CS 301
Software Engineering
Module - 34

Eswaran Narasimhan

At the end of the session, you will be able to:

- Understand the need for maintenance of software
- Differentiate types of software maintenance
- Understand challenges in software maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

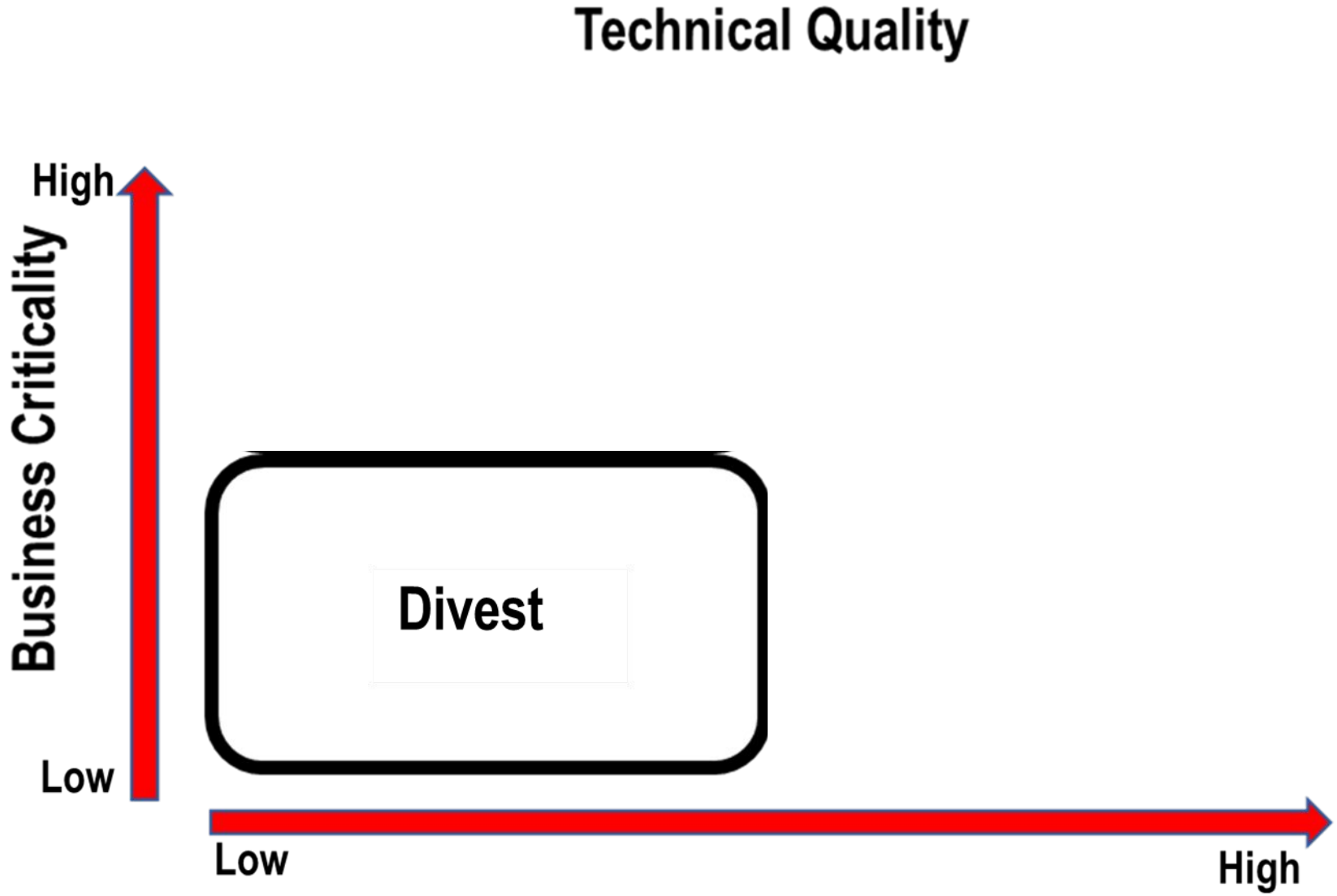
- Process of modifying a software product
- After it has been delivered to the customer

Maintenance of software

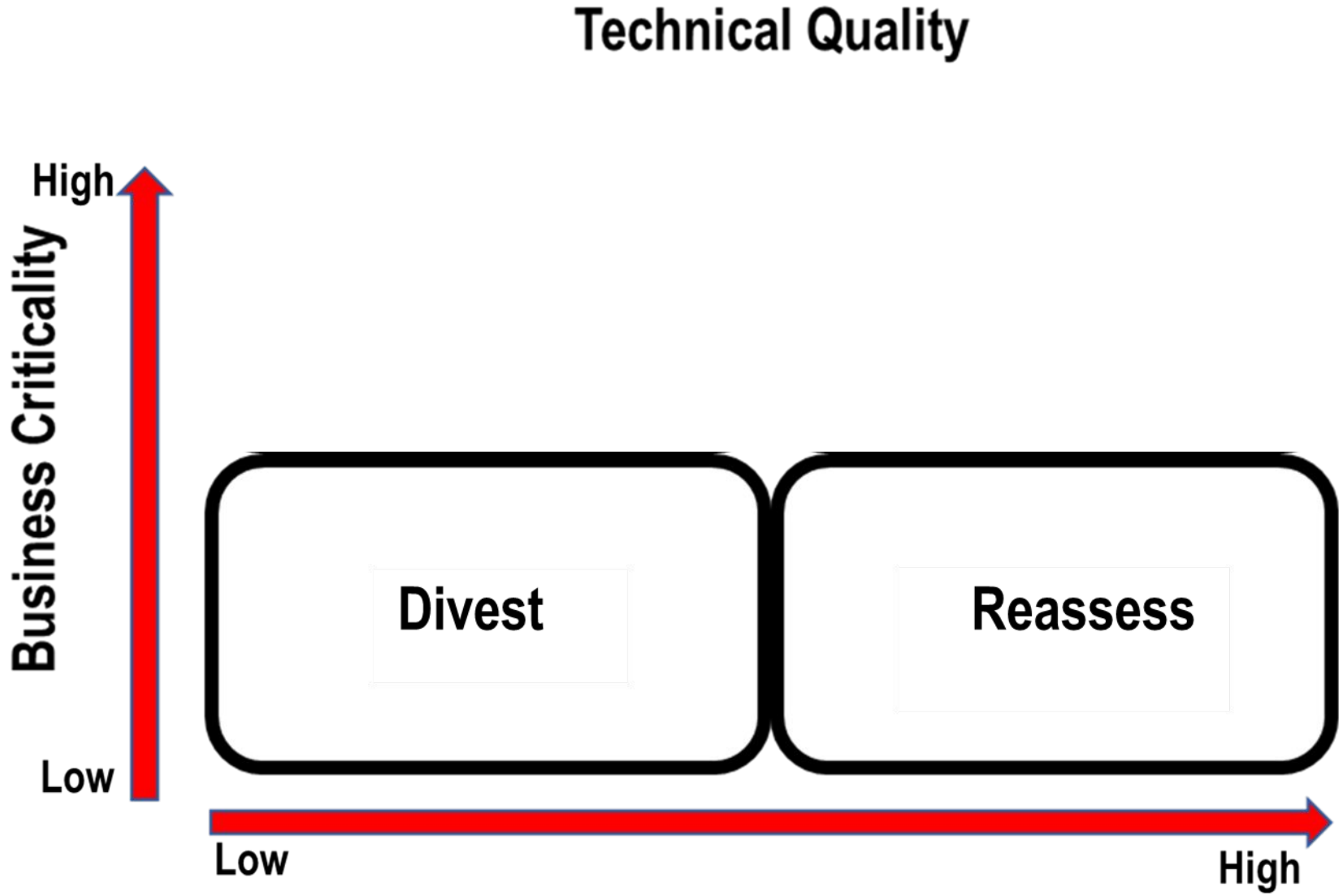
- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Defect correction
- Performance improvement
- Feature addition
- Modifying interfaces
- Increase interoperability and compatibility
- Migration
- Retirement

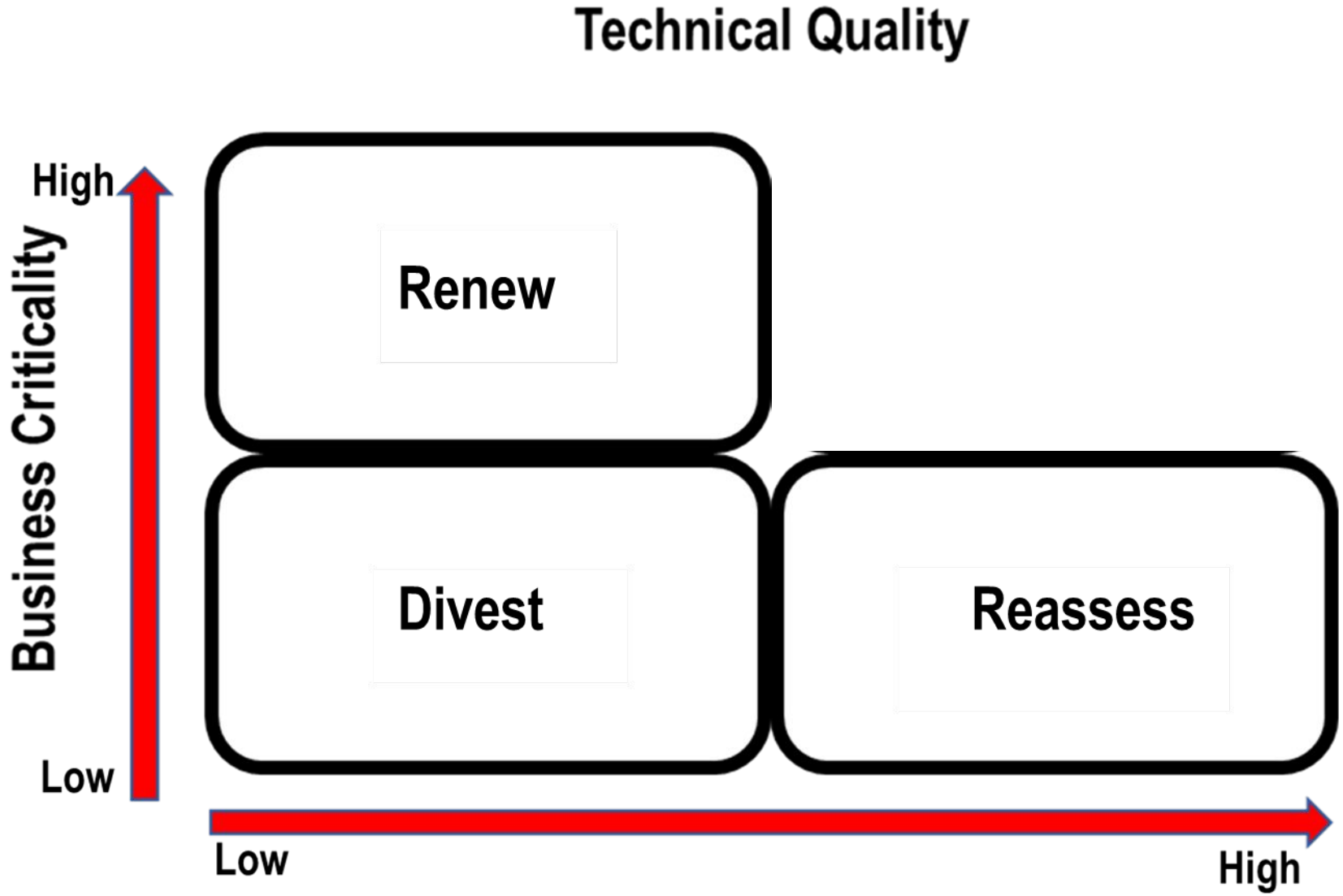
Maintenance of software



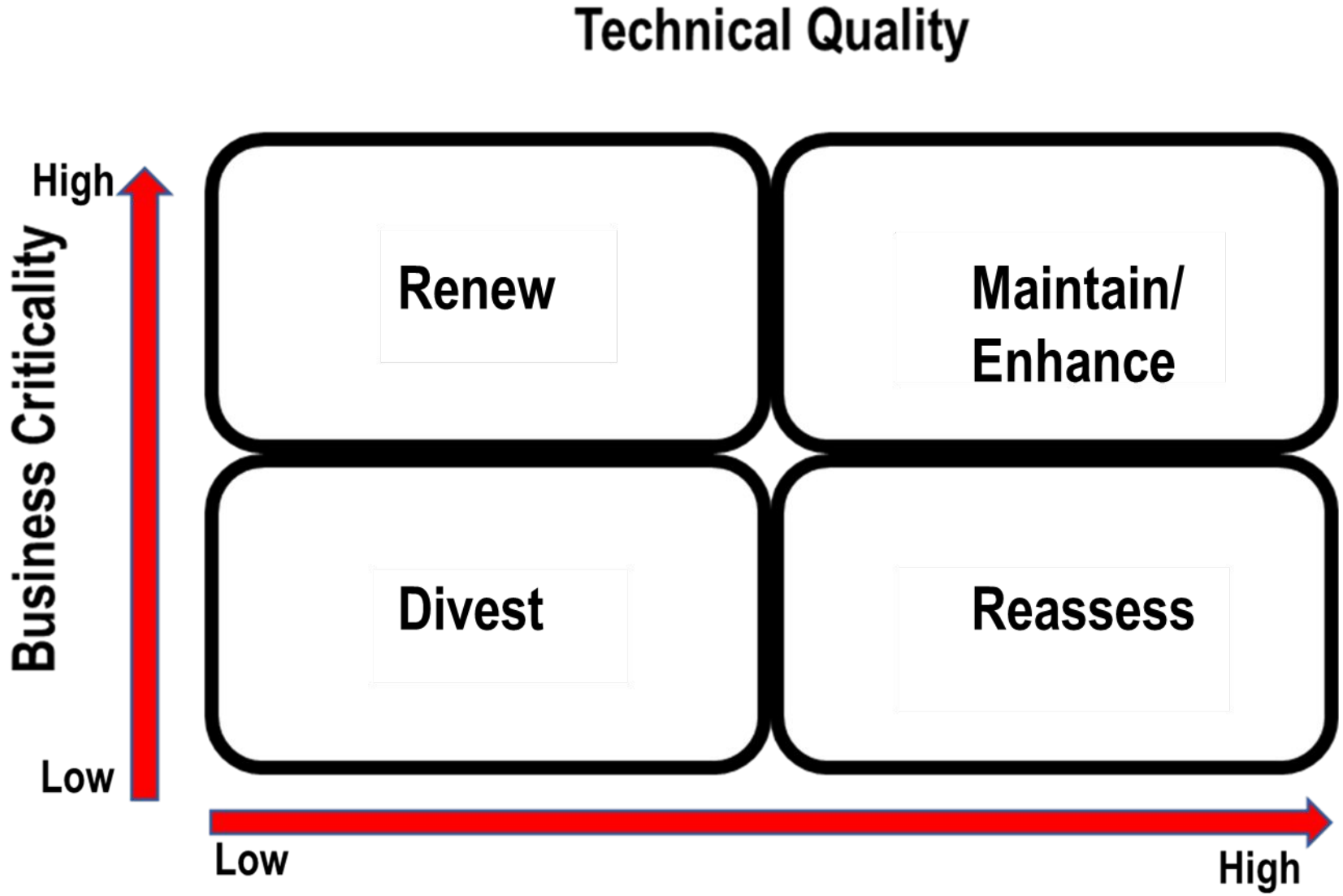
Maintenance of software



Maintenance of software



Maintenance of software



Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Corrective maintenance
- Adaptive maintenance
- Perfective maintenance
- Preventive maintenance
- Emergency maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Correcting bugs and mistakes promptly

- **Corrective maintenance**
- Adaptive maintenance
- Perfective maintenance
- Preventive maintenance
- Emergency maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Changing environments

- Corrective maintenance
- Adaptive maintenance
- Perfective maintenance
- Preventive maintenance
- Emergency maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Improvements in performance

- Corrective maintenance
- Adaptive maintenance
- Perfective maintenance
- Preventive maintenance
- Emergency maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Predicting possible threats

- Corrective maintenance
- Adaptive maintenance
- Perfective maintenance
- **Preventive maintenance**
- Emergency maintenance

Maintenance of software

- What is software maintenance?
- Need for software maintenance
- Types of software maintenance

- Unforeseen

- Corrective maintenance
- Adaptive maintenance
- Perfective maintenance
- Preventive maintenance
- Emergency maintenance

Reverse Engineering

- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering

- Reverse Engineering is processes of extracting knowledge from code or application

Reverse Engineering

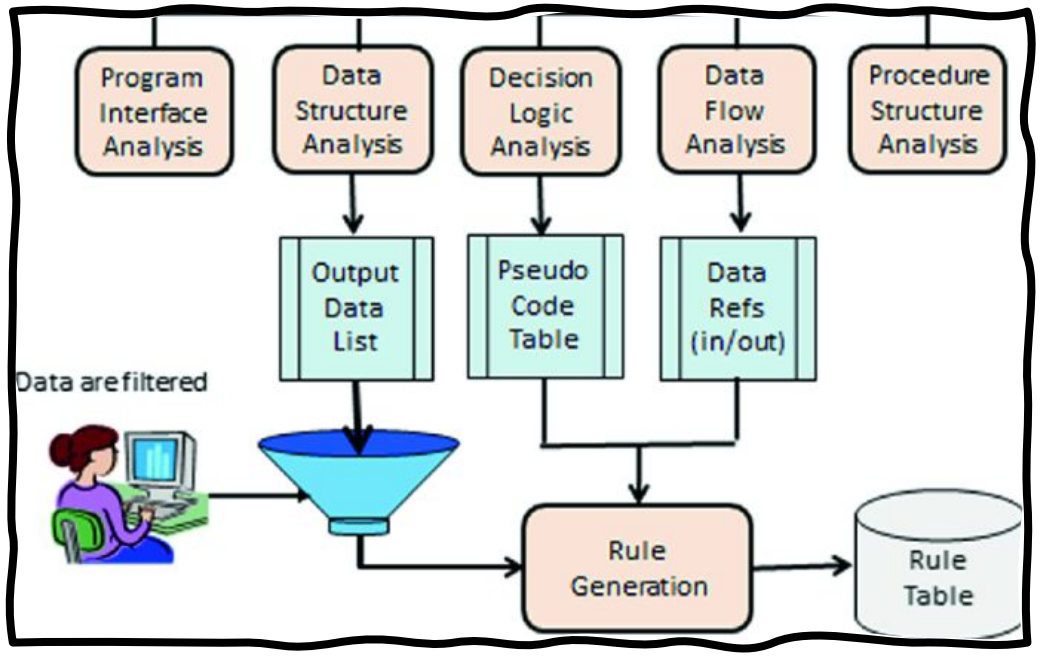
- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering

```
pushq   %rbp
movq    %rsp, %rbp
pushq   %r12
pushq   %rbx
subq    $32, %rsp
movl    %edi, -20(%rbp)
movq    %rsi, -32(%rbp)
movq    %rdx, -40(%rbp)
movq    -40(%rbp), %rdx
movq    -32(%rbp), %rcx
movl    -20(%rbp), %eax
movq    %rcx, %rsi
movl    %eax, %edi
call    _M2_init
```

- **Code Comprehension for documentation**
  - Extracting business rules
  - Identifying refactoring opportunities
  - Extracting code reuse blocks
  - Discovering patterns – e.g. date operations
  - Preparatory for Maintenance

Reverse Engineering

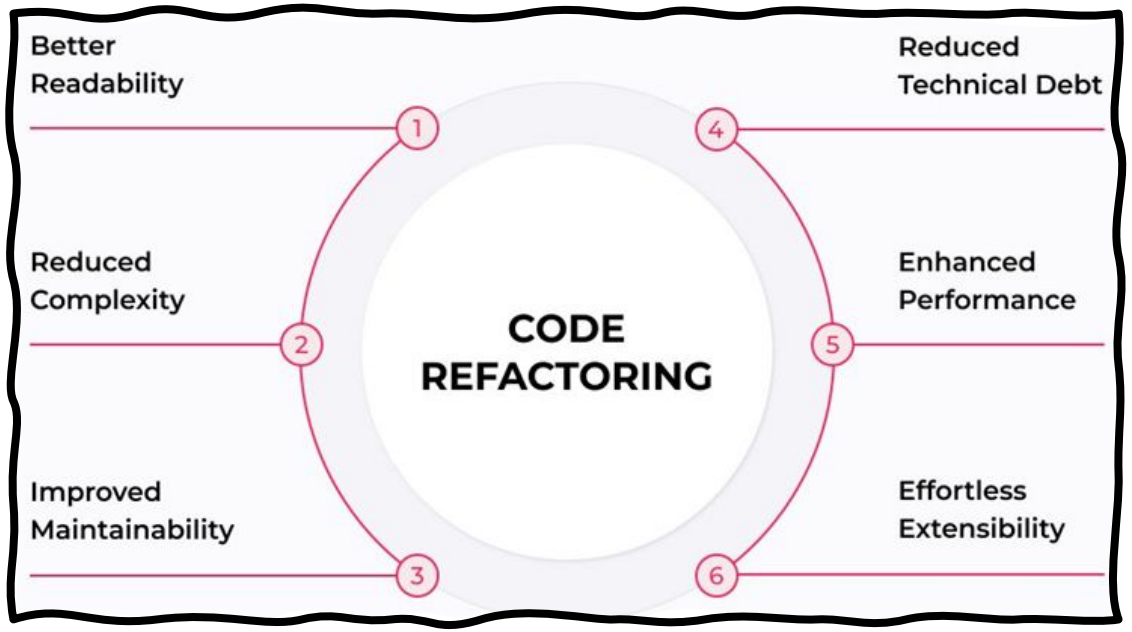
- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering



- Code Comprehension for documentation
- Extracting business rules
- Identifying refactoring opportunities
- Extracting code reuse blocks
- Discovering patterns – e.g. date operations
- Preparatory for Maintenance

Reverse Engineering

- ❑ What is reverse engineering?
- ❑ Need for reverse engineering
- ❑ Types of reverse engineering



- ❖ Code Comprehension for documentation
- ❖ Extracting business rules
- ❖ Identifying refactoring opportunities
- ❖ Extracting code reuse blocks
- ❖ Discovering patterns – e.g. date operations
- ❖ Preparatory for Maintenance

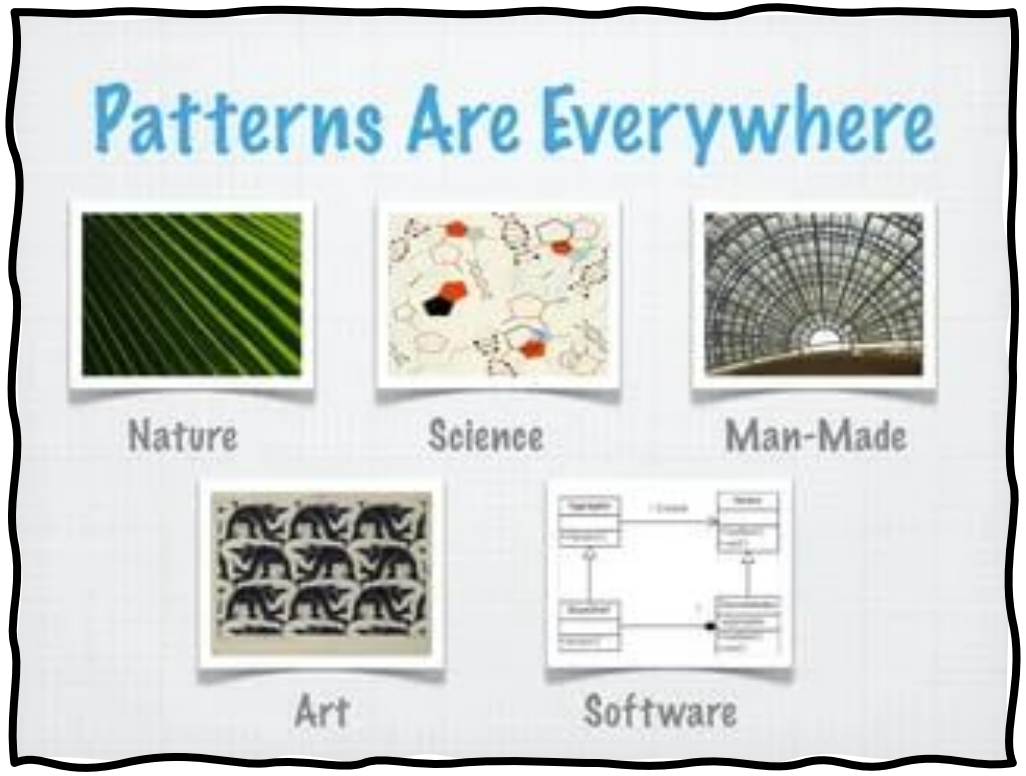
Reverse Engineering

- ❑ What is reverse engineering?
- ❑ Need for reverse engineering
- ❑ Types of reverse engineering

- Code Comprehension for documentation
- Extracting business rules
- Identifying refactoring opportunities
- Extracting code reuse blocks
- Discovering patterns – e.g. date operations
- Preparatory for Maintenance

Reverse Engineering

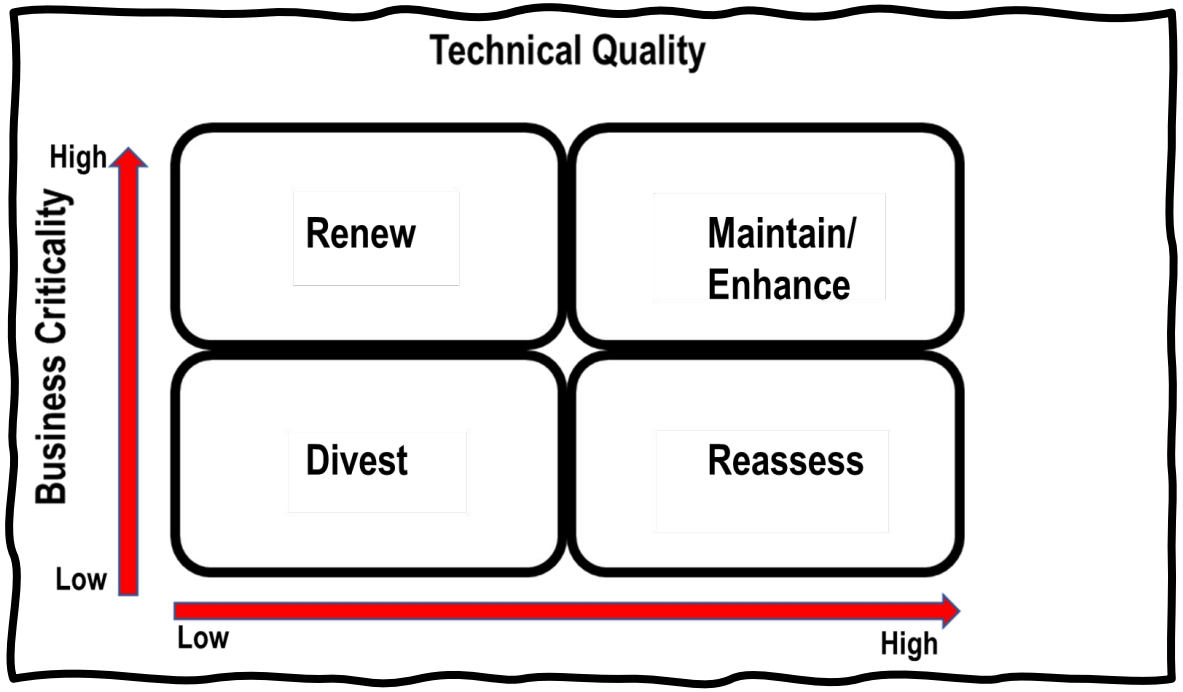
- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering



- Code Comprehension for documentation
- Extracting business rules
- Identifying refactoring opportunities
- Extracting code reuse blocks
- Discovering patterns – e.g. date operations
- Preparatory for Maintenance

Reverse Engineering

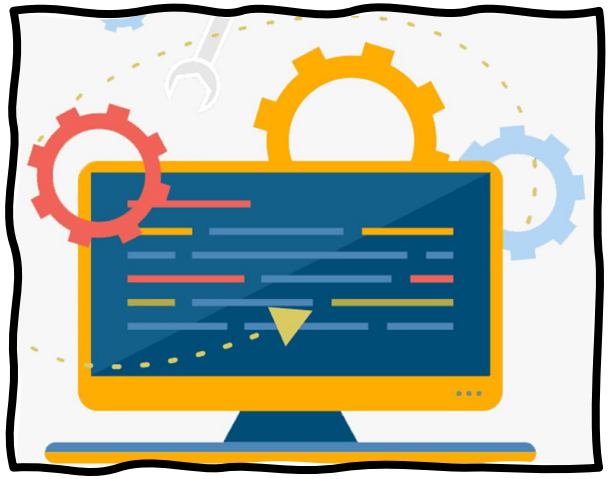
- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering



- Code Comprehension for documentation
- Extracting business rules
- Identifying refactoring opportunities
- Extracting code reuse blocks
- Discovering patterns – e.g. date operations
- Preparatory for Maintenance

Reverse Engineering

- What is reverse engineering?
- Need for reverse engineering
- Types of reverse engineering



- From code
- From application, where no source code is available
- From document with no application available for execution

We have covered the following:

- Understand the need for maintenance of software
- Differentiate types of software maintenance
- Understand challenges in software maintenance