American International University-Bangladesh

Department of Computer Science

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Assignment on Test Strategy

Subject: Software Quality and Testing

Section: C

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1. Describe from your point of view how you can state the term quality?

Answer:

Many factors fall effect behind the Enterprise Resource Planning System's success. It should be make sure the quality control and quality assurance for building up successful ERP system. Here, if we are able to control the quality, it will easy to detect the system's faults and removing it. For the quality assurance, proper planning is very important. As we are working on big software development for poultry and frozen food company, we have to think about specific set of data and utilized it in a specific manner toward a specific goals.
As our software use for the business purpose. So here our developed software must be composed of several modules like human resource, sales finance production, cross business.

They have to follow these term quality for developing software-

- Sharing database is the common feature for ERP system
- Merge employee information of different branch in the database
- Report synchronization and automated it
- The organization can get the report any time
- Can take dashboard or portal feature for better organized information in ERP system.

Maintain Data Quality is the key factor in the market place. Data quality consist of-use

- High accuracy
- Complete system
- Best time management
- Flexibility

In sales and management there must need to be proper control and plan on:

- Financial system should be followed by sales management
- Perfectly takes the order, manage it properly

- Perfectly manage the sales
- Automate the marketing management
- Give best service for customer by better order tracking technology

There are also some key aspects that we should follow to maintain the quality of the software. The key aspects that conclude software quality include-

Good design – It's invariably vital to possess an honest and aesthetic style to please users reliability. Be it any package it ought to be ready to perform the practicality impeccably while not issues.

Durability-Longevity is an easily confused term. Reliability here refers to the ability of software to run smoothly over a long period of time.

Maintainability – Software-related errors should be discovered and fixed quickly, and news and improvements should be easily added.

Value for money – Customers and businesses building this application need to feel that the money they spend on this application will not be wasted.

Consistency – Software should be able to perform consistently over platform and devices

2. Measuring what you can say the software you developed assured quality or not and how?

Answer:

Software quality assurance is a process which ensure that the activities and methods used in a project to assure the proper quality of the software system. It also assures that developed system meets and ensure standard quality specifications. When our software company is developing the software for the poultry and frozen food company, as a project manager it is important to focuses on the correctness aspect of quality and dealing with the defects. So, we can say that the software which developed is assured quality.

There is a number of activities or process to measure the quality of the software. Our software meets the specified requirements and also user needs and expectations.

Some of the quality activities when the software is developing:

Code Quality: when the software is developing, the development team ensures quality of code used for the software project development. The software code quality is maintained by writing bug free and semantically correct code. The number of lines, complexity functions and rate of bugs generation is measured and make it efficient to outcome a good quality software.

Reliability: The software is able to provide exact service in the right time or not is checked. Reliability is checked by using the software in every condition and every function is checked as user to measure if it has any bug or error.

Performance: This software is developed for the users of poultry and frozen food company for specific purpose. This software is fulfilled all the user requirements and it utilizes time and resources for providing the best service to the customer.

Clarity: Clarity ensures the quality of the software system. Clarity mention to the user interface. The user interface is the recent information like reality and ensure efficient utilization failures of the system.

Documentation: Documentation relies to the most important part of this project. For developing this project, the product document and system document are identified and developed.

Extensibility: Extensibility is the modifications that is required at the appropriate locations to be made. Extensibility of a software system depends on its modularity.

Efficiency: Software efficiency means the measurement of the system performance using the maximum number of resources. Efficiency testing checked compliance to the standards and specifications, resource utilization.

Well-tested: Well-tested system is less prone to data theft, instability and data loss. This project is well-tested, re-tested to ensure best outcome of the project.

Secure coding: Software vulnerabilities are unfortunately a present risk, that's why secure coding is important. For this reason, it's important to ensure that the code is secure and protected.

Code refactoring: Code Refactoring is a systematic process of improving existing computer code, without adding new functionality. It is desired to change the implementation, definition, structure of code without changing functionality of software.

Usability: This software is user-friendly and easy to use. Every feature is used by the end user. Their satisfaction and requirements are met. So, the users are happy using the software.

Testing: Testing is given most priority when developing the software. A number of different techniques can be applied t each level of testing. This software is tested by performing combination of manual and automated modes of execution of test cases.

Testing levels:

Unit testing: Developer test the whole system by testing individual program units. Such as procedure, methods of isolation.

Integration Testing: Testers test all the modules that are assembled to construct large system.

System Testing: This also done by the tester. Test the whole system which includes wide spectrum of testing such as functionality, load.

Acceptance Testing: It is done by the end-user. Poultry and frozen food company users test the system.

Gray-box Testing: It is the mixed of White-box testing and Black-box testing. In our project we have done Gray-box Testing.

White-box testing: it is implementation-based also known as structural testing. By using white-box testing method tested all the logical decisions on their true and false sides. This method also tested internal data structures to ensure validity.

Black-box testing: It is specification-based also known as functional testing. This testing method is also implemented in the software system. This method examines the program that is accessible from outside at the external interface level of a system. It applies a input to the program and observe the externally visible outcome. It is a high-level technique to test the whole system.

Debugging: Developers debug the whole system and is correcting the defects. And then again test, re-test the system for debugging.

Correctness: This software is classified as it can prevent defect, reduce the defect and do defect containment.

Defect Prevention: this software can prevent certain types of faults or error by blocking or correcting human misconceptions.

Defect Reduction: Reducing the defect by analyzing software code, design, test plan is done in this project. Dynamically also checked by executing the software if there is any failure in the system.

Defect containment: Exception handling and software failures is observed and limiting the damage caused by the software system failures is done.

Maintainability: A software maintenance is costly and time-consuming process. This software assures that it provides easy maintainability. It will take only few times to adapt with the software.

Integrity: This software can easily integrate with other software so that software functionality is increased. And it also controls integration so that unauthorized software cannot cyber-attack on the software.

Security: In this time of cyber terrorism, security is most essential part of the software. This software assures security that there will be no unauthorized changes, no cyber-attack will happen when this software product is used by the end user.

So, we can say that this software project is assured its quality. Maintaining this quality of the software is important for this project.

3. Is it possible to assure top quality for every quality attributes? Define your answer.

Answer:

For assure the top quality for software then you have to maintain some quality attribute. Such as security, usability, maintainability, security, usability, reliability and many more. And for any company they need to ensure those quality for their software. For build a good quality software, Poultry and frozen food Company must need to ensure or essential to maintain those quality attribute to build a project.

- **Security:** This can be Define all the specific threats that the software system to be protected from bugs or malware or any third party attack.
  Software must have some security that defined to check duplicating, editing, deleting, viewing and also collecting data analysis.

- **Usability:** This should be start with the previous design. If the developer and designer already have this software product and consider or measuring all the number of errors and fix by itself, the time that it will takes to learn how to work on the interface and complete all the tasks easily to set up a baseline and defined the usability target line.
  The client can learn easily then can operate frequently, prepare inputs and interpret outputs through interaction with a software operate system easily.

- **Flexibility:** Client or customer can easily be able to access and use the software so frequently to utilize and find their needs. Developer should be understand what an user need and quick response for that. So they can easily able to customize the conditions and all the user can be to understand the new feature easily that developer change earlier. Client should be able to understand the software system easily.

- **Safety:** The extent to which the system is safeguarded against deliberate and intrusive faults from internal and external sources.
  Software must can ability to resist all the unauthorized attempts at any user.

- **Reliability:** This can be define that the range to which of the software system continually performs the specified functions and without any system failure. The ability of a software system to be performs it is required functions and understated the conditions for a inelastic period.
  Preventative actions or procedures are essential to avoid any failure in the software.

- **Maintainability:** If a software system will be shut-down more than 24 hour for maintenance then it will not good for the system. The software system will be take a decent time for maintenance. Then most importantly the easy way find out to solve or fix any problem if occur in software system. Finally conform to technical design team that standard of software and it's quality.

- **Robustness:** if at the execution time arise any kind of exception, that time a software how goodly handle it.

- **Operability:** It can be defines how easily a user can operate a system and how much user friendly a system. How easily user can learn about that software system.

- **Test-ability:** It defines how easily testing team can perform testing activity. And if there is any defect find out then they can easily solve the problem.

- **Stability:** This can be define that any software system perform under it is own requirement on some specific situation and do it's best. How much load can handle a software.

❖ **Resource behavior :** how much resource taking the system from memory. If the system take more memory, the system will be slower. so less use of resource is good for a software.

❖ **Portability:** How much usability for same software system can perform in different environment like different operating system. Like windows, Android.

Here if I rank all those quality attribute then security, usability, reliability, Flexibility on top of them in compare to other. For software you must have to notice all the quality attribute for better quality product but mostly this four. Without security none of software product can achieve the top level quality then without usability and flexibility user or client cant not use those software easily or properly and also need reliability.

4. According to your plan the software you are developing will be tested by whom?

Answer:

The main goal of a software testing is increase it's quality and finding it's errors. After developing a software it is impossible that it will be 100% bug free. Obviously there will be some bugs. In a software project, for good quality software , the software will be tested in every phase. Here testing process should be done by who all involved in the software development process, not just full-time software testers. At the testing time good program indicates that at testing phase various level of tester can find bugs. There are three type of software testing like

1. Functional testing.

2. Non-functional testing/performance testing.

3. Maintenance.

Besides there are four type of level of this software testing

- Unit testing
- Integrating testing ,
- System testing ,
- Acceptance testing.

In software project is tested by whom, they are -

- **QA Analysts :** Give support at planning time, at designing time and at testing execution process. He works with development team. They also check all the requirements of the customer has properly implemented or not.
- **Software Quality Assurance Engineers:** their works in a project are software designing, reviewing code, change, management, program testing, write test case/test plans, identify bugs etc. They also create status report and bug reports.
- **Software Testers:** Actually they work at quality testing phase of a software project. They perform automated test and manual test. By doing there work they maintain the quality of a software.
- **Test Managers:** At testing time they act like project manager. They got the position of manager of testing team at software testing period. Their work is manage the whole software testing team. they also set quality matrix.
- **Test Analysts:** They focus on technical issues and business problems. They observed and ensure that, functional readiness of the software before delivery the software. Besides they also handle designing issues, troubleshoot tests of software and try to find out the error and bugs.
- **Test Engineer:** They record the test results, improve the quality by giving commendation, documenting testing procedure.
- **Test Automation Engineer:** actually they focus on automation testing process. At the testing period they use testing framework. They are very well known person about GUI design. They also make test cases.
- **Performance Testers :** The main work of performance tester are the speed test(response time of the software),testing stability(how much load can handle a software), reliability, scalability etc.
- **Usability Testers:** They make testing scenario for usability testing of a good quality software. Then they observer the testing result, analyze the result and make a feedback document. Then they submit it at development team.
- **Test Architect:** mainly their responsibility is checking architectural complex design. Their work is find out those complex cases and solve it.

So at last we can say that, for a good quality software and also a big project of a software development it is very essential to ensure that quality of the software is very well. That's why all of the above mentioned tester are responsible for a good quality software. So if at a project , a software company maintain their testing strategy like above and maintain all testing phase , then they will get a good output of their work.