Oracle Technical Interview Questions Answered

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The interview process can be quite stressful. Here is the first part of a two part series on helping you answer those tough questions that you might experience in your quest for an Oracle DBA position.

Ever since I wrote the past article on the Oracle Technical Interview, I have been bombarded with e-mails asking for help on getting through the interview questions that I presented. Most of you I have answered, others I was reluctant to post all of the answers so that you could begin your own quest for the answers. Now, however, I have decided to post the answers knowing that we can all benefit from them. If there are any questions here that you still need clarification on, please e-mail me and I will do my best to further explain the answer I have given. Please remember that as you go through the article, it is not enough to know the answer to a particular question, you must try and put yourself in an interview situation and experience answering the question for yourself. Therefore, after you have gone through the questions and answers read the question yourself and then answer it with your own words. As always, good luck, and cheers.

Personal

This part of the interview question is not to be regarded as insignificant. If the interviewer asks you these questions take it as a sign that they are interested in you, your qualities, and how you interact with people throughout the day. Take it as an opportunity to prove that you have been around the block a few times, are willing to work with other people, and enjoy the job you do. Many times people see DBA types as stuffy and pointed, not willing to work with others, and only concerned with the database and its day-to-day operational needs. Put aside the needs of the database and talk about how you work with people and the different departments in the organization and are concerned with providing them with top notch database services.

1. What DBA activities did you to do today?

Wow, this is a loaded question and almost begs for you to answer it with "What DBA activities do you LIKE to do on a daily basis?." And that is how I would answer this question. Again, do not get caught up in the "typical" day-to-day operational issues of database administration. Sure, you can talk about the index you rebuilt, the monitoring of system and session waits that were occurring, or the space you added to a data file, these are all good and great and you should convey that you understand the day-to-day operational issues. What you should also throw into this answer are the meetings that you attend to provide direction in the database arena, the people that you meet and talk with daily to answer adhoc questions about database use, the modeling of business needs within the database, and the extra time you spend early in the morning or

late at night to get the job done. Just because the question stipulates "today" do not take "today" to mean "today." Make sure you wrap up a few good days into "today" and talk about them. This question also begs you to ask the question of "What typical DBA activities are performed day to day within X Corporation?"

2. What is your typical day like?

If you spend enough time on question 1, this question will never be asked. It is really a continuation of question 1 to try and get you to open up and talk about the type of things you like to do. Personally, I would continue with the theme of question 1 if you are cut short or this question is asked later in the interview process. Just note that this question is not all geared toward the day-to-day operational issues you experience as a DBA. This question also gives you the opportunity to see if they want to know about you as an individual. Since the question did not stipulate "on the job" I would throw in a few items like, I get up at 5:00am to get into work and get some quiet time to read up on new trends or you help coach your son/daughter's soccer team. Just test the waters to what is acceptable. If the interviewer starts to pull you back to "job" related issues, do not go to personal. Also, if you go to the office of the interviewer please notice the surroundings, if there are pictures of his/her family, it is probably a good idea to venture down the personal path. If there is a fly-fishing picture on the wall, do not say you like deep-sea fishing. You get the picture.

3. What other parts of your organization do you interact with and how?

Again, if you have exhausted question 1 and 2 you may never get to this question. But if you have been apprehensive to opening up and explaining yourself, take note that you may have an issue and the interviewer might also be already getting tired of the interview process. If you get to this question consider yourself in trouble. You really need to forget all your hang-ups and start explaining what it is that you like to do as a DBA, and why you want to work for this particular company. You are going to have to reel this interviewer back into the interview process or you might not get to the true technical question part of the interview.

4. Do you consider yourself a development DBA or a production DBA and why?

I take this as a trick question and explain it that way. Never in my database carrier have I distinguished between "development" and "production." Just ask your development staff or VP of engineering how much time and money is lost if development systems are down. Explain to the interviewer that both systems are equally important to the operation of the company and both should be considered as production systems because there are people relying on them and money is lost if either one of them is down. Ok you may be saying, and I know you are, that we lose more money if the production system is down. Ok, convey that to the interviewer and you won't get anyone to disagree with you unless your company sells software or there are million dollar deals on the table that are expecting the next release of your product or service.

5. Are you a nuts-n-bolts DBA or a tools-n-props DBA

This question begs for me to give definition around the terms I basically group DBAs into. These are not good or bad groups but something I like to think about when talking to DBAs. A nuts-n-bolts DBA is the type that likes to figure out every little item about how the database works. He/she is a DBA who typically hates a GUI environment and prefers the command line to execute commands and accomplish tasks. A nuts-n-bolts DBA like to feel in control of the database and only feels comfortable at the command line and vi as an editor. The tools-n-props DBA is mostly the opposite of a nuts-n-bolts DBA, they like the feel of a GUI, the ease at which things can be accomplished without knowing much about the database. They want to get the job done with the least amount of intervention from having to figure out what everything is doing behind the scenes. Now the answer, I would explain myself as a combination of the two. I, having been in this business for over 20 years, have grown up in a command line era where the GUIs never seemed to work. There was high complexity in systems and not much good documentation on how things worked. Thus, I had to learn everything about most aspects of the database environment I was working in and thus became a nuts-n-bolts DBA. I was a true command line and vi bigot. Times have changed and the GUIs are very reliable, understand the environment they are installed on, and can generally get the job done quicker for individuals new to database administration. I too am slowly slipping over to the dark side of GUI administration. If you find yourself as a tools-n-props DBA, try to convey that you are aware of some tasks that require you to be a nuts-n-bolts DBA.

Technical – Oracle

This is the part you have all been waiting on. Please if you have just skipped to this section, go back to the personal section and read it. There is much to be gained by the personal section and conveying to your interviewer who you are and how you tick from day to day. Also, the answers I am giving here are off the cuff and are not intended to be the definitive answer to these questions. There are many aspects to these questions that just cannot be answered here and honestly, you will not have time to explain any of these questions fully in the interview process. It is up to you to make sure your interviewer understands that you understand the question and have given enough information that they know you understand the concept.

1. Explain the difference between a hot backup and a cold backup and the benefits associated with each.

A hot backup is basically taking a backup of the database while it is still up and running and it must be in archive log mode. A cold backup is taking a backup of the database while it is shut down and does not require being in archive log mode. The benefit of taking a hot backup is that the database is still available for use while the backup is occurring and you can recover the database to any point in time. The benefit of taking a cold backup is that it is typically easier to administer the backup and recovery process. In addition, since you are taking cold backups the database does not require being in archive log mode and thus

there will be a slight performance gain as the database is not cutting archive logs to disk.

2. You have just had to restore from backup and do not have any control files. How would you go about bringing up this database?

I would create a text based backup control file, stipulating where on disk all the data files where and then issue the recover command with the using backup control file clause.

3. How do you switch from an init.ora file to a spfile?

Issue the create spfile from pfile command.

4. Explain the difference between a data block, an extent and a segment.

A data block is the smallest unit of logical storage for a database object. As objects grow they take chunks of additional storage that are composed of contiguous data blocks. These groupings of contiguous data blocks are called extents. All the extents that an object takes when grouped together are considered the segment of the database object.

5. Give two examples of how you might determine the structure of the table DEPT.

Use the describe command or use the dbms_metadata.get_ddl package.

6. Where would you look for errors from the database engine?

In the alert log.

7. Compare and contrast TRUNCATE and DELETE for a table.

Both the truncate and delete command have the desired outcome of getting rid of all the rows in a table. The difference between the two is that the truncate command is a DDL operation and just moves the high water mark and produces a now rollback. The delete command, on the other hand, is a DML operation, which will produce a rollback and thus take longer to complete.

8. Give the reasoning behind using an index.

Faster access to data blocks in a table.

9. Give the two types of tables involved in producing a star schema and the type of data they hold.

Fact tables and dimension tables. A fact table contains measurements while dimension tables will contain data that will help describe the fact tables.

10. . What type of index should you use on a fact table?

A Bitmap index.

11. Give two examples of referential integrity constraints.

A primary key and a foreign key.

12. A table is classified as a parent table and you want to drop and re-create it. How would you do this without affecting the children tables?

Disable the foreign key constraint to the parent, drop the table, re-create the table, enable the foreign key constraint.

13. Explain the difference between ARCHIVELOG mode and NOARCHIVELOG mode and the benefits and disadvantages to each.

ARCHIVELOG mode is a mode that you can put the database in for creating a backup of all transactions that have occurred in the database so that you can recover to any point in time. NOARCHIVELOG mode is basically the absence of ARCHIVELOG mode and has the disadvantage of not being able to recover to any point in time. NOARCHIVELOG mode does have the advantage of not having to write transactions to an archive log and thus increases the performance of the database slightly.

14. What command would you use to create a backup control file?

Alter database backup control file to trace.

15. Give the stages of instance startup to a usable state where normal users may access it.

STARTUP NOMOUNT - Instance startup

STARTUP MOUNT - The database is mounted

STARTUP OPEN - The database is opened

16. What column differentiates the V$ views to the GV$ views and how?

The INST_ID column which indicates the instance in a RAC environment the information came from.

17. How would you go about generating an EXPLAIN plan?

Create a plan table with utlxplan.sql.

Use the explain plan set statement_id = 'tst1' into plan_table for a SQL statement

Look at the explain plan with utlxplp.sql or utlxpls.sql

18. How would you go about increasing the buffer cache hit ratio?

Use the buffer cache advisory over a given workload and then query the v$db_cache_advice table. If a change was necessary then I would use the alter system set db_cache_size command.

19. Explain an ORA-01555

You get this error when you get a snapshot too old within rollback. It can usually be solved by increasing the undo retention or increasing the size of rollbacks. You should also look at the logic involved in the application getting the error message.

20. Explain the difference between $ORACLE_HOME and $ORACLE_BASE.

ORACLE_BASE is the root directory for oracle. ORACLE_HOME located beneath ORACLE_BASE is where the oracle products reside.

Well, we have gone through the first 25 questions as I would answer them during an interview. Please feel free to add your personal experiences to the answers as it will always improve the process and add your particular touch. As always remember these are "core" DBA questions and not necessarily related to the Oracle options that you may encounter in some interviews. Take a close look at the requirements for any job and try to come up with questions that the interviewer may ask. Next time we will tackle the rest of the questions. Until then, good luck with the process.

This is the second part of the two part series on helping you answer those tough questions that you might experience in your quest for an Oracle DBA position.

The Oracle Technical Interview can be quite daunting. You never quite know what to study for and how to prepare. I am fully aware of this, as I have received many emails since my original article on interview questions was released. While these questions are only guidelines as to what should and more than likely will be asked, I hope that you find some comfort in the review of them. As always, do not just memorize the answers, as there are jewels to be found in the quest of figuring out the answer from the question. As always, remember that as you go through the article, it is not enough to know the answer to a particular question; you must try to put yourself in an interview situation and experience answering the question for yourself. Therefore, after you have gone through the questions and answers read the question again and then answer it with your own words. As always, good luck, and cheers.

Technical – Oracle

Last time, we answered questions 1 thru 20 of the technical part of the interview. Here are the next 30 in this section. Depending on the mood of the

interview and your ability to elaborate on the answer, try to give some insight that you know more than just the simple answer to some of these questions. Also, be sensitive to the interviewer getting tired of you talking too much. Well here they are.

21. How would you determine the time zone under which a database was operating?

```
select DBTIMEZONE from dual;
```

22. Explain the use of setting GLOBAL_NAMES equal to TRUE.

Setting **GLOBAL_NAMES** dictates how you might connect to a database. This variable is either TRUE or FALSE and if it is set to TRUE it enforces database links to have the same name as the remote database to which they are linking.

23. What command would you use to encrypt a PL/SQL application?

WRAP

24. Explain the difference between a FUNCTION, PROCEDURE and PACKAGE.

A function and procedure are the same in that they are intended to be a collection of PL/SQL code that carries a single task. While a procedure does not have to return any values to the calling application, a function will return a single value. A package on the other hand is a collection of functions and procedures that are grouped together based on their commonality to a business function or application.

25. Explain the use of table functions.

Table functions are designed to return a set of rows through PL/SQL logic but are intended to be used as a normal table or view in a SQL statement. They are also used to pipeline information in an ETL process.

26. Name three advisory statistics you can collect.

Buffer Cache Advice, Segment Level Statistics, & Timed Statistics

27. Where in the Oracle directory tree structure are audit traces placed?

In unix $ORACLE_HOME/rdbms/audit, in Windows the event viewer

28. Explain materialized views and how they are used.

Materialized views are objects that are reduced sets of information that have been summarized, grouped, or aggregated from base tables. They are typically used in data warehouse or decision support systems.

29. When a user process fails, what background process cleans up after it?

PMON

30. What background process refreshes materialized views?

The Job Queue Processes.

31. How would you determine what sessions are connected and what resources they are waiting for?

Use of V$SESSION and V$SESSION_WAIT

32. Describe what redo logs are.

Redo logs are logical and physical structures that are designed to hold all the changes made to a database and are intended to aid in the recovery of a database.

33. How would you force a log switch?

```
ALTER SYSTEM SWITCH LOGFILE;
```

34. Give two methods you could use to determine what DDL changes have been made.

You could use Logminer or Streams

35. What does coalescing a tablespace do?

Coalescing is only valid for dictionary-managed tablespaces and de-fragments space by combining neighboring free extents into large single extents.

36. What is the difference between a TEMPORARY tablespace and a PERMANENT tablespace?

A temporary tablespace is used for temporary objects such as sort structures while permanent tablespaces are used to store those objects meant to be used as the true objects of the database.

37. Name a tablespace automatically created when you create a database.

The SYSTEM tablespace.

38. When creating a user, what permissions must you grant to allow them to connect to the database?

Grant the CONNECT to the user.

39. How do you add a data file to a tablespace?

```
ALTER TABLESPACE <tablespace_name> ADD DATAFILE <datafile_name> SIZE <size>
```

40. How do you resize a data file?

```
ALTER DATABASE DATAFILE <datafile_name> RESIZE <new_size>;
```

41. What view would you use to look at the size of a data file?

```
DBA_DATA_FILES
```

42. What view would you use to determine free space in a tablespace?

```
DBA_FREE_SPACE
```

43. How would you determine who has added a row to a table?

Turn on fine grain auditing for the table.

44. How can you rebuild an index?

```
ALTER INDEX <index_name> REBUILD;
```

45. Explain what partitioning is and what its benefit is.

Partitioning is a method of taking large tables and indexes and splitting them into smaller, more manageable pieces.

46. You have just compiled a PL/SQL package but got errors, how would you view the errors?

```
SHOW ERRORS
```

47. How can you gather statistics on a table?

The ANALYZE command.

48. How can you enable a trace for a session?

Use the DBMS_SESSION.SET_SQL_TRACE or

Use ALTER SESSION SET SQL_TRACE = TRUE;

49. What is the difference between the SQL*Loader and IMPORT utilities?

These two Oracle utilities are used for loading data into the database. The difference is that the import utility relies on the data being produced by another Oracle utility EXPORT while the SQL*Loader utility allows data to be loaded that has been produced by other utilities from different data sources just so long as it conforms to ASCII formatted or delimited files.

50. Name two files used for network connection to a database.

TNSNAMES.ORA and SQLNET.ORA

Technical – UNIX

Every DBA should know something about the operating system that the database will be running on. The questions here are related to UNIX but you should equally be able to answer questions related to common Windows environments.

1. How do you list the files in an UNIX directory while also showing hidden files?

```
ls -ltra
```

2. How do you execute a UNIX command in the background?

Use the "&"

3. What UNIX command will control the default file permissions when files are created?

Umask

4. Explain the read, write, and execute permissions on a UNIX directory.

Read allows you to see and list the directory contents.

Write allows you to create, edit and delete files and subdirectories in the directory.

Execute gives you the previous read/write permissions plus allows you to change into the directory and execute programs or shells from the directory.

5. the difference between a soft link and a hard link?

A symbolic (soft) linked file and the targeted file can be located on the same or different file system while for a hard link they must be located on the same file system.

6. Give the command to display space usage on the UNIX file system.

```
df -lk
```

7. Explain iostat, vmstat and netstat.

Iostat reports on terminal, disk and tape I/O activity.

Vmstat reports on virtual memory statistics for processes, disk, tape and CPU activity.

Netstat reports on the contents of network data structures.

8. How would you change all occurrences of a value using VI?

Use :`%s/<old>/<new>/g`

9. Give two UNIX kernel parameters that effect an Oracle install

SHMMAX & SHMMNI

10. Briefly, how do you install Oracle software on UNIX.

Basically, set up disks, kernel parameters, and run orainst.

I hope that these interview questions were not too hard. Remember these are "core" DBA questions and not necessarily related to the Oracle options that you may encounter in some interviews. Take a close look at the requirements for any job and try to extract questions that interviewers may ask from manuals and real life experiences. For instance, if they are looking for a DBA to run their databases in RAC environments, you should try to determine what hardware and software they are using BEFORE you get to the interview. This would allow you to brush up on particular environments and not be caught off-guard. Good luck!