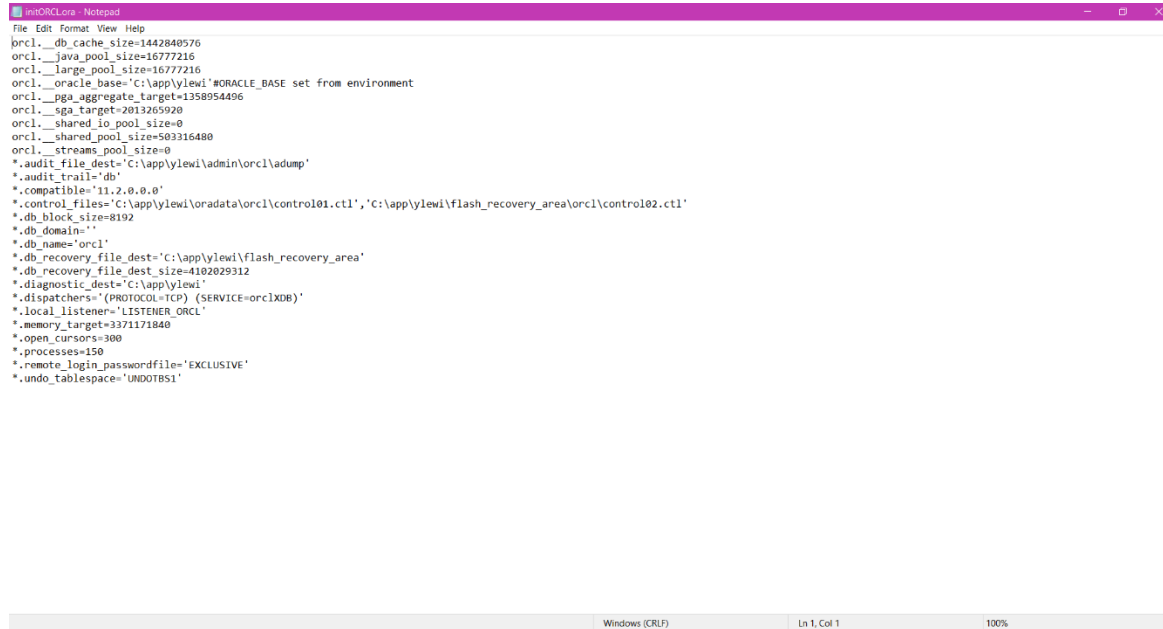


## CSC454 HW # 2

1. What is the memory target size? **Answer** :  $\text{memory\_target} = 3371171840 = 3371 \text{ MB}$
2. Write each memory component size of SGA in MB (round up to nearest whole number)



```

initORCLora - Notepad
File Edit Format View Help
orcl.__db_cache_size=1442840576
orcl.__java_pool_size=16777216
orcl.__large_pool_size=16777216
orcl.__oracle_base='C:\app\ylewi\ORACLE_BASE' set from environment
orcl.__pga_aggregate_target=1358954496
orcl.__sga_target=2013265920
orcl.__shared_io_pool_size=0
orcl.__shared_pool_size=503316480
orcl.__streams_pool_size=0
*.audit_file_dest='C:\app\ylewi\admin\orcl\adump'
*.audit_trail='db'
*.compatible='11.2.0.0'
*.control_files='C:\app\ylewi\oradata\orcl\control01.ctl','C:\app\ylewi\flash_recovery_area\orcl\control02.ctl'
*.db_block_size=8192
*.db_domain=''
*.db_name='orcl'
*.db_recovery_file_dest='C:\app\ylewi\flash_recovery_area'
*.db_recovery_file_dest_size=410209312
*.diagnostic_dest='C:\app\ylewi'
*.dispatcher='(PROTOCOL=TCP) (SERVICE=orclXDB)'
*.local_listener='LISTENER_ORCL'
*.memory_target=3371171840
*.open_cursors=300
*.processes=150
*.remote_login_passwordfile='EXCLUSIVE'
*.undo_tablespace='UNDOTBS1'

```

$\text{orcl.__db\_cache\_size} = 1442840576 = 1443 \text{ MB}$

$\text{orcl.__java\_pool\_size} = 16777216 = 17 \text{ MB}$

$\text{orcl.__large\_pool\_size} = 16777216 = 17 \text{ MB}$

$\text{orcl.__sga\_target} = 2013265920 = 2013 \text{ MB}$

$\text{orcl.__shared\_io\_pool\_size} = 0 = 0 \text{ MB}$

$\text{orcl.__shared\_pool\_size} = 503316480 = 503 \text{ MB}$

$\text{orcl.__streams\_pool\_size} = 0 = 0 \text{ MB}$

$*.db\_block\_size = 8192 = 0.00819 \text{ MB}$

3. Start a SQL\*PLUS session as user sys. Display SGA and convert each memory component to MB.

Yolanda Lewis

SQL> SHOW SGA

Total System Global Area 3357155328 bytes = 3357 MB

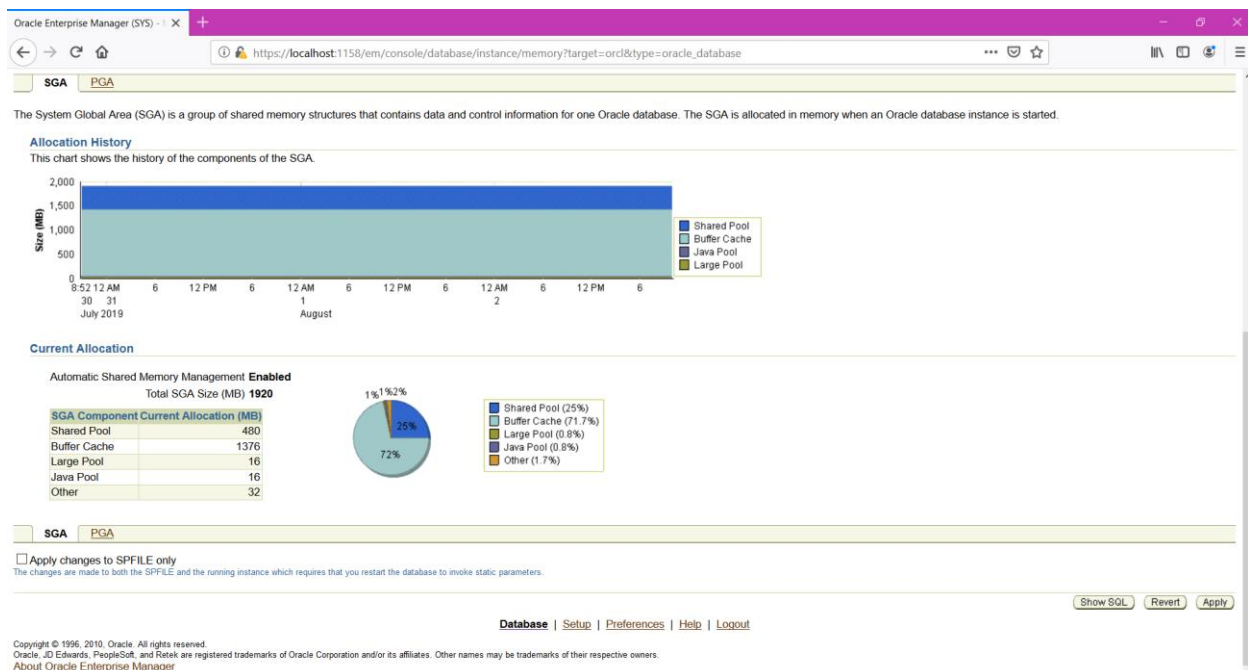
Fixed Size 2180384 bytes = 2.2 MB

Variable Size 1895828192 bytes = 1896 MB

Database Buffers 1442840576 bytes = 1443 MB

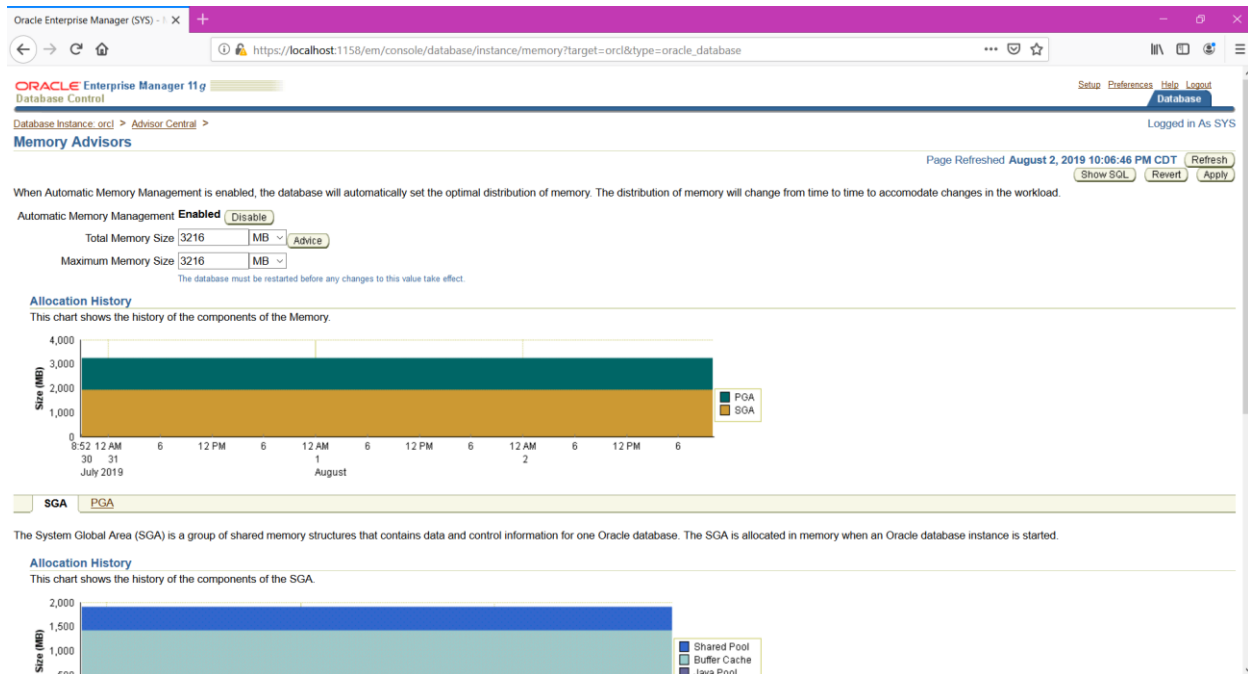
Redo Buffers 16306176 bytes = 16.3 MB

#### 4. Screen shot of current allocation of Automatic Shared Memory Management:

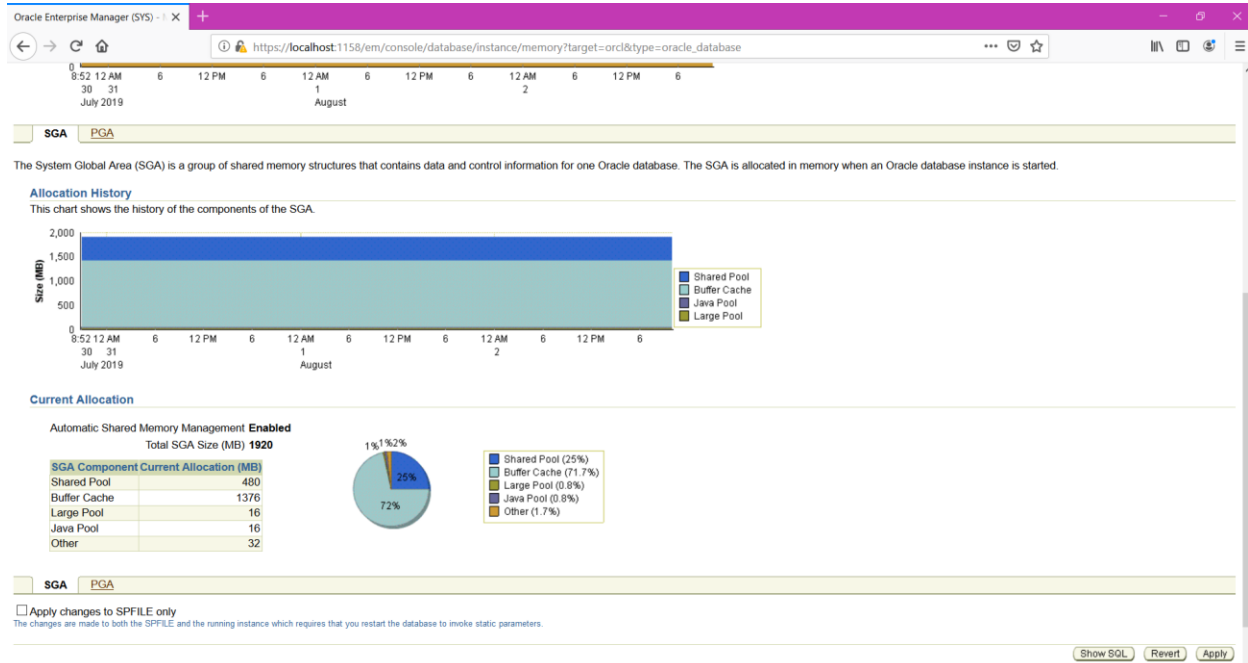


5. Total memory size : 3216 MB Maximum memory size: 3216 MB

See screen shots below for SGA and PGA allocation.

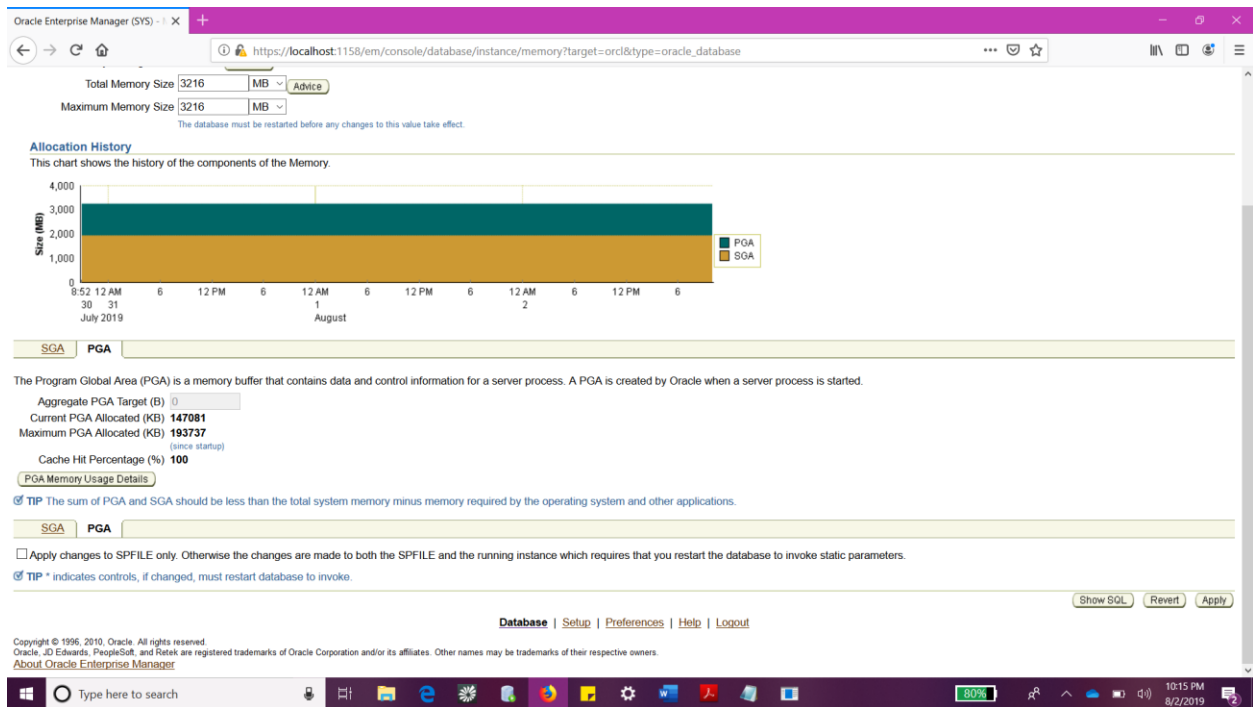


## SGA ALLOCATION



Yolanda Lewis

## PGA ALLOCATION



6. Copied from SQL\* Plus session:

```
SQL> create tablespace tbsga datafile 'tbsga.dbf' size 20m;
```

Tablespace created.

```
SQL> create temporary tablespace mytemp tempfile 'mytemp.dbf' size 40m reuse;
```

Tablespace created.

```
SQL> create user amm identified by amm default tablespace tbsga temporary tablespace mytemp;
```

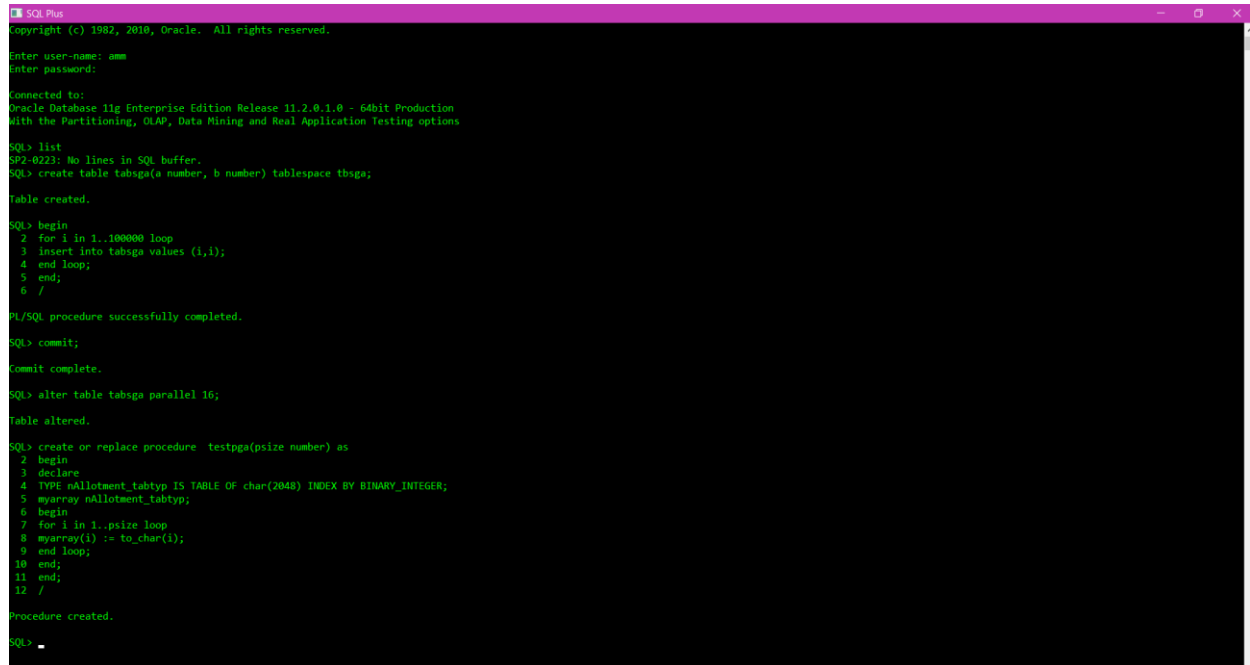
User created.

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```
SQL> grant connect,resource,dba to amm;
```

Grant succeeded.

7. Connect as amm to run the provided script and then log out.



```
SQL Plus
Copyright (c) 1982, 2010, Oracle. All rights reserved.

Enter user-name: amm
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> list
SP2-0223: No lines in SQL buffer.
SQL> create table tabsga(a number, b number) tablespace tbsga;

Table created.

SQL> begin
  2 for i in 1..1000000 loop
  3 insert into tabsga values (i,i);
  4 end loop;
  5 end;
  6 /

PL/SQL procedure successfully completed.

SQL> commit;

Commit complete.

SQL> alter table tabsga parallel 16;

Table altered.

SQL> create or replace procedure testpga(psize number) as
  2 begin
  3 declare
  4 TYPE nAllotment_tabtyp IS TABLE OF char(2048) INDEX BY BINARY_INTEGER;
  5 myarray nAllotment_tabtyp;
  6 begin
  7 for i in 1..psize loop
  8 myarray(i) := to_char(i);
  9 end loop;
 10 end;
 11 end;
 12 /

Procedure created.

SQL> _
```

8. Start a SQL\*plus session as sys then run the provided script to make sure parallel queries run during this assignment are using large pool memory for better visualization later in enterprise manager.

See screen shots below:

## Yolanda Lewis

```
SQL*Plus
SQL*Plus: Release 11.2.0.1.0 Production on Sat Aug 3 14:20:59 2019
Copyright (c) 1982, 2010, Oracle. All rights reserved.
Enter user-name: SYS AS SYSDBA
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> alter system set "_PX_use_large_pool" = TRUE SCOPE = SPFILE;

System altered.

SQL> alter system set "_memory_broker_stat_interval" = 5 SCOPE = SPFILE;

System altered.

SQL> alter system set "_memory_management_tracing" = 31 SCOPE = SPFILE;

System altered.

SQL> alter system set "_parallel_execution_message_size" = 3684 SCOPE = SPFILE;
alter system set "_parallel_execution_message_size" = 3684 SCOPE = SPFILE
*
ERROR at line 1:
ORA-02065: illegal option for ALTER SYSTEM

SQL> alter system set "parallel_execution_message_size" = 3684 SCOPE = SPFILE;

System altered.

SQL> alter system set "parallel_adaptive_multi_user" = FALSE SCOPE = SPFILE;

System altered.

SQL> alter system set "parallel_max_servers" = 20 SCOPE = SPFILE;

System altered.

SQL> alter system set "processes" = 100 SCOPE = SPFILE;

System altered.

SQL> alter system set "pga_aggregate_target" = 0 SCOPE = SPFILE;

System altered.
```

```
SQL*Plus
SQL> alter system set "parallel_max_servers" = 20 SCOPE = SPFILE;

System altered.

SQL> alter system set "processes" = 100 SCOPE = SPFILE;

System altered.

SQL> alter system set "pga_aggregate_target" = 0 SCOPE = SPFILE;

System altered.

SQL> alter system set "sga_target" = 0 SCOPE = SPFILE;

System altered.

SQL> alter system set "memory_target" = 4096 SCOPE = SPFILE;

System altered.

SQL> _
```

9.

```
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup
ORACLE instance started.

Total System Global Area  417546240 bytes
Fixed Size                 2176328 bytes
Variable Size             264243896 bytes
Database Buffers          142606336 bytes
Redo Buffers               8519680 bytes
Database mounted.
Database opened.
SQL> select name, bytes from v$sgainfo;

NAME                                BYTES
-----
Fixed SGA Size                      2176328
Redo Buffers                        8519680
Buffer Cache Size                   142606336
Shared Pool Size                    130023424
Large Pool Size                     16777216
Java Pool Size                      12582912
Streams Pool Size                    0
Shared IO Pool Size                 0
Granule Size                        4194304
Maximum SGA Size                   417546240
Startup overhead in Shared Pool    62914560

NAME                                BYTES
-----
Free SGA Memory Available          104857600

12 rows selected.
```

Write down all memory components in MB.

SGA

NAME	BYTES = MB
-----	
Fixed SGA Size	2176328 = 2MB
Redo Buffers	8519680 = 9MB
Buffer Cache Size	142606336 = 143MB
Shared Pool Size	130023424 = 130MB
Large Pool Size	16777216 = 17MB
Java Pool Size	12582912 = 13MB
Streams Pool Size	0 MB
Shared IO Pool Size	0 MB
Granule Size	4194304 = 4MB
Maximum SGA Size	417546240 = 417MB

PGA

Current PGA allocated: 99114 KB = 99 MB

Maximum PGA Allocated: 99114 kb = 99 MB



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10.

Total Memory size : 400 MB

Maximum Memory Size: 400 MB

Oracle Enterprise Manager 11g  
Database Control

Database Instance: orcl > Advisor Central > Memory Advisors

Page Refreshed August 4, 2019 10:05:44 PM CDT

When Automatic Memory Management is enabled, the database will automatically set the optimal distribution of memory. The distribution of memory will change from time to time to accommodate changes in the workload.

Automatic Memory Management **Enabled**

Total Memory Size 400 MB  
Maximum Memory Size 400 MB

The database must be restarted before any changes to this value take effect.

### Allocation History

This chart shows the history of the components of the Memory.

SGA PGA

The System Global Area (SGA) is a group of shared memory structures that contains data and control information for one Oracle database. The SGA is allocated in memory when an Oracle database instance is started.

### Allocation History

This chart shows the history of the components of the SGA.

SGA PGA

The System Global Area (SGA) is a group of shared memory structures that contains data and control information for one Oracle database. The SGA is allocated in memory when an Oracle database instance is started.

### Allocation History

This chart shows the history of the components of the SGA.

SGA PGA

### Current Allocation

Automatic Shared Memory Management **Enabled**  
Total SGA Size (MB) 304

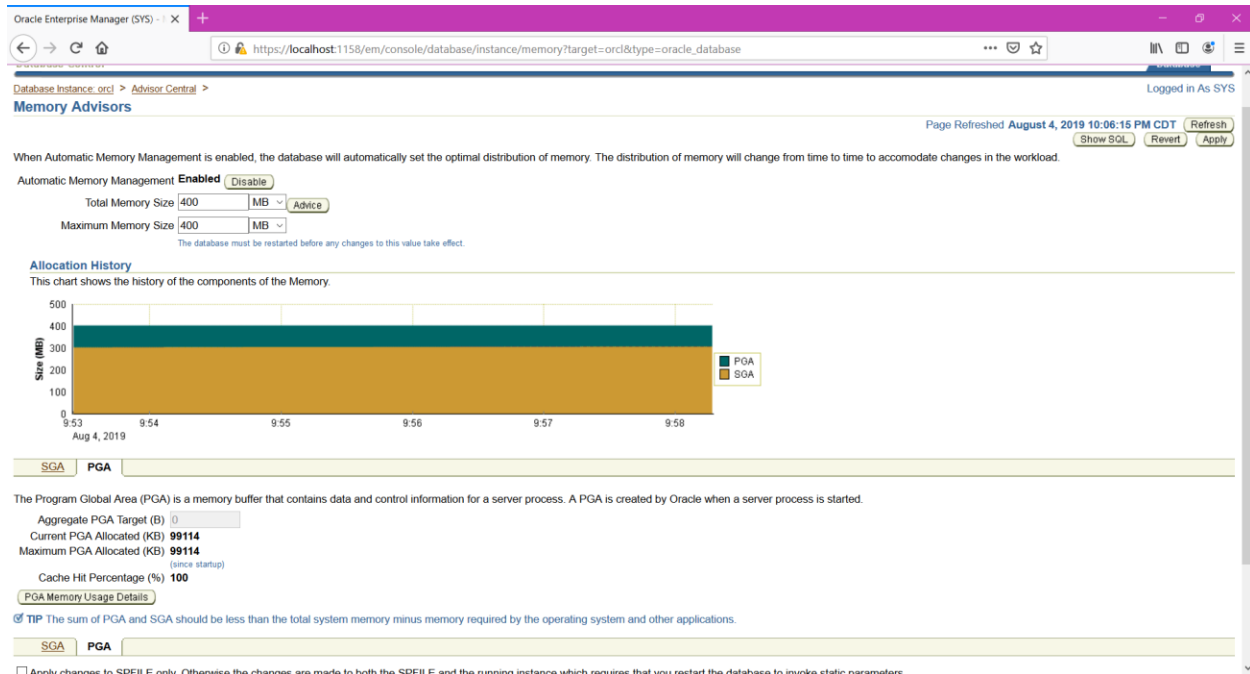
SGA Component	Current Allocation (MB)
Shared Pool	128
Buffer Cache	136
Large Pool	16
Java Pool	12
Other	12

SGA Component	Current Allocation (MB)	Percentage
Shared Pool	128	42.1%
Buffer Cache	136	44.7%
Large Pool	16	5.3%
Java Pool	12	3.9%
Other	12	3.9%

☐ Apply changes to SPFILE only  
The changes are made to both the SPFILE and the running instance which requires that you restart the database to invoke static parameters.

Database | Setup | Preferences | Help | Logout

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## 11. Screen shot of SGA Allocation History

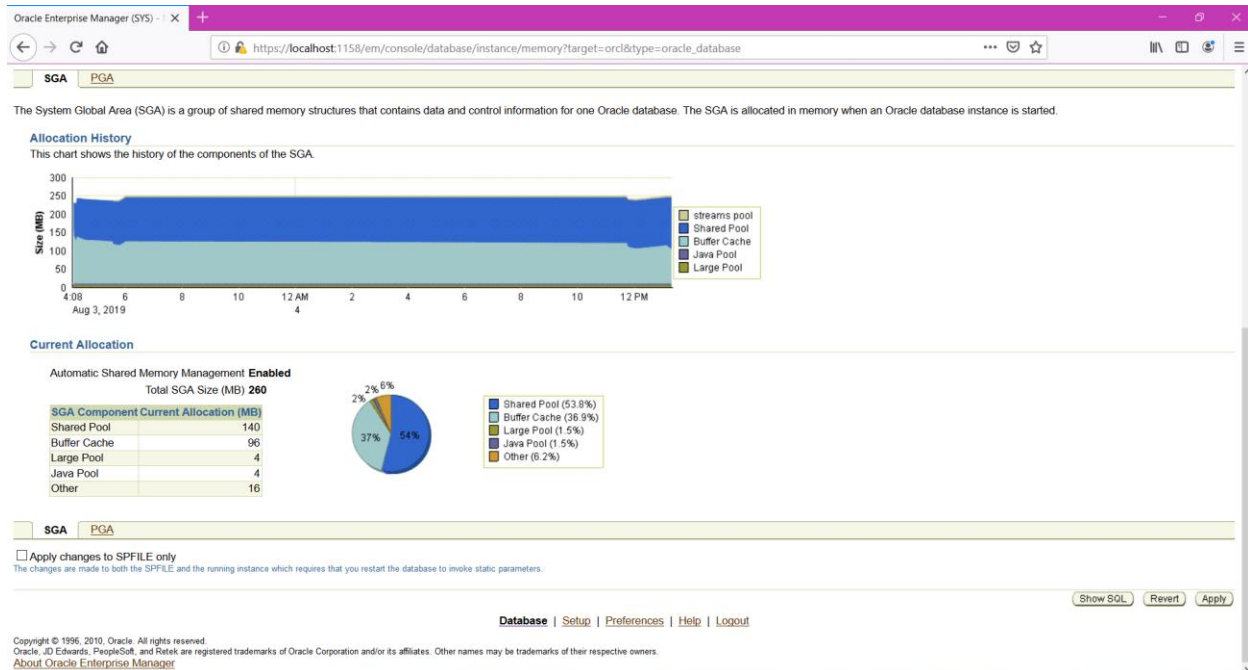
```

Enter user-name: ammm
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> select/*+ PARALLEL(s 12) */ count(*) from (select/*+ parallel(s 12) */* from tabsga s group by a);

COUNT(*)
-----
100000
  
```



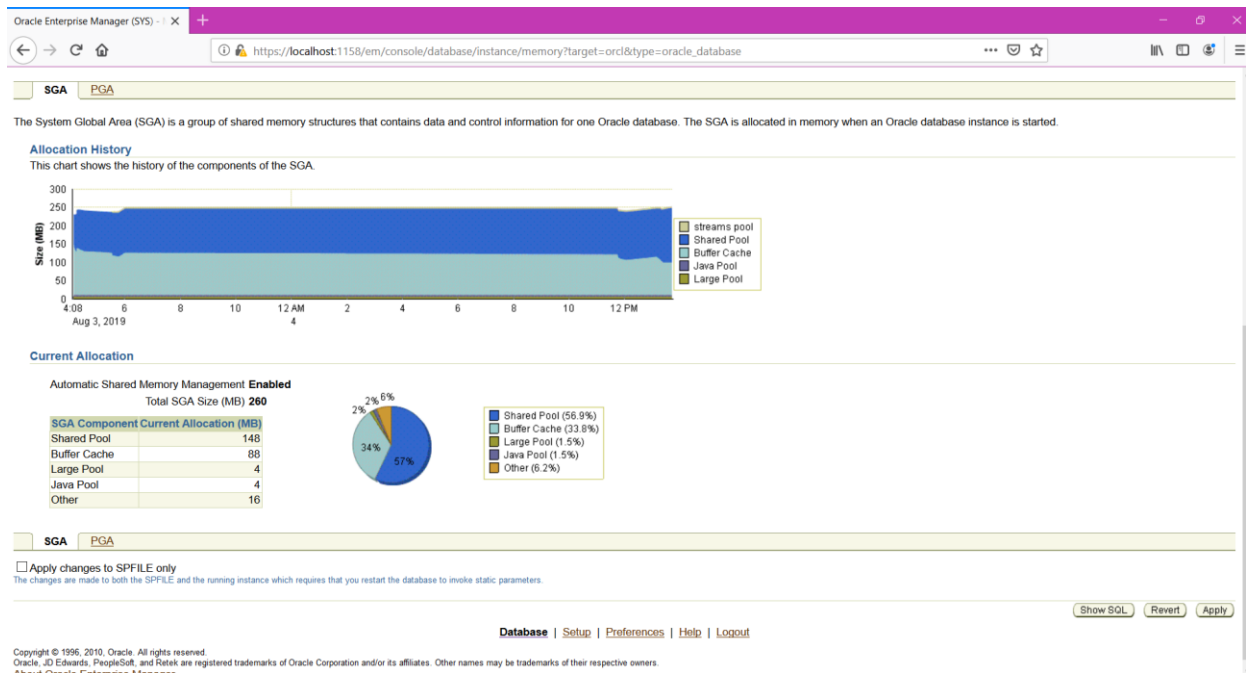
## 12. Screen shot of SGA allocation:

```
SQL> select/*+ PARALLEL(s 24) */ count(*) from (select/*+ parallel(s 24) */* from tabsga s group by a);
```

COUNT(\*)

-----

100000



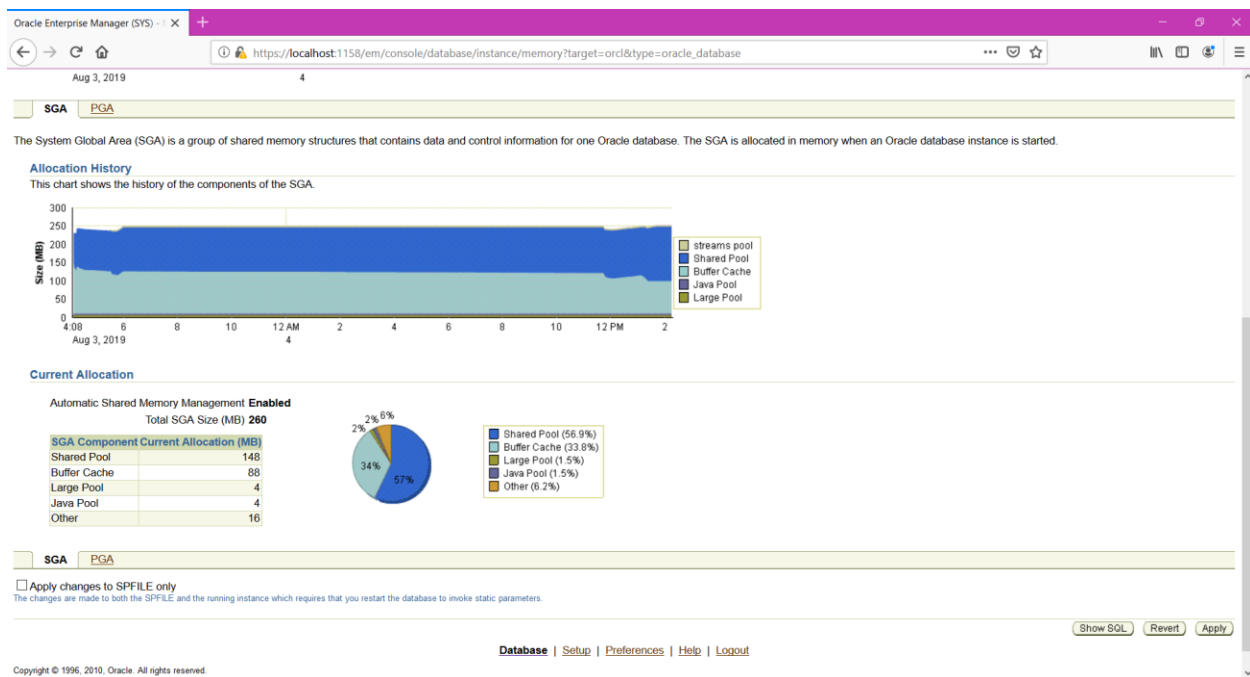
13.

```

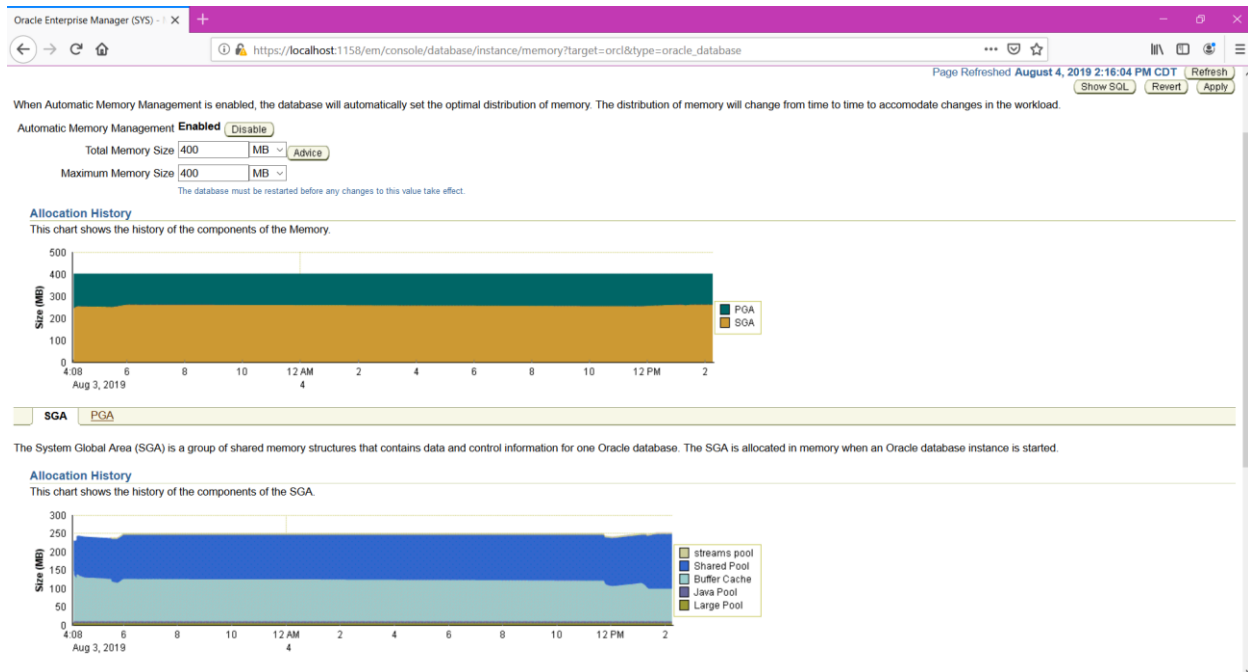
SQL> create or replace procedure testpga(psize number) as
2  begin
3  declare
4  TYPE nAllotment_tabtyp IS TABLE OF char(2048) INDEX BY BINARY_INTEGER;
5  myarray nAllotment_tabtyp;
6  begin
7  for i in 1..psize loop
8  myarray(i) := to_char(i);
9  end loop;
10 end;
11 end;
12 /

```

Procedure created.



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14. Screen shot of script to cleanup the environment:

```
SQL Plus
ORA-28009: connection as SYS should be as SYSDBA or SYSOPER

Enter user-name: SYS as sysdba
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> drop amn cascade;
drop amn cascade
*
ERROR at line 1:
ORA-00950: invalid DROP option

SQL> drop user amn cascade;
User dropped.

SQL> drop tablespace tbsga including contents and datafiles;
Tablespace dropped.

SQL> drop tablespace mytemp including contents and datafiles;
Tablespace dropped.

SQL>
```

15. Connect to database as SYS user to reconfigure Oracle memory components: See screen shot below:

Memory target set to zero to disable Automatic memory management:

```
SQL> alter system set MEMORY_TARGET = 0M;

System altered.
```

```
SQL> alter system set "sga_target" = 480M SCOPE = SPFILE;  
  
System altered.
```

```
SQL> alter system set DB_CACHE_SIZE = 135M;  
  
System altered.
```

```
SQL> alter system set "SHARED_POOL_SIZE" = 123M;  
  
System altered.  
  
SQL> alter system set "LARGE_POOL_SIZE" = 15M;  
  
System altered.  
  
SQL> alter system set "JAVA_POOL_SIZE" = 9M;  
  
System altered.  
  
SQL> alter system set "PGA_AGGREGATE_TARGET" = 80M;  
  
System altered.  
  
SQL>
```

16a. Shutdown and restart oracle. What is the size of each memory component?

```
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup
ORACLE instance started.
```

Fixed SGA Size      2177128 = 2.2MB

Redo Buffers        8146944 = 8MB

Buffer Cache Size    297795584 = 298MB

Shared Pool Size     159383552 = 159MB

Large Pool Size      16777216 = 18MB

Java Pool Size       12582912 = 13MB

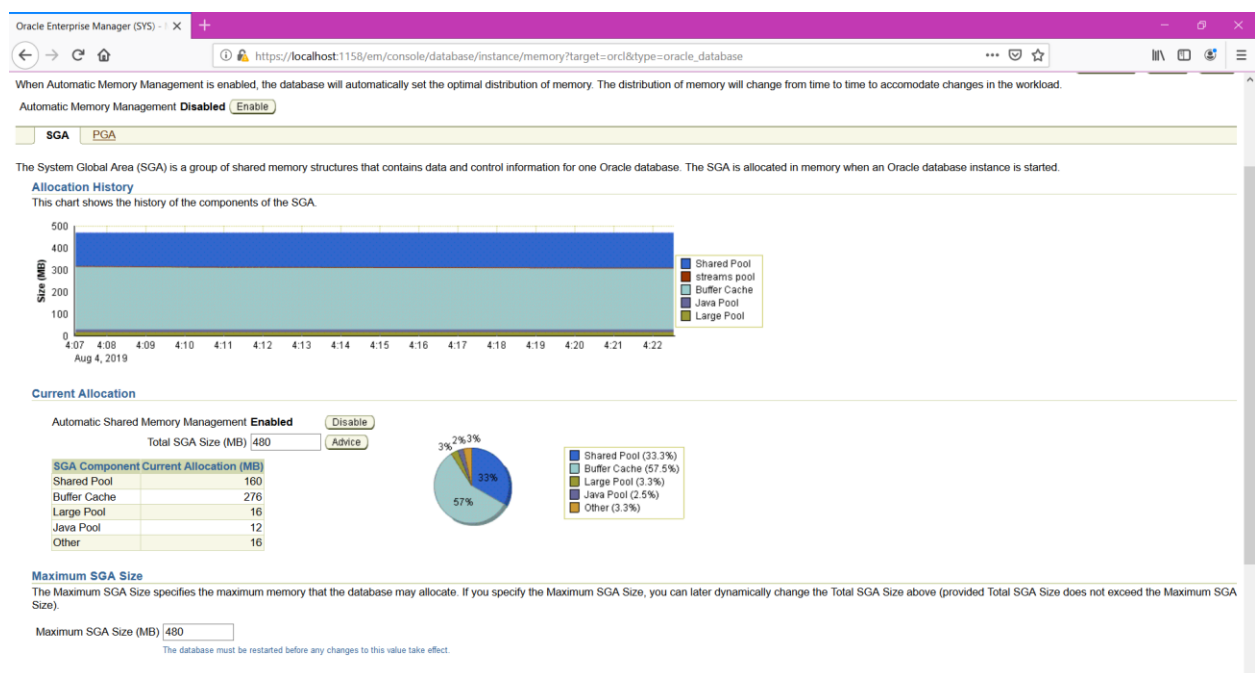
Streams Pool Size    4194304 = 4MB

Shared IO Pool Size   0 MB

Granule Size         4194304 = 4MB

Maximum SGA Size    501059584 = 501 MB

## 16b. Screen shot of OEM current memory allocation:



17 a.

```
SQL> CONNECT
Enter user-name: SYS AS SYSDBA
Enter password:
Connected.
SQL> CREATE PFILE='C:\app\y\lewi\admin\orcl\pfile\INITORCL2.ora' FROM SPFILE='C:\app\y\lewi\product\11.2.0\dbhome_1\database\SPFILEORCL.ora';

File created.

SQL>
```

17b.

orcl.\_\_db\_cache\_size=281018368 = 281MB

orcl.\_\_java\_pool\_size=12582912 = 13MB

orcl.\_\_java\_pool\_size=12582912 = 13MB

orcl.\_\_shared\_pool\_size=176160768 176MB

18. Shutdown Oracle and restart in read-only mode. See screen shot below.

```
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> STARTUP MOUNT
ORACLE instance started.

Total System Global Area  501059584 bytes
Fixed Size                  2177128 bytes
Variable Size              209717144 bytes
Database Buffers           281018368 bytes
Redo Buffers                8146944 bytes
Database mounted.
SQL> ALTER DATABASE OPEN READ ONLY;

Database altered.

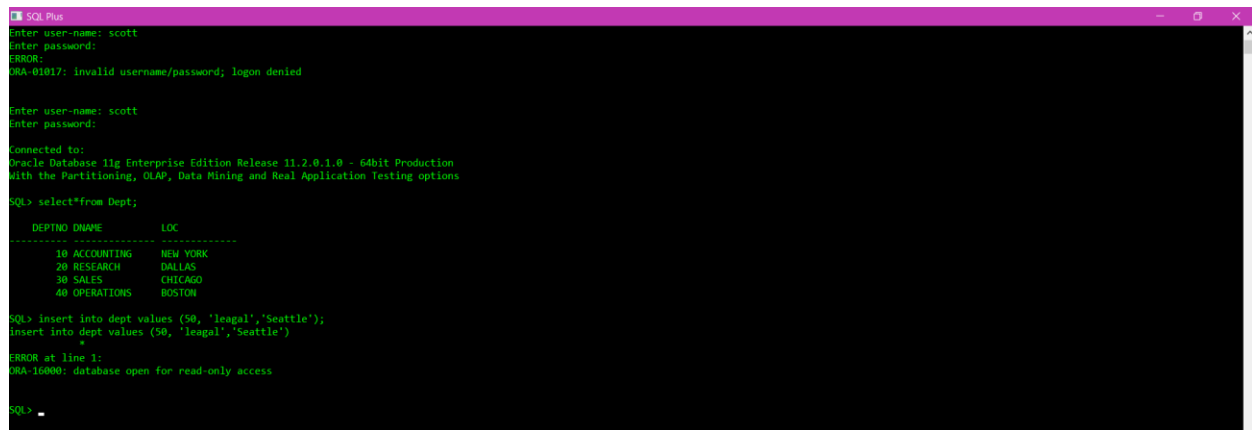
SQL>
```



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19.

The database gives an error : database open for read-only access.



```
SQL*Plus
Enter user-name: scott
Enter password:
ERROR:
ORA-01017: invalid username/password; logon denied

Enter user-name: scott
Enter password:

Connected to:
Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 - 64bit Production
With the Partitioning, OLAP, Data Mining and Real Application Testing options

SQL> select*from Dept;

-----
DEPTNO DNAME          LOC
-----
10 ACCOUNTING      NEW YORK
20 RESEARCH        DALLAS
30 SALES            CHICAGO
40 OPERATIONS       BOSTON

SQL> insert into dept values (50, 'leagal','Seattle');
insert into dept values (50, 'leagal','Seattle')
*
ERROR at line 1:
ORA-16000: database open for read-only access

SQL> -
```

20. a and b see screen shot below:

```
SQL> connect
Enter user-name: sys as sysdba
Enter password:
Connected.
SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
SQL> startup mount
ORACLE instance started.

Total System Global Area  501059584 bytes
Fixed Size                  2177128 bytes
Variable Size              209717144 bytes
Database Buffers           281018368 bytes
Redo Buffers                8146944 bytes
Database mounted.
SQL> alter database open read write;

Database altered.

SQL> connect
Enter user-name: scott
Enter password:
Connected.
SQL> insert into dept valaues(50, 'Legal', 'Seattle');
insert into dept valaues(50, 'Legal', 'Seattle')
                        *
ERROR at line 1:
ORA-00928: missing SELECT keyword

SQL> insert into dept values (50, 'Legal', 'Seattle');

1 row created.

SQL> select * from Dept;

  DEPTNO DNAME          LOC
-----
    10 ACCOUNTING      NEW YORK
    20 RESEARCH         DALLAS
    30 SALES             CHICAGO
    40 OPERATIONS        BOSTON
    50 Legal             Seattle

SQL>
```