Introduction to Software Testing

สาขาระบบสารสนเทศทางธุรกิจ มหาวิทยาลัยราชภัฏจันทรเกษม

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AGENDA

- **What is Software Testing?**
- **Types of Software Testing**
- **Categories**
- **Testing Process**
- **Importance of Software Testing**

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BISS4301 : Software Testing and Quality Assurance

What is Software Testing?

Definition:

- Software Testing is the process of evaluating and verifying that a software application or system functions as expected and meets the specified requirements.

Key Objectives:

- Identify defects and bugs in the software.
- Ensure the software product is of high quality.
- Verify that the software meets the business and technical requirements.

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Types of Software Testing

Manual Testing:

- Conducted by humans without the use of automated tools.
- Exploratory and intuitive, allowing testers to simulate user behavior.

Automated Testing:

- Uses software tools to run tests automatically.
- Suitable for repetitive tasks and regression testing.

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Categories:
- Functional Testing: Verifies that each function of the software operates in conformance with the requirement specification.
- Non-Functional Testing: Evaluates aspects like performance, usability, and reliability.

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Testing Process

Testing Process:

- **Requirements Analysis**: Understanding and analyzing testing requirements.
- **Test Planning**: Defining the strategy, resources, and schedule for testing.
- **Test Case Development**: Creating test cases and scripts based on requirements.
- **Environment Setup**: Preparing the hardware and software environment for testing.
- **Test Execution**: Running the tests and logging defects.
- **Test Closure**: Analyzing the test results, preparing reports, and learning from the process.

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Importance of Software Testing:

- **Quality Assurance**: Ensures that the software product is reliable, functional, and free of bugs.
- **Cost-Effectiveness**: Identifying defects early in the development cycle saves time and money.
- **Security**: Identifies vulnerabilities and prevents security breaches.
- **Performance**: Confirms that the software performs well under expected workloads.
- **Customer Satisfaction**: Delivering a defect-free, reliable product enhances customer trust and satisfaction.

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Quality Assurance:

- **Ensures Reliability**: Testing ensures that the software performs consistently and reliably under various conditions.
- **Reduces Bugs**: By identifying and fixing defects early, testing minimizes the number of bugs in the final product.

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Cost-Effectiveness:

- Early Defect Detection: Identifying issues early in the development cycle saves time and resources that would be required to fix them later.
- Reduces Maintenance Costs: Well-tested software requires less maintenance and fewer updates post-deployment.

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Security:
- Identifies Vulnerabilities: Testing helps uncover security vulnerabilities that could be exploited by malicious users.
- Data Protection: Ensures that sensitive information is handled securely, preventing data breaches and ensuring compliance with standards.

Performance:

- Validates Efficiency: Performance testing ensures the software performs efficiently under expected workloads.
- Prevents Bottlenecks: Helps identify and resolve performance bottlenecks before the software is deployed.

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Customer Satisfaction:

- Meets Expectations: Testing ensures that the software meets the specified requirements and user expectations.
- Enhances Trust: Delivering a defect-free, reliable product builds customer trust and enhances the company's reputation.

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Compliance:

- Standards Adherence: Ensures that the software complies with industry standards and regulations, avoiding legal issues and penalties.
- Quality Standards: Meets the quality standards set by the organization and industry.

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Improves User Experience:

- Usability Testing: Ensures that the software is user-friendly and provides a positive user experience.
- Accessibility: Verifies that the software is accessible to users with disabilities.

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Facilitates Continuous Improvement:
- Feedback Loop: Testing provides valuable feedback that can be used to improve the software development process.
- Iterative Enhancement: Continuous testing and feedback help in the iterative enhancement of the software.

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Q&A