**Assignment 2**

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**Testing Strategies for Course Registration System**

Three UML design models will be presented for the Registration and Course Enrollment System. They will aid the discussion of various testing levels that will be deployed to ensure system quality. The UML diagrams capture static and dynamic elements of the system. The testing strategy will ensure comprehensive validation of all system components.

**UML Models Analysis**

Three primary types of UML diagram are used to capture unique aspects of the system:

1. Use Case Diagram: Illustrates the interactions between system users (Students and Administrators) and system functions. (Figure 1)
2. Class Diagram: Depicts the static structure of the system, shows relationships between key classes like User, Student, Course, and Waitlist, and their attributes and methods. (Figure 2)
3. Sequence Diagram: Shows dynamic interaction between system components during the course enrollment process, including waitlist handling. (Figure 3)

Figure 1

A diagram of a course register

Description automatically generated

Figure 2

A screenshot of a computer

Description automatically generated

Figure 3

A diagram of course enrollment process

Description automatically generated

**Testing Levels**

**Component Testing**

Component testing focuses on individual units of the system:

* Testing user registration and authentication function as intended
* Validate course enrollment
* Test waitlist management
* Verifying notification service components

**Integration Testing**

Integration testing ensures proper interactions between software components:

* Testing the integration between user authentication and course enrollment
* Validating waitlist and notification system integration
* Testing database integration throughout the system

**System Testing**

System testing validates the complete system functionality meets the specified requirements, GeeksforGeeks, (2024).

* End-to-end testing of course enrollment processes
* Load testing for concurrent users
* Security testing of user authentication
* Performance testing under various conditions
* Testing system recovery and error handling

**Acceptance Testing**

Acceptance testing ensures the system meets the customer, stakeholder, or end-user’s requirements and expectations are met.

* User acceptance testing with live users
* Testing compliance with accessibility requirements
* Validating system usability and user experience requirements
* Verifying business rule implementation

**References**

GeeksforGeeks. (2024, October 23). *Unified modeling language (UML) diagrams*. <https://www.geeksforgeeks.org/unified-modeling-language-uml-introduction/>

GeeksforGeeks. (2024, September 24). *Software testing strategies*. <https://www.geeksforgeeks.org/software-testing-strategies/>

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