Oracle® Tutor™

Section6 注意事项、考点和答案

0.注意事项：

使用 level 7 产生 snap

创建一个 Job 每 5 分钟运行一次

按照指定路径生成 report 文件

outline 也考了

P14231: p460 IOT

timed_statistics 有没有被改需要检查

基于函数的索引需要会话 enable query rewrite

JOB_QUEUE_PROCESSES 对自动收集 statspack 极为重要，需要检查

都是考平时的知识点,时间比较紧张。 难点:keep 大对象、IOT 表、索引创建和 AWR

注意点:需要操作的内容很多,先做会的,注意时间 。

1.考点：

1.log checkpoint

2.fast start mttr target

3.resource manager

4.resource manager 处理并发事务

5.dbms_shared_pool 大对象代码保留在共享池中

6.ASMM SGA PGA

7.创建各种类型的索引：bitmap Index ，function index

8.Index monitoring

9.如何创建 IOT

10.Cursor sharing 共享 SQL 语句

11.表空间使用 ASSM 以减少 buffer busy wait

12.STATSPACK

13.产生 STATSPACK 报告

14.自动收集统计信息

15.大对象数据块保留在数据库缓冲区缓存中

16.可能有调整 AWR

2.题目：

1. Instance Configuration

1.1 Configure your database to record checkpoints in the alert.log file.

首先 show parameter alert 看 log_checkpoints_to_alert 的值是否为 true。

Alter system set log_checkpoints_to_alert=true;

Show parameter user_dump

看一下路径是否存在。

1.2 Ensure all user trace files are placed in the USER_DUMP_DEST location.

```
SQL> show parameter    aler

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
log_checkpoints_to_alert             boolean     FALSE
SQL> alter system set log_checkpoints_to_alert=true;

System altered.

SQL> show parameter user_dump

NAME                                 TYPE        VALUE
------------------------------------ ----------- ------------------------------
user_dump_dest                       string      /app/oracle/admin/stbdb/udump
SQL>
```

2. Set Up and Configure Resource Manager

2.1 Set up and configure Resource Manager using the following specifications:

2.1.1 Assign the user SH as the resource administrator.

EM->PROD DATABASE->Administration->User->Create->User Name & Password->System Privileges->Edit List->ADMINISTER_RESOURCE_MANAGER->OK-OK

或者

BEGIN
dbms_resource_manager_privs.grant_system_privilege(privilege_name=>'ADMINISTER_RESOURCE_MANAGER', grantee_name=>'SH', admin_option=>FALSE);
END;

2.1.2 Create two resource manager consumer groups, OLTP and DSS. (Use comments with each to denote what the objects will be used for.)

2.1.3 Create a plan named WEEKDAYS with the following directives only;

选择 Modify

将 OLTP 和 DSS 添加到 WEEKDAYS 中

2.1.3.1 For OLTP group, we cannot allow more than 20 active sessions. If the 21st user attempts an activity, the request should be aborted if the wait exceeds 60 seconds.

2.1.3.2 The maximum number of active sessions for the DSS group to 5. If more than 5 sessions are requested, then the request should abort at 120 seconds.

2.1.3.3 The maximum execution time for a query for a session in the OLTP group should be set to 5 seconds. If the query is estimated to take longer than 5 seconds the session should be automatically switched to the DSS group.

COSUMER GROUP SWITCHING

时间 10 Use Estimate 选钩 action to take：Switch To Group DSS

2.1.3.4 The maximum amount of undo that the OLTP group can use should be set to 200MB.

2.1.3.5 Set CPU ratios for OLTP,DSS and OTHER_GROUPS as 50,30 and 20 respectively.

2.1.3.6 DSS group has parallel degree limit of 20.

2.1.3.7 Make sure that an idle OLTP sessions cannot block a DML statement for more than 60 seconds.

IDLE TIME

需要设置 Max Idle Time if Blocking Another Session (sec)

2.1.4 Assign the default consumer group for the OLTP_USER to OLTP group.

2.1.5 Assign the default consumer group for the SH user to DSS group.

2.1.6 Specify that the WEEKDAYS plan the used by the instance as default.

这道题主要是让我们建一个 Resource Plan 和两个 consumer group
然后按照题目的要求去设置相关的参数的值。
下面相关的脚本

```
BEGIN
dbms_resource_manager.clear_pending_area();
dbms_resource_manager.create_pending_area();
dbms_resource_manager.create_plan( 'WEEKDAYS', '');
dbms_resource_manager.create_plan_directive(
   plan => 'WEEKDAYS',
   group_or_subplan => 'DSS',
   comment => '',
   cpu_p1 => 30, cpu_p2 => NULL, cpu_p3 => NULL, cpu_p4 => NULL,
   cpu_p5 => NULL, cpu_p6 => NULL, cpu_p7 => NULL, cpu_p8 => NULL,
   parallel_degree_limit_p1 => 20,
```

```
        active_sess_pool_p1 => 5,
        queueing_p1 => 120,
        switch_group => NULL,
        switch_time => NULL,
        switch_estimate => false,
        max_est_exec_time => NULL,
        undo_pool => NULL,
        max_idle_time => NULL,
        max_idle_blocker_time => NULL,
        switch_time_in_call => NULL
    );
    dbms_resource_manager.create_plan_directive(
        plan => 'WEEKDAYS',
        group_or_subplan => 'OLTP',
        comment => '',
        cpu_p1 => 50, cpu_p2 => NULL, cpu_p3 => NULL, cpu_p4 => NULL,
        cpu_p5 => NULL, cpu_p6 => NULL, cpu_p7 => NULL, cpu_p8 => NULL,
        parallel_degree_limit_p1 => NULL,
        active_sess_pool_p1 => 20,
        queueing_p1 => 60,
        switch_group => 'DSS',
        switch_time => 5,
        switch_estimate => false,
        max_est_exec_time => 5,
        undo_pool => 204800,
        max_idle_time => NULL,
        max_idle_blocker_time => 60,
        switch_time_in_call => NULL
    );
    dbms_resource_manager.create_plan_directive(
        plan => 'WEEKDAYS',
        group_or_subplan => 'OTHER_GROUPS',
        comment => '',
        cpu_p1 => 20, cpu_p2 => NULL, cpu_p3 => NULL, cpu_p4 => NULL,
        cpu_p5 => NULL, cpu_p6 => NULL, cpu_p7 => NULL, cpu_p8 => NULL,
        parallel_degree_limit_p1 => NULL,
        active_sess_pool_p1 => NULL,
        queueing_p1 => NULL,
        switch_group => NULL,
        switch_time => NULL,
        switch_estimate => false,
        max_est_exec_time => NULL,
        undo_pool => NULL,
        max_idle_time => NULL,
```

```
    max_idle_blocker_time => NULL,
    switch_time_in_call => NULL
);
dbms_resource_manager.submit_pending_area();
dbms_resource_manager.switch_plan( plan_name => 'WEEKDAYS', sid => 'PROD' );
END;
EXEC DBMS_RESOURCE_MANAGER_PRIVS.GRANT_SWITCH_CONSUMER_GROUP
('SH','DSS',TRUE);
EXEC DBMS_RESOURCE_MANAGER_PRIVS.GRANT_SWITCH_CONSUMER_GROUP
('OLTP_USER','OTLP', TRUE);
```

3. Manage Instance Memory Structures

3.1 Create a view owned by user SYS that lists the packages,procedures,triggers and functions that are in memory and occupy more than 50KB. The view should be named LARGE_PROC and visible to all users through a public synonym named LARGE_PROC.

创建 synonym 时可以参考 Database Administrator's Guide 中搜索 synonym 关键字。
第一问的意思是创建一个视图，该视图中包含驻留在共享内存中超过 50 KB 的对象的信息，这些对象为包，过程，触发器和函数。并为这个视图创建一个公共的 synonym，使它能被所有的用户查看到。

```
Create view LARGE_PROC
As
Select * from V$DB_OBJECT_CACHE
WHERE
TYPE
IN('PACKAGE','PROCEDURE','TRIGGER','FUNCTION', 'PACKAGE BODY')
AND
SHARABLE_MEM>52100;
CREATE PUBLIC SYNONYM LARGE_PROC FOR SYS. LARGE_PROC;
Grant select on LARGE_PROC to public;
```

3.2 Set your maximum SGA to 512MB. Turn on Automatic Shared Memory Management. Restart the instance after specifying.

3.3 Your developers notify you that they will need the Java Pool set to a minimum of 200MB.

3.4 Limit the total amount of PGA that can be used on an instance-wide basis to 150MB.

```
Alter system set sga_max_size=512M scope=spfile;
Alter system set sga_target=512m scope=spfile;
Alter system set java_pool_size=200M;
Alter system set pga_aggregatee_target=150M;
```

4. Manage Objects for Performance

4.1 Our application needs to access the CUST_LAST_NAME column in the CUSTOMERS table in the SH schema. The problem is that the users can supply names without regard to case. The application changes all the user-supplied names to uppercase. Analysis reveals that a normal index we placed on the column is not used. Create an index on the

aforementioned column that will be usable by the application.

建一个函数索引，参考文档为 Database Administrator's Guide 第 16 章。

Create index cust_last_name_idx on CUSTOMERS(upper(CUST_LAST_NAME));

4.2 Turn on monitoring for all of the indexes on the SALES table in the OLTP_USER schema.

监控一个表的索引使用情况，参考文档为 Database Administrator's Guide 第 16 章。

Create or replace procedure proc_mon

is

begin

  for rec in (Select index_name from dba_indexes where owner=' OLTP_USER' and table_name='SALES')

loop

    execute immediate 'alter index '||rec.index_name||' monitoring usage';

end loop;

exec proc_mon;

在 oltp_user 用户下执行 select * from v$object_usage;

可以查看监控的情况。

4.3 Create two new tables named STUDENTS and ATTENDEES in the OLTP_USER schema. This STUDENTS table will contain three columns. STUD_ID will be a number and primary key. FNAME and LNAME will be the other two columns and may vary in length with a maximum of 20 characters. ATTENDEES will be an intersection table in a many-to-many relationship between the STUDENTS and CLASSES tables also in the OLTP_USER schema. The ATTENDEES table will contain the primary keys of each of the other tables as its primary key. Create the ATTENDEES table so what the primary key index and the table itself are the same object.

建一个普通表和索引组织表

参考文档为 Database Administrator's Guide 第 15 章创建 IOT 表

CREATE TABLE STUDENTS (STUD_ID NUMBER, FNAME VARCHAR2(20), LNAME VARCHAR2(20), PRIMARY KEY (STUD_ID) VALIDATE) ；

CREATE TABLE OLTP_USER.ATTENDEES(STUD_ID number, CLASS_ID number,

    CONSTRAINT ad PRIMARY KEY (STUD_ID, CLASS_ID),

    CONSTRAINT atst1 foreign key(STUD_ID)

    REFERENCES OLTP_USeR.STUDENTS(STUD_ID) ,

    CONSTRAINT atcl1 foreign key(CLASS_ID)

    REFERENCES OLTP_USeR.CLASS(CLASS_ID)

)

ORGANIZATION INDEX;

4.4 Because of the unevenly distributed data in the DEPARTMENT_ID column of the EMPLOYEES table of the HR schema, you need to supply more information to the optimizer to allow for more efficient use of indexes. Regenerate statistics on the EMPLOYEES table to solve this problem.

收集表的统计信息

参考文档为 Database Administrator's Guide 第13章
BEGIN

dbms_stats.gather_table_stats(ownname=>'HR',TABNAME=>'EMPLOYEES',method_opt=>'FOR COLUMNS SKEWONLY');
END;

4.5 Analysis has revealed that the COUNTRY_ID column of the CUSTOMERS table of the SH schema has very low cardinality. This column is never updated. Create an index that can take advantage of the above attributes of this column.

建一个位图索引
Create bitmap index idx_custtomers_bmp on CUSTOMERS(COUNTRY_ID);

4.6 Create an index on the COUNTRY_ID and CUST_CITY column in the CUSTOMERS table of the SH schema. The application requires that leading column of this index must be the COUNTRY_ID column. Take advantage of the Oracle feature of indexes that allows the creation of the index to use less space when the leading column is not the most unique.

建一个复合压缩索引，多列index，并压缩
参考文档为 Database Administrator's Guide 第16章
Create index coutry_id_cust_city on CUSTOMERS(COUNTRY_ID, CUST_CITY) COMPRESS 1;

4.7 Make certain that the package named STANDARD is always kept in memory.

参考文档 Database PL/SQL Packages and Types Reference 第97章
将某个存储过程,序列缓存进 shared pool
@?/rdbms/admin/dbmspool
exec DBMS_SHARED_POOL.KEEP('sys.DBMS_STATS.GATHER_SYSTEM_STATS','P');

4.8 Analysis reveals that a 3rd party application is not usinig bind variables and has skewed data. In addition, we find shared pool latch contention. Find the best solution to reduce shared pool usage.

参考文档 Database Reference 中搜索 cursor_sharing
Alter system set cursor_sharing=similar;

4.9 Move and rebuild all objects in cust_tbs tablespace to tablespace users . Recreate tablespace cust_tbs as segment space management auto. Then move and rebuild all objects back to newly created tablespace cust_tbs.

首先查看表空间 CUST_TBS 里有什么对象
Select SEGMENT_NAME, SEGMENT_TYPE from dba_segments where TABLESPACE_NAME='CUST_TBS';
然后把查到的表 move 到其它表空间
把索引 rebuild 到其它表空间。参考命令：
Alter table table_name move tablespace_name;
Alter index index_name rebuild tablespace tablespace_name;
然后再删除表空间 CUST_TBS，重新建 CUST_TBS 为 ASSM 表空间；
接着把刚才的表和索引用样的方法搬回来。
需要 rebuild index ， 需要重点注意的。
(如果表和索引很多：select 'alter table '||owner||','||table_name||' move tablespace users;' from dba_tables where tablespace_name=upper('cust_tbs');

select 'alter index '||owner||'.'||index_name||' rebuild users;' from dba_indexes where tablespace_name=upper('cust_tbs');)

删除表空间重建后，将表再从 USERS 中移回来：

drop tablespace cust_tbs;

create tablespace cust_tbs datafile '/u01/app/oracle/oradata/PROD/Disk1/cust_tbs_01.dbf' size 20m reuse segment space management auto;

4.10 Please make the sql plan for the following sql statement stable.

    SELECT c.cust_id, SUM(amount_sold)
    FROM
    sh.sales s, sh.customers c
    WHERE s.cust_id = c.cust_id
    GROUP BY c.cust_id;

用 outline 固定一个 sql 语句的执行计划

首先解锁 outln 帐户然后

Alter system set create_stored_outlines=true;(true 表示使用默认的 catalog)

接着给建 outline 的用户授权

Grant create any outline to user_name;

接着在该用户下建 outline.

CREATE OUTLINE salaries ON SELECT last_name, salary FROM employees;

最后 ALTER SESSION SET USE_STORED_OUTLINES =true;

Using STATSPACK

要求以 sys 用户创建一个 outline for default category

create outline ol on select * from hr.employees;

5. Using STATSPACK

 5.1 Install the STATSPACK package.

  5.1.1 Assign the TOOLS tablespace as the default tablespace for the PERFSTAT user.

  5.1.2 Assign the TEMP1 tablespace as the temporary tablespace for the PERFSTAT user.

5.2 Generate the initial set of statistics using STATSPACK making certain that timing data and segment level statics are included. Specify a comment for the statistics MANUAL.

 5.3 Collect statistics using STATSPACK every five minutes for 15 minutes and then remove the job. During this interval run the /home/oracle/oltp_workload.sql script as system user.

 5.4 Generate a STATSPACK report using any two sets of stats. Name the report statspack.ls and place it in the /home/oracle directory.

在 sqlplus 中输入

@?/rdbms/admin/spcreate.sql

创建 statspack

！grep error *.lis 查看创建过程中产生的错误。

Execute statspack.snap(i_snap_level=>7,i_ucomment=>'MANUL');

（或设置默认值：

execute statspack.modify_statspack_parameter(i_snap_level=>7);

execute statspack.snap;）

可查看 spdoc.txt

修改 spauto.sql：

修改 spauto.sql,调整时间为 5/1440(两个地方)

```
dbms_job.submit(:jobno, 'statspack.snap;', trunc(sysdate+1/288,'MI'),
'trunc(SYSDATE+1/288,''MI'')', TRUE, :instno);

…….
variable jobno number;
variable instno number;
begin
  select instance_number into :instno from v$instance;
  dbms_job.submit(:jobno, 'statspack.snap;', trunc(sysdate+1/24,'HH'),
'trunc(SYSDATE+1/24,''HH'')', TRUE, :instno);
  commit;
end;
………
```

修改为

```
…………
variable jobno number;
variable instno number;
begin
  select instance_number into :instno from v$instance;
  dbms_job.submit(:jobno, 'statspack.snap;', trunc(sysdate+1/24/60*5,'MI'),
'trunc(SYSDATE+1/24/60*5,''MI'')', TRUE, :instno);
  commit;
end;

…………
@?/rdbms/admin/spauto.sql
```

这样每隔 5 分钟就会做一个快照
注意："show parameter job_queue_processes " job_queue_processes 参数必须不为 0；
修改完后在 sqlplus 运行该脚本和题目给的 oltp_workload.sql
15 分钟后删除刚才用脚本建的 jobs
Execute dbms_ijob.remove(job_id);
select job from dba_jobs;查看 job_id.
最后在 sqlplus 中运行@?/rdbms/admin/spreport.sql
选择用 job 生成的 3 个快照中任意两中生成报告。保存在/home/oracle/目录下。

6. Make the employees table of HR schema buffer pool keep, and departments table of HR
schema buffer pool recycle.
alter system set db_keep_cache_size=10m scope=spfile;
create table tab6(id int) storage (buffer_pool keep);

3.其他题目（不大可能存在的 AWR 题目）：
chapter 119
begin DBMS_WORKLOAD_REPOSITORY.MODIFY_SNAPSHOT_SETTINGS(8640,60); end;

标准时间是分钟, 7 天 1 个小时一次

看 awr 的不同时间段对比报告：
在 awr 界面，点击 compare periods
需要观察的是 report 部分。

看 ash 报告：
到 Performance-run ASH report-点击 Top Activity-选中中间长条的时间段-点击 Run ASH Report-

产生 awr 对比报告：

@？/rdbm/admin/awrddrpt.sql