**Software Testing**

Software testing is a crucial phase in the software development lifecycle that ensures the quality, reliability, functionality as well as the security of a software application. It involves systematically evaluating various aspects of the software to identify defects or issues, which can then be fixed before the software is released to end-users. The benefits of testing include preventing bugs, reducing development costs and improving performance. Failure to carry out testing or only complete partial or inadequate testing can have negative consequences for the company, both in terms of reputation and profits. It is likely to adversely impact the customers’ perception of and trust in the company. At minimum, it could leave customers frustrated and at worst it could cause existing customers to abandon your product for an adversary’s as well as potential customers going elsewhere.

**Types of Software Testing**

1. **Functional Testing:**
   * **What is Functional Testing?**  
     Functional testing is a type of testing that focuses on verifying whether the software's functions and features work as expected. It checks if the software performs its intended operations correctly.
   * **Examples:**
     1. **Unit Testing:** This tests individual components or functions of the software in isolation. For instance, testing a specific function in a calculator application to ensure it calculates accurately.
     2. **Integration Testing:** It evaluates the interactions between different components or modules of the software. For example, testing how an e-commerce website's shopping cart integrates with the payment gateway.
     3. **System Testing:** This assesses the entire software system to ensure all components function correctly together. In a word processing application, system testing would include checking if formatting, spell check, and saving documents work seamlessly.
2. **Non-Functional Testing:**
   * **What is Non-Functional Testing?**  
     Non-functional testing evaluates aspects of the software that are not related to specific functionalities but are equally important for user satisfaction. It assesses the software's performance, usability, security, and other quality attributes.
   * **Examples:**\
     1. **Performance Testing:** This checks the software's responsiveness, scalability, and speed under various conditions. For instance, load testing assesses how an e-commerce website performs with thousands of concurrent users.
     2. **Usability Testing:** It measures how user-friendly and intuitive the software is. Testers mimic real users to identify user interface issues, navigation problems, and overall user experience.
     3. **Security Testing:** This focuses on identifying vulnerabilities and weaknesses in the software's security measures. Penetration testing attempts to exploit security flaws to prevent potential breaches.