

# COMP 10066

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# Week 1 Lecture

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# Why Testing?

- How does this course fit in to my studies?
  - Software Testing is a growing field and is becoming extremely important as software touches more of what we do on a daily basis
  - As the complexity of software increases, testing has become more and more important
  - An appreciation for testing results in programmers producing better code.
  - Many entry level positions software developers will be hired as testers first.

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# Lecture Summary

- What is Testing?
- What is Quality?
- How can we determine the quality of anything?
- How do we relate Quality and Testing

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# Defining Software Testing

- Is an Empirical / methodical investigation conducted to provide information on a software program.

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# Goal of Software Testing

- What is the goal of a Software Tester?
  - TO FIND BUGS.
  - To Find bugs as early as possible in the software development process and to make sure that they get fixed (in a reasonable time)

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Downloaded from <http://ajphaphysiol.org/> on November 10, 2015



# Defining Quality Assurance (QA)

- Systematic Monitoring and evaluation of different aspects of a product to ensure that standards of quality are being used

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# Goal of Quality Assurance

- What is the goal of Quality Assurance?
  - Ensure that processes and procedures are followed and to improve the process with the goal that process improvements will result in improving the software.
  - Will reduce the probability of bugs getting into the software in the first place.

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# Programmers Involvement in Testing

- Are programmers responsible for any of the activities involved in Software Quality and Testing? What are they?

- YES

- Build code that is well-documented that follows best practices and provide proof that the code meets the specification

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# Defining ISO Certification

- What is ISO?
  - International Standards Organization
- What is ISO 9000?
  - Standard for Quality Assurance
- Name the two sections of the ISO standard that apply to Software Development?
  1. ISO 9001
  2. ISO 9000-3

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# ISO Certification

- What are the two main goals of the ISO 9000 process?
  1. Targets the Development Process – How does an Organization complete its work.
  2. Tells an organization what process to follow to achieve quality.
    - What needs to be done – Does not enforce a particular method.

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# ISO 9000, ISO 9000-3

- Areas that need to be addressed for software development

- ISO 9000-3, Primary Areas of Concern

- configuration management,
- change control,
- development planning,
- quality planning,
- design and implementation,
- testing and validation
- maintenance.

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# Software Testing Careers

- What are some of the different job titles associated with Software Testing?
  - Test Technician
  - Test Engineer
  - Software Tester
  - Test Automation Specialist
  - Test Lead – Test plan developer/manager
  - Test Manager – Oversees all testing within an Organization
  - QA Engineer
  - Many software development jobs, also list software testing as a part of the job requirements

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# Traits of a Software Tester

- What are some of the important traits that a good software tester should have?
  - Like to Explore
  - Likes to Troubleshoot
  - Relentless
  - Creative – Develop tests that will expose problems
  - “Somewhat” of a Perfectionist
  - Tactful and Diplomatic
  - Persuasive – Needs to convince people of the importance of correcting the bugs.
  - Attention to detail

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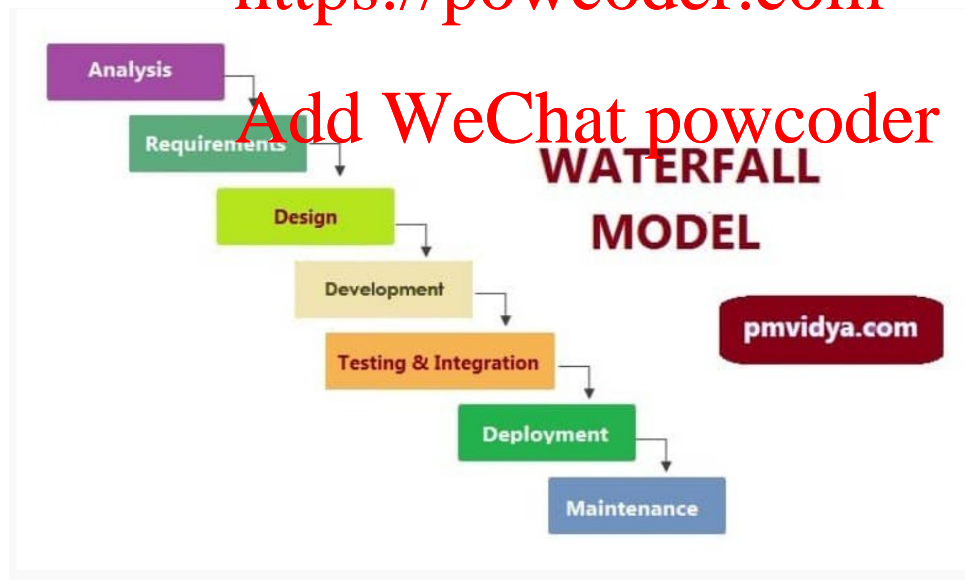
# What makes Software high quality?

- Provide some of the attributes of High Quality Software:
  1. **Accurate/Complete Documentation**
  2. **UI follows standards for the device/OS**
  3. **Behaves: Accurately, Predictably, Reliably, Consistently**
  4. **Does what the user/specification says it should do.**

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# Where does testing fall on the Software Development Lifecycle?

- Waterfall – Thorough specification
  - Testing: A complete phase of testing once development is complete
  - Testing can be designed from the specification
  - Should result in well defined accurate tests



<https://pmvidya.com/blog/waterfall-model/>



# Where does testing fall on the Software Development Lifecycle?

- Evolutionary / Agile / Spiral

- **Testing:** Test phases are integrated throughout the development cycle.

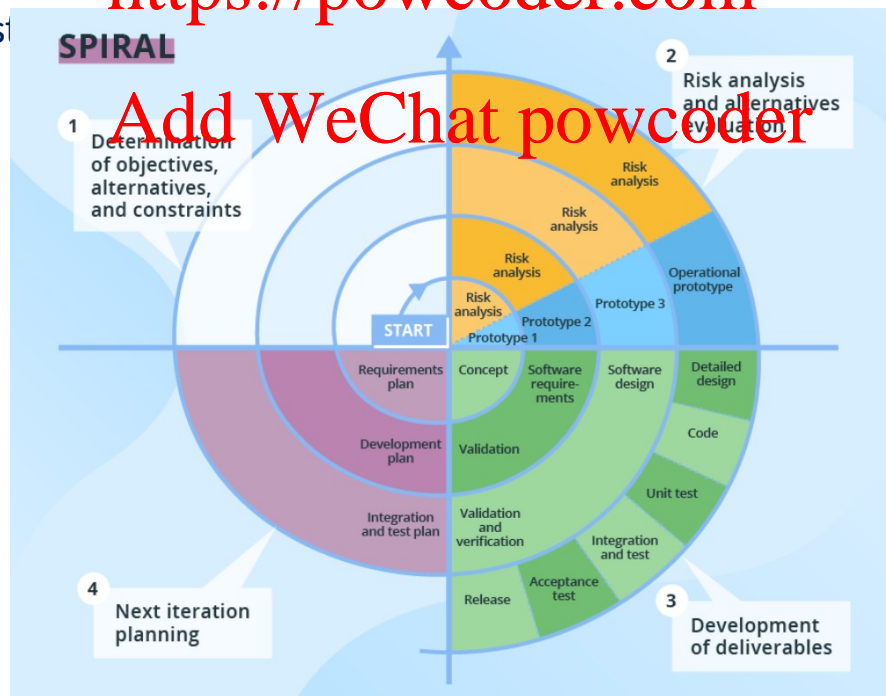
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- **Core Tests** can be run regressively as new features are added

- Core tests must be designed well

- New test

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# Limitations of Software Testing

- What are some of the realities or limitations of testing software that all parties involved in the development or use of software must be aware of?
  - Not all bugs will be found / fixed in any significantly large system.
  - You can't write tests for all cases
  - Some bugs are too risky to fix
    - May break other components of a tightly integrated system.
  - It may not be worth it to fix the bug
    - Limited number of users, simple workaround

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