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Loadrunner Interview Questions and Answers from H2kinfosys

Performance Testing Interview Questions and Answers

1) What is Performance Testing?

Ans:
The process of testing to determine the performance of software product.

2) What is Load Testing?

Ans:
A type of performance testing conducted to evaluate the behavior of a component or system with increasing load, e.g. numbers of parallel users and/or numbers of transactions, to determine what load can be handled by the component or system.

3) What is Stress Testing?

Ans:
A type of performance testing conducted to evaluate a system or component at or beyond the limits of its anticipated or specified work loads, or with reduced availability of resources such as access to memory or servers.

4) What is Spike Testing?

Ans:
Verify the System's performance under sudden increments and decrements.

5) What is Data Volume Testing?

Ans:
Testing where the system is subjected to large volumes of data.

6) What is Endurance Testing?

Ans:
Verifying the System's performance under continues load in terms of users and transactions.

7) What is LoadRunner?

Ans:
It is a Performance Test Tool from HP. It supports all aspects of Performance Testing like Load, Stress, Endurance, spike and Data volume testing.

8) What are the tools available in the industry for Load Testing?

Ans:
LoadRunner from HP

RPT (Rational Performance Tester) from IBM

Silk Performer from Micro Focus

JMeter (Open source Tool) Etc…

9) What is latest version of LoadRunner?

Ans:
LoadRunner 11.5

10) What is the scripting language that used in LoadRunner?

Ans:
VUser script (It is C like language)

11) What are the 4 important components in LoadRunner?

Ans:
Virtual User Generator (VUGEN)
Controller
Load Generator
Analysis

12) How do you identify the performance bottlenecks?

Ans:
Performance Bottlenecks can be detected by using monitors. These monitors might be application server monitors, web server monitors, database server monitors and

network monitors. They help in finding out the troubled area in our scenario which causes increased response time. The measurements made are usually performance response time, throughput, hits/sec, network delay graphs, etc.

13) If web server, database and Network are all fine where could be the problem?

Ans:
The problem could be in the system itself or in the application server or in the code written for the application.

14) How did you find web server related issues?

Ans:
Using Web resource monitors we can find the performance of web servers. Using these monitors we can analyze throughput on the web server, number of hits per second that occurred during scenario, the number of http responses per second, the number of downloaded pages per second.

15) How did you find database related issues?

Ans:
By running "Database" monitor and help of "Data Resource Graph" we can find database related issues. E.g. You can specify the resource you want to measure on before running the controller and than you can see database related issues

16) Explain all the web recording options?

17) What is the difference between Overlay graph and Correlate graph?

Ans:
Overlay Graph:

It overlay the content of two graphs that shares a common x-axis. Left Y-axis on the merged graph show's the current graph's value & Right Y-axis show the value of Y-axis of the graph that was merged.

Correlate Graph:

Plot the Y-axis of two graphs against each other. The active graph's Y-axis becomes X-axis of merged graph. Y-axis of the graph that was merged becomes merged graph's Y-axis.

18) How did you plan the Load? What are the Criteria?

Ans:
Load test is planned to decide the number of users, what kind of machines we are going to use and from where they are run. It is based on 2 important documents, Task Distribution Diagram and Transaction profile. Task Distribution Diagram gives us the information on number of users for a particular transaction and the time of the load. The peak usage and off-usage are decided from this Diagram. Transaction profile gives us the information about the transactions name and their priority levels with regard to the scenario we are deciding.

19) What does vuser_init action contain?

Ans:
Vuser_init action contains procedures to login to a server.

20) What does vuser_end action contain?

Ans:
Vuser_end section contains log off procedures.

21) What is Performance Test Tool?

Ans:
A tool to support performance testing that usually has two main
Facilities: load generation and test transaction measurement.

Load generation can simulate either multiple users or high volumes of input data. During execution, response time measurements are taken from selected transactions and these are logged.

Performance testing tools normally provide reports based on test logs and graphs of load against response times.

22) What are the phases in LoadRunner Test Process?

Ans:
I) Planning the Test

II) Creating VUser Scripts

III) Creating the Scenario

IV) Running the Scenario

V) Monitoring the Scenario

VI) Analyzing Test Result

23) How LoadRunner interact with Software Application?

Ans:
LoadRunner interacts with Software Application based on Protocols.

24) What is Protocol?

Ans:
A set of rules that enable Computer devices to connect and transmit data to one another. Protocols determine how data are transmitted between computing devices and over networks.

25) What are the important Protocol Bundles that LoadRunner supports?

Ans:

LoadRunner Supporting Protocol Bundles

- .NET Record/Replay
- Database
- DCOM
- Network

- Oracle E-Business
- Remote Access
- Rich Internet Applications
- SAP
- SOA
- Templates
- Web and Multimedia
- Wireless
- GUI
- Java Record/Replay
- Remote Desktop
- Web 2.0

26) What is the extension of LoadRunner scenario file?

Ans:
Extension of LoadRunner scenario file is .lrs

27) How many areas we can do the correlation?

Ans:
Areas of correlation are:
1) ItemData
2) TimeStamp
3) Links
4) Check Boxes
5) List Buttons
6) Radio Buttons

28) Tell something about LoadRunner?

Ans:
1) LoadRunner is the industry standard automated performance and load testing tool.
2) HP acquired LoadRunner as part of its acquisition of Mercury Interactive.
3) Using LoadRunner one can emulated hundreds and thousand of virtual users for performance and load testing.
4) LoadRunner supports wide range of industry standard applications for load testing.

29) What are the features of HP LoadRunner?

Ans:
The key features of HP LoadRunner are as follows:

1. TruClient technology that simplifies and accelerates scripting for complex Rich Internet applications.
2. Enterprise load generation that applies measurable and repeatable loads while monitoring systems and end-user transactions to identify issues.
3. Powerful analysis and reporting capabilities that help isolate performance bottlenecks quickly and easily.
4.Integrated diagnostics help pinpoint the root causes of application-level issues down to the code level.

30) What is a virtual user or VUser in LoadRunner?

Ans:
Virtual user or Vuser emulates the real user steps. The real user steps are recorded a test script.
During the recording time user steps (like posting the requests or accessing the pages) are recorded as test script. When the test script is played back the script is going to perform the user actions. The real user emulation by playing back the script is called virtual user or vuser.
The vusers are created as a process or a thread in LoadRunner for multiple users.

31) What are the LoadRunner components?

Ans:
LoadRunner has majorily 4 components
1. LoadRunner VuGen - Virtual user generator - used for scripting purpose.
2. LoadRunner Controller - used for load test execution and monitoring purpose.
3. LoadRunner Load Generator - used for generating the load of multiple virtual users.
4. LoadRunner Analysis - used for analysis and reporting purpose.

32) What is a transaction in LoadRunner?

Ans:
Transaction is defined as response time of one or more than one user steps.
Transaction in LoadRunner is used for measuring the response time of user steps. If one has to measure the response time one or more than one page, the measure statements will be inserted at the appropriate pages.

lr_measure_start("trans1")
Step 1
Step 2
lr_measure_stop("trans1")
lr_measure_start("trans2)
Step 3
lr_measure_stop("trans2)
Step 4
trans1 and trans2 are transaction names, which will have the response times to measure periodically and those response times will be displayed from the graphs in controller during the load test execution and those transaction response times can be analyzed from LoadRunner analysis after load test execution.

33) What is think time in LoadRunner?

Ans:
AThink time is nothing but the user delay between two subsequent requests.
Assume that a user opened page1 and he is filling the data on page1. During filling the page the user has spent 10 sec, and he has submitted the page1, then page2 is loaded. In this case the user wait time between pag1 and page2 10 sec is called think time.

34) What is tuning in LoadRunner? How to use this tuning option in any project?Any one pls explain me in detail.?

Ans:
We are having different tunings like DB Tuning, Network Tuning, and Server Tuning and so on.

35) What is VUGen?

Ans:

The VUGen stands for Virtual User Generator. VuGen is used to generate vuser script (here we record a business operation performed by a single user).

36) What is the analyzer in LoadRunner?

Ans:
This gives you the results of the load runner test. These results can be viewed in graphs and reports.

37) Do we see much difference in load testing for web applications versus traditional software?

Ans:
Yes. From own experience, in traditional applications, the developers know more about how it all works, if it's in house then developers are easy to access and know the environment. With Web and CMS, there is so much the developers don't know about, this is especially true when they integrate out of the box solutions. So many software developers now are using solutions they buy from someone else and they are slow to turn around bugs, functional or non-functional. Obviously this depends on a lot again, traditional applications can also fall into these traps, but it's more common with Web.

38) What are some of the most common web app bottlenecks that you find and/or fix?

Ans:
Some of the most common web app bottlenecks that you find and/or fix: Misconfigured server, poor performing stored procedure, or the application. Less down to infrastructure as most places we have been they spend a lot of money in this area.

39) Have you ever measured application performance re-engineering impact by operations cost reduction?

Ans:
Yes. We can test a work-flow application, and the speed of this application had an impact on both the productivity of a large portion of their workforce, and the performance of their helpdesk staff, which had a direct effect on their reputation.

40) What do you think is the most important aspect of load testing?

Ans:
Most important aspect of load testing:
As mentioned getting the scenario right and answering the business question. No point telling them , "it breaks at 1000 users, when they have 100 people working there and they were concerned only with network latency". (Simplistic example as we know).

41) What kind of applications LR tests?

Ans:
LR tests Client / Server & Web based applications.

42) What is correlation?

Ans:
Correlation is used to obtain data which are unique for each run of the script and which are generated by nested queries. Correlation provides the value to avoid errors arising out of duplicate values and also optimizing the code (to avoid nested queries). Automatic correlation is where we set some rules for correlation. It can be application server specific. Here values are replaced by data which are created by these rules. In manual correlation, the value we want to correlate is scanned and create correlation is used to correlate.

43) How do you find out where correlation is required?

Ans:
In two ways we can find out where correlation is required.
First we can scan for correlations, and see the list of values which can be correlated. From this we can pick a value to be correlated.
Secondly, we can record two scripts and compare them. We can look up the difference file to see for the values which needed to be correlated.

44) Why do you create parameters?

Ans:
Parameters are like script variables. They are used to vary input to the server and to emulate real users. Different sets of data are sent to the server each time the script is run. Better simulate the usage model for more accurate testing from the Controller; one script can emulate many different users on the system.

45) What is the controller in LoadRunner?

Ans:
The more important and critical component of LoadRunner is the Controller. LoadRunner uses the Controller to emulate the real time users. Here is where we configure our scenario settings like Scripts need to be executed, No of Vusers, Load Generators, Run-time settings, Load test duration etc..

46) What is the use of Scheduler?

Ans:
We can use the LoadRunner Scheduler to set up a scenario to run automatically.

47) What are the reasons why parameterization is necessary when load testing the Web server and the database server?

Ans:
Parameterization is useful for performance scripts for varous reasosn: -
1. We can use different data in scripts dynamically.
2. When URLs of AUT are parameterized, it becomes easy for the script to point to different application environments, i.e. Dev, QA or Prod depending upon the requirements.
3. Parameterizing helps in emulation real scenario as it avoids caching effect, if we send same data again and again while running scripts in iteration, then the data could be used from cache or from the temporary table from the database. Now if we send different data in each iteration the real performnace transaction timers can be measured.

48) What is the difference between hits/second and requests/second?

Ans:
Hits per second means the number of hits the vserver receives in one second from the vuser and the request per second is the no. of request the vuser will request from the server.

49) What is the advantage of using LoadRunner?
Ans:
Advantages are:
1. With help of vusers reduces the human users
2. Reduces the reqirement of the systems
3. Helps in the better usage of time and money

4. Effective utilization of automation
5. Everything done from a single point.

50) How do you identify the performance bottlenecks?

Ans:
Performance Bottlenecks can be detected by using monitors. These monitors might be application server monitors, web server monitors, database server monitors and network monitors. They help in finding out the troubled area in our scenario which causes increased response time. The measurements made are usually performance response time, throughput, hits/sec, network delay graphs, etc.

51) What are the tools available in the industry for Load Testing?

Ans:
HP-LoadRunner

IBM - RPT (Rational Performance Tester)

Micro Focus - Silk Performer

JMeter (Open source Tool)

QA WebLoad (RadView)

Etc...

52) What are the considerable factors in Performance Result Analysis using LoadRunner?

Ans:
Performance Bench Marks

Local System Configuration

Network communicators

Server response

53) How to identify the memory leakage using Loadrunner?

Ans:
In Load runner, every application has a processor running in the system. The processor needs to be identified. Using the performance tab we can check the memory consumption of the processor. Continuous tracking needs to be done while load testing. However, if the memory keeps increasing even on stopping the test, a memory may have occurred. Also, if the memory is not released on stopping the test, a memory may have occurred.

54) How do we debug a LoadRunner script?

Ans:
Debugging a LoadRunner script:
VuGen contains two options to help debug Vuser scripts-the Run Step by Step command and breakpoints. The Debug settings in the Options dialog box allow us to determine the extent of the trace to be performed during scenario execution. The debug information is written to the Output window. We can manually set the message class within your script using the lr_set_debug_message function. This is useful if we want to receive debug information about a small section of the script only.

55) What are the performance tester roles and responsibilities using loadrunner?

Ans:
There won't be load runner roles and responsibilities. It is the roles of performance engineer and there won't be difference between the roles what ever tool you use for performance testing.

56) When do you do load and performance Testing?

Ans:
We perform load testing once we are done with interface (GUI) testing. Modern system architectures are large and complex. Whereas single user testing primarily on functionality and user interface of a system component, application testing focuses on performance and reliability of an entire system. For example, a typical application-testing scenario might depict 1000 users logging in simultaneously to a system. This gives rise to issues such as what is the response time of the system, does it crash, will it go with different software applications and platforms, can it hold so many hundreds and thousands of users, etc. This is when we set do load and performance testing.

57) Do you feel like performance testing is an accepted critical part of the development life cycle?

Ans:
It is getting that way yes, with more and more crashes getting exposure on the news here and with it happening more and more it has become a critical part of testing.

58) What are the key KPIs you track for performance testing and tuning?

Ans:
The key KPIs that we track for performance testing are transaction response time, memory usage, disk space, and CPU time.
Tuning: Network delay and stored procedure times.

59) What is Throughput?

Ans:
Basically, "Throughput" is the amount of transactions produced over time during a test. It's also expressed as the amount of capacity that a website or application can handle. Also before starting a performance test it is common to have a throughput goal that the application needs to be able to handle a specific number of requests per hour.

60) What is peak load testing?

Ans:
Peak load is the maximum amount of concurrent users that are on a website within a certain time period. For example, if you own a retail website, your peak load during any given week is most likely to be on the weekend. It would also follow that the Thanksgiving and Christmas holiday season is your busiest overall.

61) What is the focus of Performance testing?

Ans:
The focus of Performance testing is checking a software program's
• Speed – Determines whether the application responds quickly.
• Scalability – Determines maximum user load the software application can handle.
• Stability – Determines if the application is stable under varying loads.

62) What is the goal of performance testing?

Ans:
The goal of performance testing is not to find bugs but to eliminate performance bottlenecks.

63) Can anybody give me example for load testing?

Ans:
Load testing will simulate a real time user load on the application and testing.

For example: Searching functionality in a website.
If a website needs to accommodate a certain number of simultaneous users, for instance 1000 people using the search engine at the same time, then the site should be tested for that load before putting the website into production. Each of these 1000 visitors can access this website with different browsers, different versions of the same browser, different machines in different platforms. Their connections can range from high-bandwidth data lines to dial-up. Load testing is designed to verify that the website can handle the expected load.

64) What is Endurance Testing?

Ans:
Endurance Testing means testing is done with expected user load sustained over longer period of time with normal ramp up and ramp down time and to identify Memory Leaks.

65) What is Volume Testing?

Ans:
Volume testing is a typical load testing except that a large volume of data is populated on the database to study its impact on the application response time and database overall health ; Behavior at various DB volumes.
E.g. Checks for Accumulated counts, logs, and data files.

66) What is Scalability Testing?

Ans:
Scalability testing is a process of evaluating the systems behaviour when the number of simultaneous users is increasing, and the hardware and software resources are

fixed. This testing will be conducted for comparing the response times and system resource utilization of AUT when the number of users are increased.

67) What are the results reported after capacity Testing?

Ans:
Results Reported after capacity Testing are:
• The hardware resource related bottlenecks will be reported.
• Recommendation on new hardware.
• Up-gradation of existing hardware.
• Change in the existing application deployment architecture to support the future growth.
• Introducing new servers in the application deployment architecture.

68) What are the results reported after Stress Testing?

Ans:
Results Reported after Stress Testing are:
1. The maximum number of users supported by AUT.
2. Let us assume that, the system resources are utilized beyond the expected limits. After the stress test, when the normal amount of users are running, the status of the application in terms of the resources utilization will be reported.
3. Assume that there are many errors are coming when the stress testing is been conducted. After the stress test, when the normal amount of users are running the status of the application in terms of the errors will be reported.

69) What are the disadvantages of using commercial performance / load testing tools?

Ans:
Disadvantages of using commercial performance/load testing:
We need to understand the need for any commercial tool with respect to the kind of technologies we use in your organisation. A tool that do not support the technologies is waste of time and money. If it can fit into our requirements, there is a considerable ROI.

70) How do you test an application if it is going production for the first time?

Ans:
For testing the application, you need to have the basic scenarios done first.

Second step will be to do the End to End testing with E2E scenarios.
Third test will be to do the rigorous testing.
Final step will be to do the load testing.

71) Why should we automate the performance testing?

Ans:
Its a discipline that leverages products, people and processes to reduce the risk of application, upgrade or patch deployment. It is about applying production work loads to pre-deployment systems while simultaneously measuring system performance and end-user experience.

72) What are the results reported after the Endurance/Longevity/Soak Testing?

Ans:
Results Reported after the Endurance / Longevity / Soak Testing Test:

When the endurance test is conducted on a multi tier web based enterprise level applications the following kind of results will be reported.
• Memory leaks on the application servers
• JVM Heap size utilization on the application servers
• Connection leaks on the database server
• Cursor leaks on the data base servers
• Response time (consistency or degradation) comparison for start of the load test to end of the load test
• Systems Resource (Memory, CPU, Network and Disk usage etc) comparison for beginning of the load test to end of the load test
• Application errors occurrence over the period of time.

73) What are all the things will be considered while doing performance testing?

Ans:
Does the application respond quickly enough for the intended users?
Will the application handle the expected user load and beyond?
Will the application handle the number of transactions required by the business?
Is the application stable under expected and unexpected user loads?
Are we sure that users will have a positive experience on go-live day?

74) What are the results reported after the load Testing?

Ans:
Results Reported after the load Test:
• The system will be validated to ensure whether the service level agreements or performance objectives are met.
• Average, max, min and standard deviation of response times for each scenario will be measure and reported.
• Resource utilization of each of the systems which are part of AUT will be monitored and reported.
• If there is any application break point below the peak load condition, it need to be identified and reported.

75) What are the results reported after Spike Testing?

Ans:
Results Reported after Spike Testing:
• The systems resources are utilization comparison for, with and without spikes.
• The response times comparison for, with and without spikes.
• Observation on errors for, with and without spikes.

76) What is remote command launcher?

Ans:
The remote command launcher enables the controller to start applications on the host machine.

77) How to determine the Stress Point?

Ans:
Determining the Stress Point:
• Transaction response times are exponentially increased
• The application started throwing the errors for many users
• The system stopped responding
• At least one of the server in AUT architecture got crashed
• The system resource utilization went beyond the acceptable limits.

78) What are the results reported after Scalability Testing?

Ans:
Results Reported after Scalability Testing:

- The comparison charts of different number of users and their response times.
- The comparison charts of system resource utilization for different amount of users.
- Scalability issues when the number of users are incremented.
- Identification of scalable point of the application.