

KSC ENGINEERING ACADEMY (KEA) TECHNICAL TALK  
Software Testing: White Box and Black Box

Good Morning  
&  
Welcome!

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October 25, 2007

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**Definition of Software Testing**

Testing is the process of establishing confidence that a program or system does what it is supposed to. (Hetzel 1973)

Testing is any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results. (Hetzel 1983)

Testing is the process of executing a program or system with the intent of finding errors. (Myers 1979)

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***Practitioners' Views of Software Testing***

*Checking programs against specifications*

*Finding bugs in programs*

*Determining user acceptability*

*Insuring that a system is ready for use*

*Gaining confidence that it works*

*Showing that a program performs correctly*

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***Practitioners' Views of Software Testing (Continue)***

*Demonstrating that errors are not present*

*Understanding the limits of performance*

*Learning what a system is not able to do*

*Evaluating the capabilities of a system*

*Verifying documentation*

*Convincing oneself that the job is finished*

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Testing is a *broad and continuous* activity throughout the development process.

Testing should be thought of as a necessary information-gathering activity to enable us to evaluate our work effectively.

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***What should be tested?***

***When should testing start and stop?***

***Who does the testing?***

***What Techniques Should Be Applied?***

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***What should be tested?***

- 1.**
- 2.**
- 3.**
- 4.**

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***When should testing start and stop?***

- 1.**
- 2.**
- 3.**
- 4.**

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***Who does the testing?***

- 1.
- 2.
- 3.
- 4.

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***What Techniques Should Be Applied?***

- 1.
- 2.
- 3.
- 4.

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### **Myers 's contemporary perspective on the testing techniques**

- Logic Coverage Testing
- Equivalence Partitioning
- Boundary Value Analysis
- Cause-Effect Graphing
- Error Guessing

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### **Test design**

The process of specifying the object, initial state, and input and predicting the outcome and/or final state for that object, initial state, and input.

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**White Box Testing (Structural  
Testing)**

**Black Box Testing (Behavioral  
Testing, Functional Testing)**

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**Tool and Automation-Automated  
Software Testing**

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Tool and Automation-Automated Software Testing

Test Development Tools

Test Execution Tools

Test Support Tools

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**Test Development Tools**

Test-procedure generator

Test-data generator

Test-data extraction



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## Test Execution Tools

- Unit testing
- Memory-leak detection
- GUI-testing (capture/playback)
- Load, performance, and stress testing
- Network Testing

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## Test Support Tools

- Test Management
- Code Coverage Analyzers
- Metrics Reporting
- Usability Measurement
- Defect Tracking

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**Summary**

Testing Through Reviews  
Testing Requirements  
Testing Designs  
Testing Programs—Testing in the Small  
Testing Systems—Testing in the Large  
Testing Software Changes  
Testing Software Packages

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**Questions?**

**Thank you!**