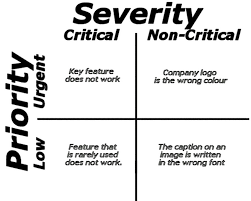
* 1. **Software Testing Fundamentals**
  2. **Overview of Software Testing**
* **Definition and Importance:** Software testing is the process of evaluating a software application to find defects or bugs. It is crucial in the Software Development Life Cycle (SDLC) to ensure quality and reliability of the software.
* **Testing Principles:**
  1. **Testing shows the presence of defects**: Testing can show that there are problems in the software, but it can’t prove that there are no problems at all.
  2. **Exhaustive testing is impossible**: It's impossible to test every single scenario. Focus on the most important and likely situations.
  3. **Early testing**: Start testing as soon as you start developing the software. Finding problems early is easier and cheaper to fix.
  4. **Defect clustering**: Usually, a small part of the software has most of the problems. Spend more time testing these parts.
  5. **Pesticide paradox**: Repeating the same tests over and over again will not find new defects. Test cases need to be regularly reviewed and revised, and new and different tests need to be written to exercise different parts of the software.
  6. **Testing is context-dependent**: Testing is done differently in different contexts. For instance, safety-critical software is tested differently from an e-commerce site.
  7. **Absence-of-errors fallacy**: Just because a software product is 99% bug-free does not mean it is useful. It must meet the users' needs and requirements. Identifying and fixing bugs does not help if the system built is unusable and does not fulfill the user’s needs and expectations.



**Sanity Testing**

* **Definition**: Sanity testing is a subset of regression testing. It is performed when a small change is made to the application, to ensure that the bugs have been fixed and no further issues have been introduced due to these changes.
* **Purpose**: To verify that a particular function or bug fix works correctly.

**Smoke Testing**

* **Definition**: Smoke testing, also known as build verification testing, is a type of testing conducted to ensure that the most crucial functions of a program work without requiring further testing.
* **Purpose**: To verify that the build is stable and the main functionalities are working before proceeding to more detailed testing.

**Regression Testing**

* **Definition**: Regression testing is performed to ensure that recent changes or additions to the code have not adversely affected the existing functionalities of the software.
* **Purpose**: To confirm that new code changes do not introduce new bugs or break existing functionality.

**Retesting**

* **Definition**: Retesting is a process of testing the specific functionality or a bug after it has been fixed to confirm that it is working as expected.
* **Purpose**: To verify that a specific issue has been resolved.

**Difference between Retesting and Regression Testing**

* **Retesting**: Focuses on verifying that specific defects have been fixed.
* **Regression Testing**: Ensures that new changes have not impacted the existing functionality of the software.

**Difference between Smoke and Sanity Testing**

* **Smoke Testing**: Conducted on initial builds to ensure that the critical functionalities of the application are working.
* **Sanity Testing**: Conducted on stable builds to verify that specific changes or bug fixes are working as expected.