**UML Design Modeling**

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A diagram of a course

Description automatically generated

The UML (Unified Modeling Language) is an important aspect part of object-oriented software, and it is the software development process. It is important for developers to understand the levels of unit testing such as integration, system, acceptance, and component testing for the software to operate. The modeling language is sets of diagrams that helps software developers with developing the system, similar like blueprints with specification, visualization, construction, and documentation of software systems “UML helps software engineers, businessmen and system architects with modelling, design and analysis” (GeeksforGeeks, 2022).

**Component Diagram Testing**

Component testing is structural and represents the physical components in a system and are used for modelling implementation details that are wired together to form larger components or software systems “A component diagram breaks down the actual system under development into various high levels of functionality” (Visual-Paradigm, n.d.). At a high-level component model is as such:

1. A rectangle with the component's name
2. A rectangle with the component icon
3. A rectangle with the stereotype text and/or icon

Looks of a Component

**Integration Diagram Testing**

Integration testing is where the software testing of components is tested to verify the interactions between the different types of software system modules. It is tested either in a single or organized group. There are various types of integration testing that include big-bang, mixed, top-down, and bottom-up. There are many benefits that include with integration such as (TestingXperts, 2020):

* Simplifies the integration among different application modules.
* Enhances the code coverage and improves the reliability of the tests.
* Identifies system-level issues such as integration mistakes, broken databases, and helps to resolve them at the earliest opportunity.
* Assures in interacting with other third-party tools and APIs.
* Bugs are ident and resolved at the early stage.
* Improves the overall development and production time.

**System Diagram Testing**

System Testing and Integration are two types of software testing that ensures the quality and reliability of products. Meanwhile system testing ensures the software’s behavior and functionality as a whole “product meets the needs and requirements of the user and to find any bugs or problems that need to be fixed. It is also called an end-to-end test because it covers everything and is done at a late stage in the development process” (Yilmaz, 2023). The testing can be divided into two categories: functional testing and non-functional testing.

**Acceptance Diagram Testing**

Acceptance testing (UAT) is known to be the last phase or end user of software testing after system testing “type of testing performed by the end user or the client to verify/accept the software system before moving the software application to the production environment” (Hamilton, 2023). There are various types of acceptance testing such as User Acceptance Testing (UAT), Business Acceptance Testing (BAT), Contract Acceptance Testing (CAT), Regulations Acceptance Testing (RAT), Operational Acceptance Testing (OAT), Alpha Testing, and Beta testing. UAT is performed by client and end user, it is to validate the end-to-end business flow. There are five stages to the acceptance testing process; Requirement analysis, create a test plan, test case design, execution, and objective confirmation.

**Reference**

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