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Question: 1

Which of the following statements about performance testing tools is NOT correct?

A. Typical metrics and reports provided by performance testing tools include the number of simulated users throughout the test, and the number and type of transactions generated by the simulated users, and the arrival rate of the transactions.
B. Significant factors to consider in the implementation of performance testing tools include the flexibility of the tool to allow different operational profiles to be easily implemented, and the hardware and network bandwidth required to generate the load.
C. Performance testing tools typically drive the application by simulating user interaction at the graphical user interface level to more accurately measure response times.
D. Performance testing tools generate a load by simulating a large number of virtual users following their designated operational profiles to generate specific volumes of input data.

Answer: C

Explanation:
The statement about performance testing tools that is NOT correct is that they typically drive the application by simulating user interaction at the graphical user interface (GUI) level to more accurately measure response times. In practice, performance testing tools often simulate user interactions at a protocol or service level rather than the GUI level. This approach allows the tools to generate a high load by simulating many virtual users, which would be challenging to achieve with GUI-level interactions due to the higher resource consumption and slower execution speed associated with GUI automation. Performance testing tools are designed to assess the performance of a system under a particular load and are not primarily focused on the user interface. They simulate multiple users accessing the system simultaneously, which helps in identifying bottlenecks, understanding the system ' s behavior under load, and determining how the system scales with increasing load. The tools typically simulate user requests to the server, bypassing the GUI to directly test the backend, APIs, or other service endpoints. This method allows for more efficient and scalable testing, enabling the simulation of thousands of users without the overhead of rendering the GUI.

Question: 2

You are asked to provide a practical and pragmatic testing solution for a commercial system where the main user interface is via the Internet. It is critical that the company’s existing good name and market profile are not damaged in any way. Time to market is not a critical issue when appropriate testing solutions are identified to mitigate business risks.
A product risk assessment has revealed the following product risk:
• Abnormal application termination due to connection failure of the main interface.
Which of the following is the appropriate test type to address this risk?

A. Performance efficiency testing
B. Portability testing
C. Reliability testing
D. Operability testing

Answer: C

Explanation:
Reliability testing is the process of checking whether the software consistently performs according to its specifications. For a commercial system with a critical internet-based user interface, ensuring that the application can handle connection failures without abnormal terminations is essential. Reliability testing would include testing the system ' s ability to recover from failures and continue operating, which directly addresses the risk identified.

Question: 3

Within the world of consumer electronics, the amount of embedded software is growing rapidly. The amount of software in high-end television sets has increased by a factor of about eight over the last six years. In addition, the market of consumer electronics has been faced with a 5 -10% price erosion per year. The price of a product is, among a number of other things, determined by the microcontroller used. Therefore, the use of ROM and RAM remains under high pressure in consumer electronic products, leading to severe restrictions on code size.
Within a new high-end TV project, it has been decided to apply dynamic analysis.
Which of the quality goals listed below is MOST appropriate to the project context?

A. Prevent failures from occurring by detecting wild pointers and loss of system memory.
B. Analyse system failures which cannot easily be reproduced.
C. Evaluate network behaviour.
D. Improve system performance by providing information on run-time system behaviour.

Answer: D

Explanation:
In the context of consumer electronics, where there is rapid growth in embedded software and pressure to minimize code size due to cost constraints, dynamic analysis can be particularly useful for improving system performance. Dynamic analysis involves examining the system ' s behavior during execution, which can provide insights into the efficiency of the code at runtime, memory utilization, and processing speed. In a high-end TV project where the use of ROM and RAM is under severe restrictions, dynamic analysis would be most appropriately applied to improve system performance, ensuring that the software runs efficiently within the available hardware resources. This supports the project context by contributing to the optimization of the software to run within the constraints of the microcontroller used, thereby potentially reducing costs.

Question: 4

You are working on project where re-use of software is an objective. You are involved in the project as a Technical Test Analyst and have been given the task to develop a checklist for code reviews.
Which question from the list below should you implement as part of the code review checklist?

A. Are all modules, data, and interfaces uniquely identified?
B. Can each item be implemented with the techniques, tools, and resources available?
C. Is it possible during acceptance testing to verity whether the item has been satisfied?
D. Are all variables defined with meaningful, consistent and clear names?

Answer: A

Explanation:
For a project where the reuse of software components is a key objective, it is essential to ensure that all modules, data, and interfaces are uniquely identified. This facilitates the tracking, maintenance, and reuse of these components in different parts of the software or in other projects. Unique identification helps in preventing confusion and conflicts that may arise due to the reuse of components that have the same name but different functionalities or interfaces.

Question: 5

At which test level would reliability testing most likely be performed?

A. Static testing
B. Component testing
C. System testing
D. Functional acceptance testing

Answer: C

Explanation:
Reliability testing is aimed at verifying the software ' s ability to function under expected conditions for a specified period of time. It is typically conducted during system testing, where the software is tested in its entirety to ensure that all components work together as expected in an environment that closely simulates the production environment. Reliability testing is not typically associated with static testing, component testing, or functional acceptance testing, as these levels of testing do not address the overall behavior of the system over time.

Question: 6

As a technical test analyst, you are involved in a risk analysis session using the Failure Mode and Effect Analysis technique. You are calculating risk priorities. Which of the following are the major factors in this exercise?

A. Severity and priority
B. Functionality, reliability, usability, maintainability, efficiency and portability
C. Likelihood and impact

D. Financial damage, frequency of use and external visibility

Answer: C

Explanation:
Failure Mode and Effect Analysis (FMEA) is a structured approach to identify and address potential failures in a system, product, process, or service. The major factors involved in calculating risk priorities in FMEA are typically the severity of the potential failure, its likelihood of occurrence, and the ability to detect it. These factors are usually combined to form a Risk Priority Number (RPN) for each potential failure mode identified. However, the specific factors mentioned in the options like functionality, reliability, usability, maintainability, efficiency, and portability are quality characteristics that could be considered in an FMEA analysis but are not directly used for calculating risk priorities. Likewise, financial damage, frequency of use, and external visibility might influence the severity or impact of a failure, but they are not standard factors in calculating risk priorities in the context of FMEA. Therefore, the most relevant factors for calculating risk priorities in an FMEA context would typically be the likelihood of the failure occurring and its potential impact, which aligns with option C: Likelihood and impact.
It ' s important to note that while these explanations are based on general principles and practices related to fault seeding and FMEA, the specifics might vary slightly in different contexts or with different methodologies.

Question: 7

A medical company has performed a safety criticality analysis using the IEC61508 standard. The software components to be developed have been categorized by Safety Integrity Level (SIL). Most components have been rated at SIL 1 or 2, and a few components at SIL 4.
After some discussions with the QA manager, the project has decided to adhere to the recommendations for test coverage provided by the IEC61508 standard.
Which level and type of test coverage should at least be used for the components rated at Safety Integrity Level (SIL) 2?

A. 100% statement coverage, 100% decision coverage and 100% multiple condition coverage
B. 100% statement coverage, 100% decision coverage and 100% MC/DC coverage
C. 100% statement coverage and 100% decision coverage
D. 100% statement coverage

Answer: C

Explanation:
In the context of software testing, different safety integrity levels (SIL) require different levels of rigor in testing. According to the IEC61508 standard, for software components rated at SIL 2, achieving 100% statement coverage and 100% decision coverage is recommended. Statement coverage ensures that every line of code is executed at least once during testing, while decision coverage ensures that every decision in the code (e.g., every branch of an IF statement) is executed on both the true and false sides. These coverage criteria ensure a thorough testing of the software components to validate that they behave correctly in all circumstances. Multiple condition coverage and MC/DC coverage (Options A and B) are more rigorous and typically required for higher SIL levels, such as SIL 4.

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