

# SOFTWARE ENGINEERING

## CSE 470 – Software Quality

BRAC University



Inspiring Excellence

# What is Software Quality?

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- ❑ Quality is an attribute of software that implies the software meets its specification
- ❑ The assessment of software quality is a subjective process where the quality management team has to use their judgment to decide if an acceptable level of quality has been achieved.

# Software Quality Attributes

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Important software quality attributes are:

- ▶ Safety
- ▶ Security
- ▶ Reliability
- ▶ Resilience
- ▶ Robustness
- ▶ Understandability
- ▶ Testability
- ▶ Adaptability
- ▶ Modularity
- ▶ Complexity
- ▶ Portability
- ▶ Usability
- ▶ Reusability
- ▶ Efficiency
- ▶ Learnability



# Software Quality Assurance

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- To ensure quality in a software product, an organization must have a three-prong approach to quality management:
  - Organization-wide policies, procedures and standards must be established.
  - Project-specific policies, procedures and standards must be tailored from the organization-wide templates.
  - Quality must be controlled; that is, the organization must ensure that the appropriate procedures are followed for each project
- Standards exist to help an organization draft an appropriate software quality assurance plan.
  - ISO 9000-3
  - ANSI/IEEE standards
- External entities can be contracted to verify that an organization is standard-compliant.

	QA	QC	Testing
<b>Purpose</b>	Setting up adequate processes, introducing the standards of quality to prevent the errors and flaws in the product	Making sure that the product corresponds to the requirements and specs before it is released	Detecting and solving software errors and flaws
<b>Focus</b>	Processes	Product as a whole	Source code and design
<b>What</b>	Prevention	Verification	Detection
<b>Who</b>	The team including the stakeholders	The team	Test Engineers, Developers
<b>When</b>	Throughout the process	Before the release	At the testing stage or along with the development process



# SQA Activities

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- ▶ Applying technical methods
  - ▶ To help the analyst achieve a high quality specification and a high quality design
- ▶ Testing Software
  - ▶ A series of test case design methods that help ensure effective error detection
- ▶ Enforcing standards
- ▶ Measurement
  - ▶ Track software quality and assess the ability of methodological and procedural changes to improve software quality
- ▶ Record keeping and reporting
  - ▶ Provide procedures for the collection and dissemination of SQA information