7.1

Read the document with the notes on Test Plan and Types of Tests (test\_plan\_notes)

1. What are the differences between: functional testing, integration testing, acceptance test, and performance testing?

Functional testing is to check each module/unit/features of the system whether meet functional requirements specified by business analyst in the requirement catalogue, while acceptance test are done by business representatives in the user point of view, to ensure those modules work together in correct business manner. Integration testing is intend to test all modules/units of the system interact correctly with each other, ensure the whole system is consistent, while performance testing is check throughput and response of the system within a range of stability level(threshold) defined in the non-functional requirements in the SRS. Qualitative attributes such as reliability, scalability and interoperability may also be evaluated in the test.

1. Give example of the three types of resources needed for testing: human, hardware and software.

The person involving in the functional testing are the developers implemented the tested modules/units, and test engineer and business analyst performing high level tests.

The hardware using in the integration testing: for the test, the separate physical or virtual server is needed to isolate from the development branch, telecommunication device is to support the communication between different channels for people involving in the test.

Software using in performance testing: support platform, control/monitor tool and result reporting tool are needed in the test environment, such as UNIX, JDK installed, JMeter using in Java based System and a database to store the test results.

You are in charge of a team of 20 developers working on a web-based platform hosting blogs. The platform is in its third version, and therefore can be considered matured. You now need to reorganize the team and distribute roles to include quality assurance mechanisms. Which roles would you consider? What are the tasks assigned to the different roles?

This question is to get a sense of how would you organize a team when addressing quality assurance issues. Would you separate quality assurance to certain members? Would you merge the tasks? Make assumptions and explain them.

Suppose we have 3 senior developers in charge the high level design and analysis, 6 major developers do the implementations, 1 people is business analyst and 8 test engineers, 2 people evaluate quality issues according to the test results, prepare and organize the documentations of the system.

|  |  |  |
| --- | --- | --- |
| Role | Quantity | task |
| PM/QA | 2 | project flow management; take care the quality constraint |
| designer | 3 | high level designer; review activity |
| developer | 6 | implement the designs/component test, bug fix |
| test engineer | 8 | Design test case, implement the testing script; performing test, evaluate test results |
| business analyst | 1 | analysis the business requirements, cooperate with UAT, ensure all user requirements tested |

All designers, developers and test engineers should attend quality assurance seminar, and one of designers and test engineers should be the quality specialist for better contributing the quality works to the development and testing.

In the development procedures, 3 senior developers would host the design reviewer for each other with their implementer and corresponding test engineers. Major developers and designers can do code walk-through in pairs and code static analysis ready for each review activity.

Before test procedures, 5 of the test engineers would in charge of writing test programs according to test cases written by the rest of senior test engineers. The test cases design review would be done by in the similar manner of development. Then, test engineers would be mainly responsible for the system test. Also, test engineers would have to ensure the environment is ready before the system test begin.

The review session in development and testing procedures would have regularly report to those 2 QA, addressing any issues may influence the release, ensure they comply with quality standards as previous and guide the team to continuous improve quality. QA would periodically review tasks taken placed and provide necessary support/resource.

During the testing, all designer and developers would cooperate with those test engineers to fix any system issues, make use of any logging and track the detected defects. Test engineers would use test management tool to evaluate the progress of test and generate reports.

Before the UAT begins, developers would have to contribute their system documents to the QA, and re-organize them with business analyst, and business users could do the business test based on the current stable version. The QA would check the reliability and availability, and any recover mechanisms exists for the system.

After the completion of UAT, all team members would give the final preparation of documentations of the system and be ready to deploy the system into the production environment.

7.2

1. Review the content of the software testing notes (sw\_testing\_notes) with special attention to:

Content of a Test Plan.

Example of type of tests in the plan: functional, integration, user acceptance, performance, etc.

Roles and responsibilities of your test team.

Writing a test case.

Integration testing.

Top/down vs Bottom/up integration testing.

Interface testing.

Object oriented testing.

Scenario based testing.

List of different types of testing.

7.3

Consider the following classes used to print documents in HTML obtained from the Web:

**class** **Document** **{**

String html**;**

Document**(**String url**)** **{**

HtmlClient client **=** **new** HtmlClient**();**

html **=** client**.**get**(**url**);}**

**}**

class Printer {

// Other fields and code that are not important...

void print(Document html) {// Code under test

System.out.println("Testing print method of Printer class");}

}

1. Write a class Test to test the print method with the following string:”<html><body><p>Testing</p></body></html>”

Original of week7-7.3.2

1. Try to reorganize the code (create new classes if needed) so that the testing function is simplified.

*Improvement of week7-7.3.2*

1. Looking at the new testing code, could you propose a design guideline to suggest designers so that testing is simplified?

The main test class injects a dependency builder uses an htmlClient to build different Document object, which is used in the print method of Printer class. It can extent to another type of Document object without modify the main test class, in original design, it would have to modify the new Document statement in order to achieve this.

7.4

1. Using the template previously given, and working in teams, fill out all the fields to describe a test case that can be used in your product.

|  |  |  |  |
| --- | --- | --- | --- |
| Title | JDK Version Test | Test priority | High |
| Module Name  com.eteks.sweethome3d.tools.OperatingSystem | | | |
| Test type | white box, unit test | | |
| Purpose | Tests for comparing different version of JDK environment | | |
| Test Description  Tests for comparing different version of JDK environment where first version number is expected to be smaller than second version number | | | |
| Prerequisite  Input should be strings | | | |
| Dependencies  Not any | | | |
| Input Data  "1.7.0\_71-alhpa14","1.7.0\_71-alhpa15" | | | |
| Expected Result  Boolean result - true | | | |
| Actual result  Boolean result - true | | | |
| Steps   1. Give two Strings of version number 2. The input pass into the method compareVersion 3. Execute the test | | | |
| Output  Boolean value | | | |
| Exit criteria  first version number is expected to be smaller than second version number | | | |
| Post-condition  Test case run successfully with no assertion error | | | |
| Recommendations: not any | | | |
| Note: not any | | | |