

# Software Quality Assurance

**Rakibul Hassan**  
**Lecturer**  
**Dept. of ECE, RUET**

# Software Quality Assurance

## What is Quality?

Quality is defined as the product or services that should be "fit for use and purpose."

Quality is all about **meeting the needs** and **expectations of customers** concerning functionality, design, reliability, durability, and price of the product.

# Software Quality Assurance

## What is Assurance?

Assurance is a **positive declaration** on a product or service. It is all about the product which should work well. It provides a **guarantee** which **would work without any problem** according to **expectations and requirements**.

# Software Quality Assurance

## What is Quality Assurance?

Quality Assurance is also known as **QA Testing**. QA is defined as an activity to **ensure** that an organization is providing the **best product** or service to the customers.

# Software Quality Assurance

## What is Quality Control?

Quality Control popularly abbreviated as QC is a software engineering **process used** to **ensure quality** in a product. It does not deal with the processes used to create a product. Instead, it examines the quality of the end product and the outcome.

# Software Quality Assurance

Quality Assurance	Quality Control
<ul style="list-style-type: none"><li>• Quality Assurance prevents defects.</li></ul>	<ul style="list-style-type: none"><li>• Quality Control provides identification of defects.</li></ul>
<ul style="list-style-type: none"><li>• Quality Assurance is process oriented.</li></ul>	<ul style="list-style-type: none"><li>• Quality control is product oriented.</li></ul>
<ul style="list-style-type: none"><li>• Quality Assurance is proactive in the process and protective.</li></ul>	<ul style="list-style-type: none"><li>• Quality Control is a reactive.</li></ul>
<ul style="list-style-type: none"><li>• Quality Assurance is a managerial tool.</li></ul>	<ul style="list-style-type: none"><li>• Quality Control is a corrective tool.</li></ul>
<ul style="list-style-type: none"><li>• Each developer is responsible for Quality Assurance.</li></ul>	<ul style="list-style-type: none"><li>• The testing team is responsible for Quality Control.</li></ul>
<ul style="list-style-type: none"><li>• Verification is an example of QA.</li></ul>	<ul style="list-style-type: none"><li>• Validation is an example of QC.</li></ul>

# Software Quality Assurance

## What is the Quality Attribute of a software?

The following six characteristics can define the quality of the software:

### 1. Functionality

Quality of software is defined as how effectively the software interacts with other components of the system. The software must provide appropriate functions as per requirement, and these functions must be implemented correctly.

### 2. Reliability

It is defined as the capability of the software to perform under specific conditions for a specified duration.

# Software Quality Assurance

## 3. Usability

Usability of software is defined as its ease of use. Quality of the software is also identified as how easily a user can understand the functions of the software and how much efforts are required to follow the features.

## 4. Efficiency

The efficiency of the software is dependent on the architecture and coding practice followed during development.



# Software Quality Assurance

## 5. Maintainability

Maintainability is also one of the significant factors to define the quality of the software. It refers to identify the fault and fix in the software. It should be stable when the changes are made.

## 6. Portability

Portability of the software, defined as how easily a system adapts to changes in the specifications. Quality of the software is also determined by the portability of the system how easy it is to install the software and how easy it is to replace a component of the order in a given environment.

# Software Quality Assurance

## Quality Assurance Certifications:

There are several **certifications available** in the industry to ensure that Organizations follow Standards Quality Processes. Customers make this as qualifying criteria while selecting a software vendor.

### ISO 9000

This standard was first established **in 1987**, and it is related to Quality Management Systems. This helps the organization ensure quality to their customers and other stakeholders. An organization who wishes to be certified as ISO 9000 is **audited based on their functions, products, services and their processes**. The main objective is to review and verify whether the organization is following the process as expected and check whether existing processes need improvement.

# Software Quality Assurance

**Software Re-engineering** is a process of software development which is done to **improve the maintainability** of a software system. Re-engineering is the **examination and alteration of a system** to reconstitute it in a new form. This process encompasses a combination of sub-processes like reverse engineering, forward engineering, reconstructing etc.

# Software Quality Assurance

**Software Re-engineering** is a process of software development which is done to **improve the maintainability** of a software system. Re-engineering is the **examination and alteration of a system** to reconstitute it in a new form. This process encompasses a combination of sub-processes like reverse engineering, forward engineering, reconstructing etc.

Thank you