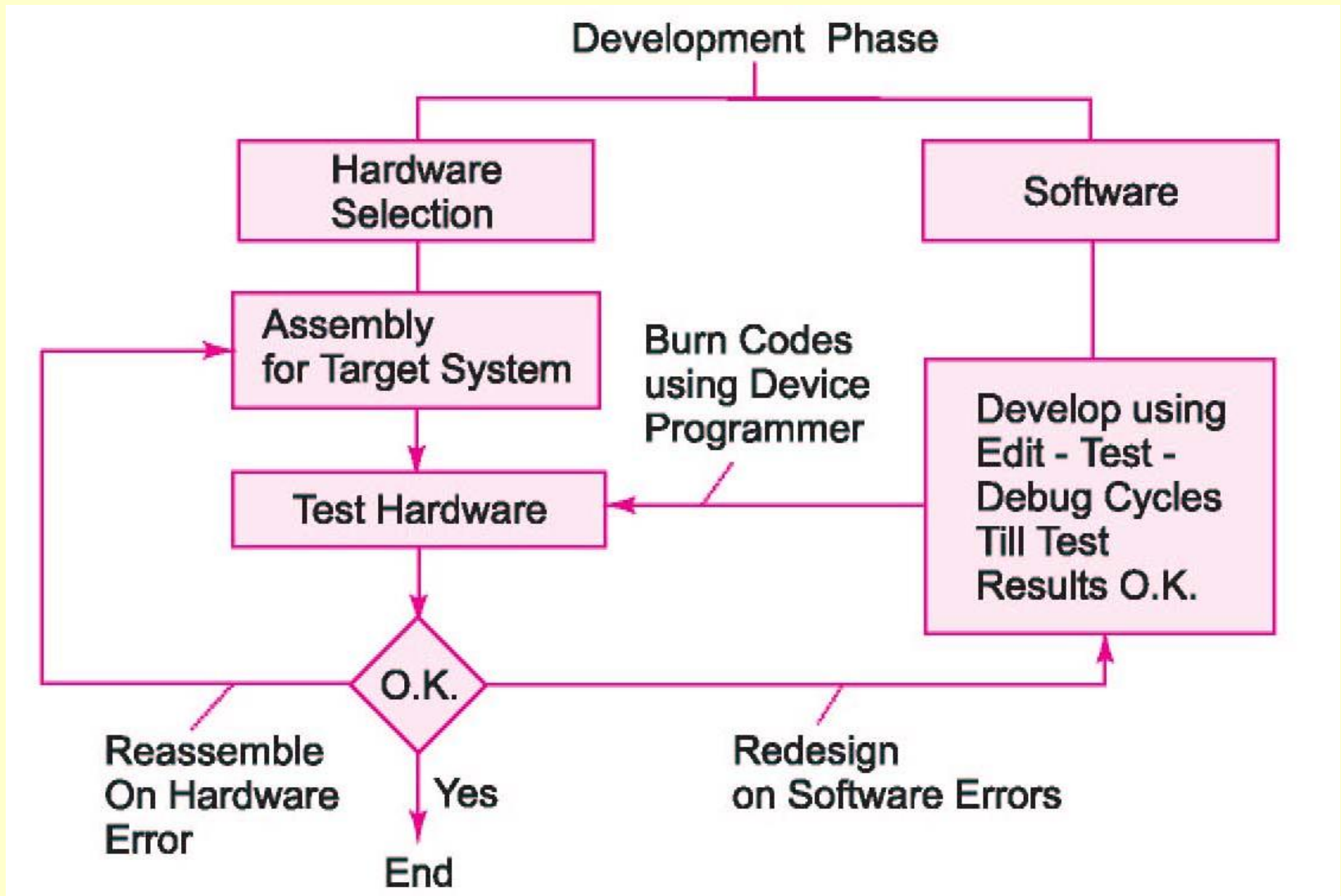
# Cost of developing a final targeted system

- Small processor cost
- Larger time frame needed than the hardware circuit design
- High development cost for final targeted system

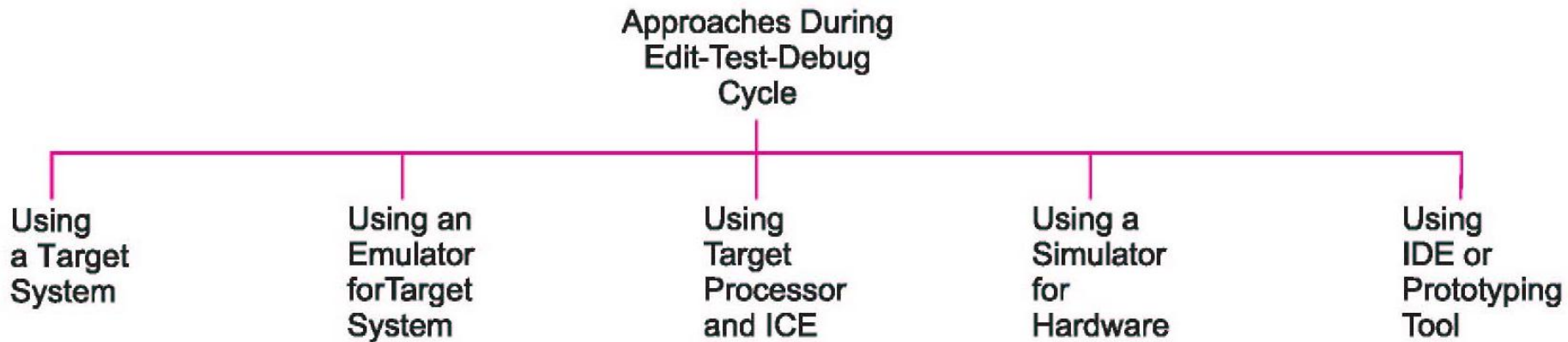
# Development Process

- Edit-test-debug cycles
- Fixed Processor and hardware parts once chosen
- Application software codes perfected by a number of runs and tests.

# Development process of an embedded system



# Edit-Test-Debug Cycle implementation phase of the development process



## 2. Software Tools

# Software Tools

- Software Development Kit (SDK)
- Source-code Engineering Software
- RTOS
- Integrated Development Environment
- Prototyper
- Editor
- Interpreter



# Software Tools ...

- Compiler
- Assembler
- Cross Assembler
- Testing and debugging tools
- Locator

# 3. Source Code Engineering Tool

# Typical tool Features

- Comprehension,
- Navigation and browsing,
- Editing,
- Debugging,
- Configuring (disabling and enabling specific C++ features)
- Compiling

# Typical tool Features...

- Searches and lists the definitions, symbols, hierarchy of the classes, and class inheritance trees
- Symbols include the class members
- Searches and lists the dependencies of symbols and defined symbols, variables and functions

# Typical tool Features ...

- Monitors, enables and disables the implementation virtual functions.
- Finds the full effect of any code change on the source code.
- Searches and lists the dependencies and hierarchy of included header files.

# Typical tool Features ...

Navigates to and fro—

- between the implementation and symbol declaration.
- between the overridden and overriding methods.

# Typical tool Features ...

Browses through

- information regarding instantiation (object creation) of a class.
- encapsulation of variables among the members
- public, private and protected visibility of the members.
- object component relationships

# Typical tool Features ...

- Automatically removes error-prone and unused tasks.
- Provides easy and automated search and replacement



# Summary

# We learnt

- Software development process using editing, testing and debugging cycles
- Software development kit
- Source-code Engineering Software
- RTOS
- Integrated Development Environment
- Testing and debugging tools for testing and debugging

# We learnt

- Number of software tools used to develop software for designing an embedded system.
- Sophisticated tools— RTOS, Integrated Development Environment and Prototype development tools needed for integrated development of system software and hardware.

End of Lesson-1 of chapter 14 on  
Introduction to Embedded Software  
Development Process and Tools