**Assignment - 1**

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**What is testing? What is the need of testing? What are different principles of testing? What are the different features of testing?**

Ans:- Software testing is a process of identifying the correctness of software by considering its all attributes (Reliability, Scalability, Portability, Re-usability, Usability) and evaluating the execution of software components to find the software bugs or errors or defects.

**Following are the needs of software testing**

1. Helps in saving money

* he **cost-effectiveness** of the project happens to be one of the top reasons why companies go for [**software testing Services**](https://www.indiumsoftware.com/software-testing-services/).
* The testing of software comprises of a bunch of projects. In case you find any bug in the early phases, fixing them costs a reduced amount of money.

1. Security

* It is considered to be the most **vulnerable** and sensitive part. There are a bunch of situations in which the information and details of the users are stolen and they are used for the benefits.
* It is considered to be the reason why people look for the well tested and reliable products.
* As a specific product undergoes testing, the user can be ensured that they are going to receive a reliable product. The personal details of the user can be safe. Users can receive products that are free from **vulnerability** with the aid of software testing.

1. Quality of the product

* Following the needs of the product is a prerequisite as it is helpful in getting the prerequisite results.
* Products should be serving the user in one way or the other. It is a must that it is going to bring the value, as per the promise.
* Hence, it should function in a complete manner for ensuring an effective customer experience. It is also necessary to check the **compatibility** of the device.
* For instance, in case, you are planning to launch an application, it is a must to check the compatibility of the same in a wide array of **operating systems** and **devices**.

1. Satisfaction of the customer

* The reasons why it is necessary to opt for **software testing** is due to the fact that it offers the prerequisite and perfect user experience.
* As you opt for the best project in the saturated project, you will be capable of earning the reputation of reliable clients.
* Thus, you are going to reap long-term benefits by opting for **software testing**. Earning the trust of the client is certainly not an easy task, primarily in case the product is found to be functioning and glitching every time or the other.

1. Enhancing the development process

* It is really simple and the developers need to fix the same in no time. In addition to this, **software testers** should be working with the development team parallelly, which is useful in the acceleration of the development procedure.

**Following are the principles of software testing**

* Testing shows the presence of defects
* Exhaustive Testing is not possible
* Early Testing
* Defect Clustering
* Pesticide Paradox
* Testing is context-dependent
* Absence of errors fallacy

**Following are the features of the software testing**

1. **Test Management and Planning**  
   A good testing plan will have a plan and management system in place. Developers and tech teams need some way to systematically test parts and pieces of software. When you fail to test systematically, you increase the chances of missing out on key areas or losing time tracking the same sections of these tests over and over again.   
   A good test management and planning solution will have a track development system and test and quality readiness tracker. Test management is a continuous process that needs actionable solutions. Good test management and planning will help in developing dynamic test plans based on a project’s requirements and risk factors.
2. **Automated Testing**  
   The future of work and productivity depends heavily on automation. Up to [80% of executives](https://www.semrush.com/blog/artificial-intelligence-stats/) expect their retail companies to adopt artificial intelligence-powered automation by 2027. That’s why automation should be present in operations that involve repetitive tasks. Using automation tools in testing can help eliminate hours wasted on repetitive tasks when testing and lessen a development team’s workload significantly.   
   Part of an automation testing tools list should include integration tests, smoke tests for build stability checking, regression tests, API tests, security tests, and responsiveness performance tests.
3. **Quality Assurance Reporting and Insights**  
   Part of the QA testing tools list for automated software testing should include reporting. This feature helps provide diagnoses on complex errors, giving high-accuracy insights into errors that might arise during testing. Spotting bugs and errors in code can be a strenuous ordeal for developers.    
   Up to 36% said that the traditional error monitoring process isn’t ideal because it takes too much time to spot all the details needed to fix an error in software, website, or program. With deeper insights and reports, developers no longer have to investigate issues line-by-line and find errors they need to address faster.

1. **Mobile Testing Capabilities**  
   More and more people are switching to mobile solutions to run several of their tech-based activities. There’s a massive shift towards accessing websites and apps through mobile apps. Accordingly, it makes sense for software to have mobile apps or a mobile-friendly web program at the very least.   
   When [testing mobile apps](https://blog.qatts.com/blogs/checklist-for-mobile-app-testing-2022/), the experience could be very different from checking a desktop experience. Hence, automated software testing should be compatible with mobile programs and experiences. Choosing right QA software testing tool that tests all devices of all sizes can help save time and resources.
2. **Design and Experience Testing**  
   When [testing an e-commerce website](https://blog.qatts.com/blogs/importance-of-ecommerce-website-testing/), design and user experience play a big factor in determining whether a site is ready for launch or not. This testing should include both functional and visual aspects of a website. In the past, website developers and designers had to test and check website pages one by one. But now that some e-commerce sites might have thousands of products, manual testing is now a tedious endeavour.    
   That’s why automated design and experience testing on e-commerce and even non-e-commerce websites are a big help to developers and teams. There are now many significant differences in the coding language supported by the browser and other factors. So, use a website testing software that checks each website on various browsers.
3. **Solution Integrations**  
   A QA testing software tool should have native integration with CI/CD tools. Having integrations will help in ensuring test automation remains integral to the development process. Having integrations with ERP software also helps communicate any necessary testing on launched products that need bug fixes so that all departments know of any downtimes and other schedules. Check out this [compilation of ERP software companies](https://financesonline.com/list-of-erp-software-companies/) that can help integrate online operations.