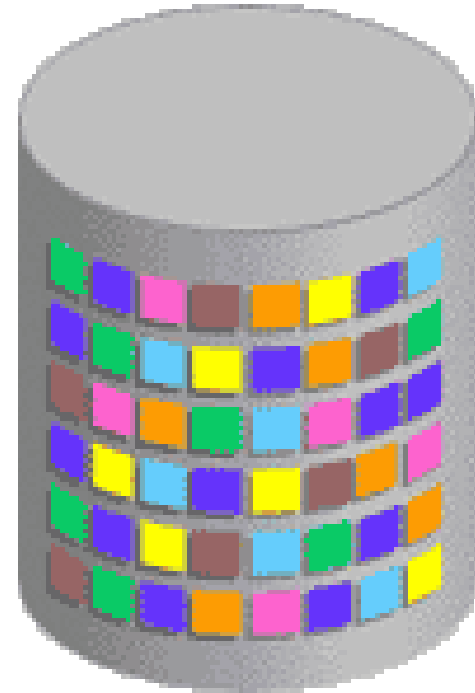


Administration and Monitoring the Database

Oracle 10g

The Main Database Administration Tasks

- Viewing parameter settings
- Managing data storage
- Managing database memory
- Managing users
- Monitoring the database for performance issues



Managing Database Settings

- Oracle Database XE consists of two main components:
 - ❑ The Oracle instance comprises memory structures known as the System Global Area (SGA) and Oracle background processes.
 - ❑ The Oracle database comprises data files, redo log files, and control files.

- The instance is controlled by a set of parameters that are listed in the initialization parameter file (init.ora). Some of these parameters:
 - ❑ May be modified for a given session by using ALTER SESSION commands
 - ❑ May be modified for the entire database instance by using ALTER SYSTEM commands
 - ❑ Require restarting the database to change the setting
 - ❑ Are fixed for a given database

Viewing Settings

- The About Database page (under Administration) provides information about the following database settings:
 - ❑ Version
 - ❑ Database
 - ❑ Options
 - ❑ Feature usage
 - ❑ National language support
 - ❑ CGI environment

User: SYSTEM

Home > Administration > **About Database**

☒ Version ☐ Settings ☐ National Language Support ☐ CGI Environment ☐ Parameters

Version

Oracle Database 10g Express Edition Release 10.2.0.1.0 - Product
PL/SQL Release 10.2.0.1.0 - Production
CORE 10.2.0.1.0 Production
TNS for 32-bit Windows: Version 10.2.0.1.0 - Production
NLSRTL Version 10.2.0.1.0 - Production

Practice

- Sheila wants to view the parameter settings for the database. She then wants to change the format of the date displayed in her session to mm/dd/yy, because this is the format required for her reports. She can change this by using one of the following options:
 - ❑ ALTER SESSION command: Applies the change only to Sheila's current session
 - ❑ ALTER SYSTEM command: Keeps the setting only until the current instance of the database is shut down
 - ❑ Make the change in the initialization parameter file and then restart the database. This keeps this setting until the parameter file is edited again.
 - ❑ Sheila opts for the first method using the SQL command interface.



Administration



Object Browser



SQL



Utilities



Application Builder

Sheila wants to view database settings which is an administrative task. So she selects **Administration** from the HTML Db home page. DBA privileges are required to access the Administration page. Sheila has DBA role granted to her so she is not asked for a further login.

Links

- [Homepage](#)
- [Discussion Forum](#)
- [Documentation](#)
- [Registration](#)
- [Getting Started](#)
- [License Agreement](#)
- [Learn more](#)

Usage Monitor

Storage: 3,004MB



Memory: 861MB



Sessions:

9 Total
3 Active

Users:

22 Internal
81 Database
103 Total

User: PRIYA

Home > **Administration**



Storage



Memory



Database Users



Monitor



About Database

[Version](#)
[Settings](#)
[National Language Support](#)
[CGI Environment](#)
[Parameters](#)

Tasks

- [Change My Password](#)
- [Manage Login Message](#)
- [Manage Access](#)

The Administration page has several options. Sheila wants to view the parameters and settings in the database. Place your mouse over each option to view more information. Sheila wants to view the **Parameters** and **National Language Settings** in the database. Which option should she pick? Select it now

User: PRIYA

Home > Administration > **About Database**

☒ Version ☐ Settings ☐ National Language Support ☐ CGI Environment ☐ **Parameters**

Version

Oracle Database 10g Enterprise Edition Release
PL/SQL Release 10.1.0.2.0 - Production
CORE 10.1.0.2.0 Production
TNS for Linux: Version 10.1.0.2.0 - Production
NLSRTL Version 10.1.0.2.0 - Production

Select the
Parameters check
box

Sheila wants to view the
database **Parameters** and
National Language Settings

User: PRIYA

Home > Administration > **About Database**

☐ Version ☐ Settings ☐ National Language Support ☐ CGI Environment ☒ Parameters

Version

Oracle Database 10g Enterprise Edition Release 10.1.0.2.0 - Prod
PL/SQL Release 10.1.0.2.0 - Production
CORE 10.1.0.2.0 Production
TNS for Linux: Version 10.1.0.2.0 - Production
NLSRTL Version 10.1.0.2.0 - Production

Select the
**National
Language
Support** checkbox

Sheila wants to view the
database **Parameters** and
National Language Settings

User: PRIYA

[Home](#) > [Administration](#) > **About Database**

☐ Version ☐ Settings ☒ National Language Support ☐ CGI Environment ☒ Parameters **Go**

Version

Oracle Database 10g Enterprise Edition Release 10.1.0.2.0 - Production
PL/SQL Release 10.1.0.2.0 - Production
CORE 10.1.0.2.0 Production
TNS for Linux: Version 10.1.0.2.0 - Production
NLSRTL Version 10.1.0.2.0 - Production

Click the **Go** button to view the settings

User: PRIYA

[Home](#) > [Administration](#) > **About Database**☐ Version ☐ Settings ☒ National Language Support ☐ CGI Environment ☒ Parameters **National Language Support**

<u>National Language Parameter</u> ▲	<u>Value</u>
NLS_CALENDAR	GREGORIAN
NLS_CHARACTERSET	AL32UTF8
NLS_COMP	BINARY
NLS_CURRENCY	\$
NLS_DATE_FORMAT	DD-MON-RR
NLS_DATE_LANGUAGE	AMERICAN
NLS_DUAL_CURRENCY	\$
NLS_ISO_CURRENCY	AMERICA
NLS_LANGUAGE	AMERICAN
NLS_LENGTH_SEMANTICS	BYTE
NLS_NCHAR_CHARACTERSET	AL16UTF16
NLS_NCHAR_CONV_EXCP	FALSE
NLS_NUMERIC_CHARACTERS	.,
NLS_SORT	BINARY
NLS_TERRITORY	AMERICA
NLS_TIMESTAMP_FORMAT	DD-MON-RR HH.MI.SSXXF AM
NLS_TIMESTAMP_TZ_FORMAT	DD-MON-RR HH.MI.SSXXF AM TZR

The **NLS Parameter Settings** are displayed first

Parameters

Name

O7_DICTIONARY_ACCESSIBILITY FALSE

active_instance_count -

aq_tm_processes 0

archive_lag_target 0

asm_diskgroups -

asm_diskstring -

asm_power_limit 1

audit_file_dest /home/oracle/product/10.1.0/db_1/rdbms/audit

audit_sys_operations FALSE

audit_trail NONE

Sheila scrolls to view the **Database
Parameter Settings**

Sheila wants to change an NLS setting using an *ALTER SESSION* command.

ORACLE[®] XE
DATABASE

User: SHEILA

Home



Administration



Object Browser



SQL



Utilities



Application Builder

Click on SQL



SQL Commands



SQL Scripts



Query Builder

Click on **SQL
Commands**

ORACLE® Database Express Edition

User: SHEILA

Home > SQL > **SQL Commands**

☒ Autocommit Display 10 ▼

Select the
Autocommit check
box

For Sheila to set an NLS parameter for her session she has to set **Autocommit** to **OFF**.

Results Explain Describe Saved SQL History

Enter SQL or PL/SQL and click Run to see the results.

User: SHEILA

Home > SQL > SQL Commands

☐ Autocommit Display 10 ▼

Save

Run

```
alter session set nls_date_format='mm/dd/yyyy'|
```


Click the **Run** button to execute the statement

Results Explain Describe Saved SQL History

Enter SQL or PL/SQL and click Run to see the results.

User: SHEILA

Home > SQL > **SQL Commands**

☐ Autocommit Display 

Save

Run

```
Select * from employees|
```

Results Explain Describe Saved SQL History

Statement processed.

0.01 seconds

```
Select * from employees|
```

Sheila is able to display the results of the query using the new date format. However this date format will only persist for the duration of Sheila's session. When she quits this session the database default date format will continue to be in effect.

Results Explain

Next

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID	SALARY
100	Steven	King	SKING	515.123.4567	06/17/1987	AD_PRES	24000
101	Neena	Kochhar	NKOCHHAR	515.123.4568	09/21/1989	AD_VP	17000
102	Lex	De Haan	LDEHAAN	515.123.4569	01/13/1993	AD_VP	17000
103	Alexander	Hunold	AHUNOLD	590.423.4567	01/03/1990	IT_PROG	9000
104	Bruce	Ernst	BERNST	590.423.4568	05/21/1991	IT_PROG	6000
105	David	Austin	DAUSTIN	590.423.4569	06/25/1997	IT_PROG	4800
106	Valli	Pataballa	VPATABAL	590.423.4560	02/05/1998	IT_PROG	4800
108	Nancy	Greenberg	NGREENBE	515.124.4569	08/17/1994	FI_MGR	12000
109	Daniel	Faviet	DFAVIET	515.124.4169	08/16/1994	FI_ACCOUNT	9000
110	John	Chen	JCHEN	515.124.4269	09/28/1997	FI_ACCOUNT	8200

Managing Memory

- An Oracle database uses memory structures and processes to manage and access the database. The basic memory structures associated with an Oracle instance include:
 - ❑ **System Global Area (SGA):** Shared by all server and background processes
 - ❑ **Program Global Area (PGA):** Private to each server and background process, with one PGA for each process

SGA

- The SGA is a memory area that contains data and control information for the instance. The SGA includes the following data structures:
 - ❑ **Database buffer cache**
 - ❑ **Redo log buffer**
 - ❑ **Shared pool**
 - ❑ **Large pool**
 - ❑ **Java pool**
 - ❑ **Streams pool**

PGA

- A Program Global Area (PGA) is a memory region that contains data and control information for each server process. An Oracle server process services a client's requests. Each server process has its own private PGA that is created when the server process is started. Access to the PGA is exclusive to that server process, and the PGA is read and written only by the Oracle code acting on its behalf. With the dynamic SGA infrastructure, the size of the database buffer cache, the shared pool, the large pool, the Java pool, and the Streams pool changes without shutting down the instance.

Changing SGA and PGA Targets

- Sheila wants to adjust the SGA and PGA sizes to better utilize the memory on her server. To make this change, she also has to restart the database.

The screenshot shows the Oracle SQL*Plus HTML DB home page. The 'Administration' icon is highlighted with a red box. A blue callout box points to it with the text 'Click on Administration'. A red-bordered box at the bottom left contains text explaining Sheila's goal. A yellow-bordered box with a 'Note' points to the 'Usage Monitor' section. The 'Usage Monitor' section is highlighted with a black box and shows memory usage at 861 MB. The 'Links' section on the right lists various resources, and the 'Sessions' and 'Users' sections show current database statistics.

home Customiz

Administration Object Browser SQL

Utilities Application Builder

Click on Administration

Note: The HTML DB home page gives database summary information in the **Usage Monitor** section.

Sheila wants to view and make changes to the Memory settings. This is a database administration task. So she selects **Administration** from the HTML DB home page.

Links

- o Homepage
- o Discussion Forum
- o Documentation
- o Registration
- o ... Started
- o ... Agreement
- o ... re

Usage Monitor

04MB

0% 50% 100%

Memory: 861 MB

0% 50% 100%

Sessions:

- 9 Total
- 3 Active

Users:

- 22 Internal
- 81 Database
- 103 Total

User: PRIYA

Home > **Administration**



Storage



Monitor



Memory

[Memory Utilization](#)
[Manage SGA](#)
[Manage PGA](#)

About Database



Manage Users

Tasks

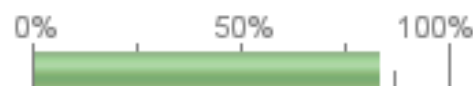
- [Change My Password](#)
- [Manage Login Message](#)
- [Manage Access](#)

The Administration page has several options. Sheila wants to view information about **SGA** and **PGA** for the database. Place your mouse over each option to view more information. Which option should she pick? Select it now

User: SHEILA

Home > Administration > **Memory**

System Global Area (SGA): **597 MB**
 Program Global Area (PGA): **264 MB**
 Total (SGA + PGA): **861 MB**
 Maximum Allowed: **1,024 MB**
 Percent Used: **84.12%**



Sheila wants to increase the SGA Target to 700 which link should she choose? Click it now

Memory

Oracle Database Express Edition is limited to a memory size of 1GB.

Tasks

- ☐ [Configure SGA](#)
- ☐ [Configure PGA](#)

User: SHEILA

[Home](#) > [Administration](#) > [Memory](#) > **SGA****System Global Area** **Program Global Area**SGA Target (in MB) **Apply Changes**

SGA Component	Computed Allocation
Shared Pool	110
Buffer Cache	110
Other	13
Total	

Type **700** in SGA target field**System Global Area (SGA)**

The System Global Area (SGA) is a memory area that contains data shared between all database users such as buffer cache and a shared pool of SQL statements. The SGA is allocated in memory when an Oracle database instance is started, and any change in the value will take effect at the next startup.

Sheila has to run reports that require sorting. To help the sorts to be done in memory, she wants to increase SGA target to 700.

User: SHEILA

[Home](#) > [Administration](#) > [Memory](#) > **SGA**

Click the **Apply Changes** button to apply your change

System Global Area [Program Global Area](#)SGA Target (in MB) **Apply Changes**

SGA Component	Computed Current Allocation (MB)
Shared Pool	168
Buffer Cache	416
Other	13
Total	

System Global Area (SGA)

The System Global Area (SGA) is a memory area that contains data shared between all database users such as buffer cache and a shared pool of SQL statements. The SGA is allocated in memory when an Oracle database instance is started, and any change in the value will take effect at the next startup.

Sheila has to run reports that require sorting. To help the sorts to be done in memory, she wants to increase SGA target to 700.

User: SHEILA

Home > Administration > **Memory**

System Global Area (SGA): **597 MB**
 Program Global Area (PGA): **264 MB**
 Total (SGA + PGA): **861 MB**
 Maximum Allowed: **1,024 MB**
 Percent Used: **84.12%**



Memory

Oracle Database Express Edition is limited to a memory size of 1GB.

Tasks

- [Configure SGA](#)
- [Configure PGA](#)

To update PGA select the **Configure PGA** link

User: SHEILA

[Home](#) > [Administration](#) > [Memory](#) > **PGA****System Global Area** **Program Global Area**Aggregate PGA Target (in MB) **Apply Changes**Current PGA Allocated (MB): **64**
Maximum PGA Allocated (MB): **264**Type in 300 in the PGA
Aggregate Target fieldClick the **Apply Changes** button

A Program Global Area (PGA) is a memory buffer that is allocated for each individual database session and it contains session specific information such as SQL statement data or buffers used for sorting. The value specifies the total memory allocated by all sessions, and changes will take effect as new sessions are started.

The PGA Memory page appears. Since Sheila knows that there are few concurrent sessions in the database, she wants to reduce PGA target to 300.

User: SHEILA

[Home](#) > [Administration](#) > [Memory](#) > **PGA**

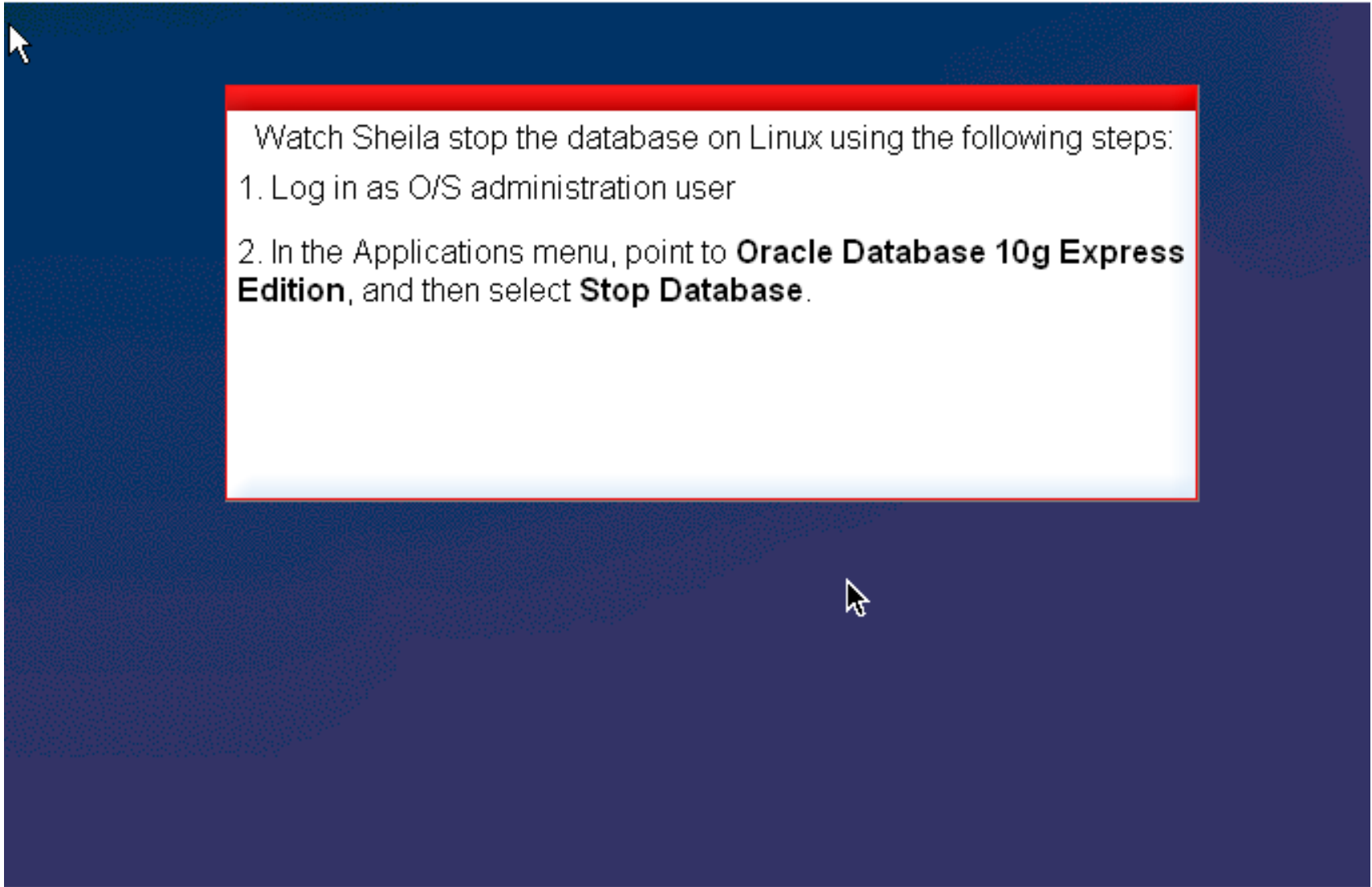
PGA aggregate target updated

System Global Area **Program Global Area**Aggregate PGA Target (in MB) **Apply Changes**Current PGA Allocated (MB): **64**Maximum PGA Allocated (MB): **264****Program Global Area (PGA)**

A Program Global Area (PGA) is a memory buffer that is allocated for each individual database session and it contains session specific information such as SQL statement data or buffers used for sorting. The value specifies the total memory allocated by all sessions, and changes will take effect as new sessions are started.

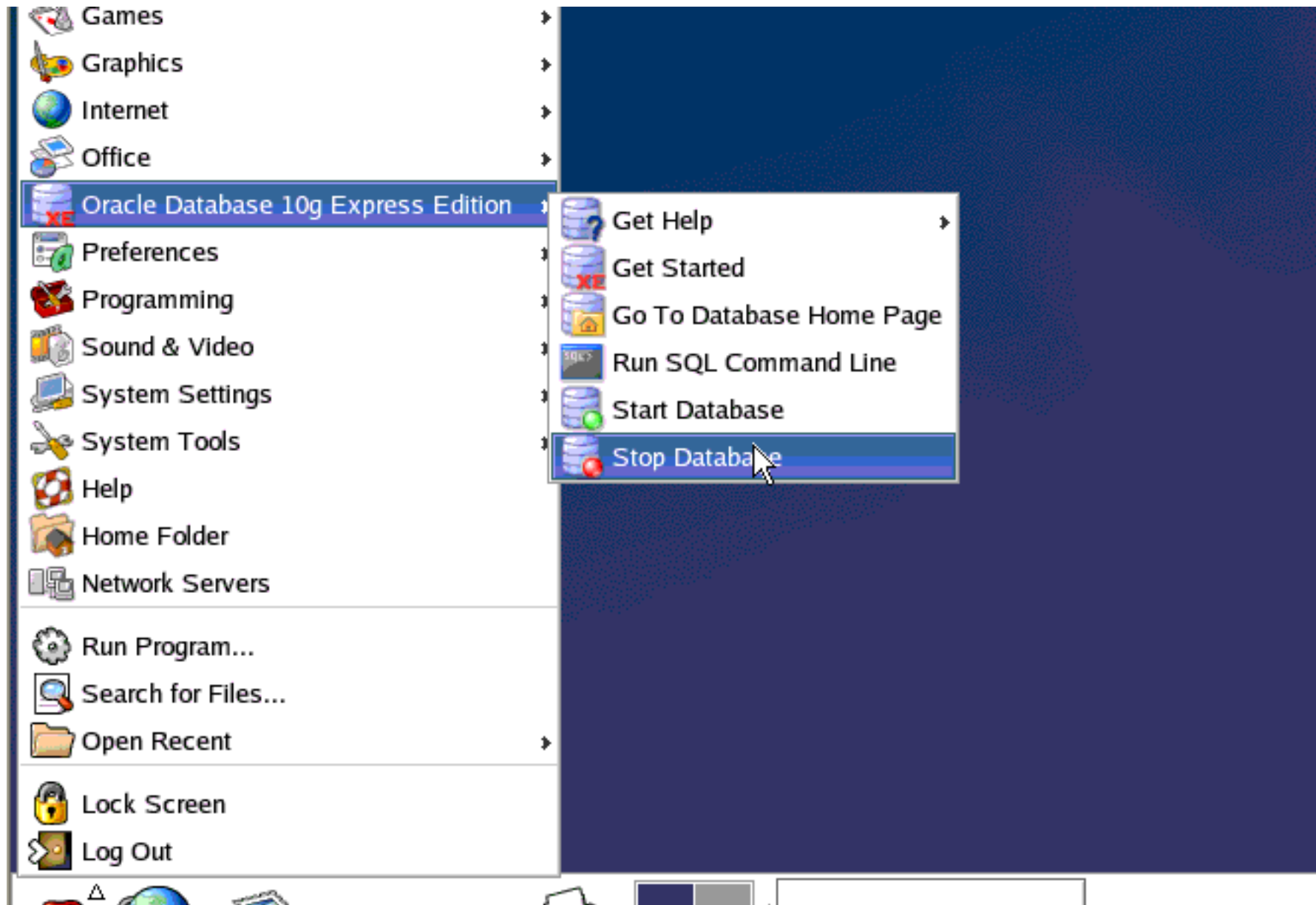
Sheila has successfully updated both the SGA and PGA Aggregate Targets. To make the change effective she has to restart the database

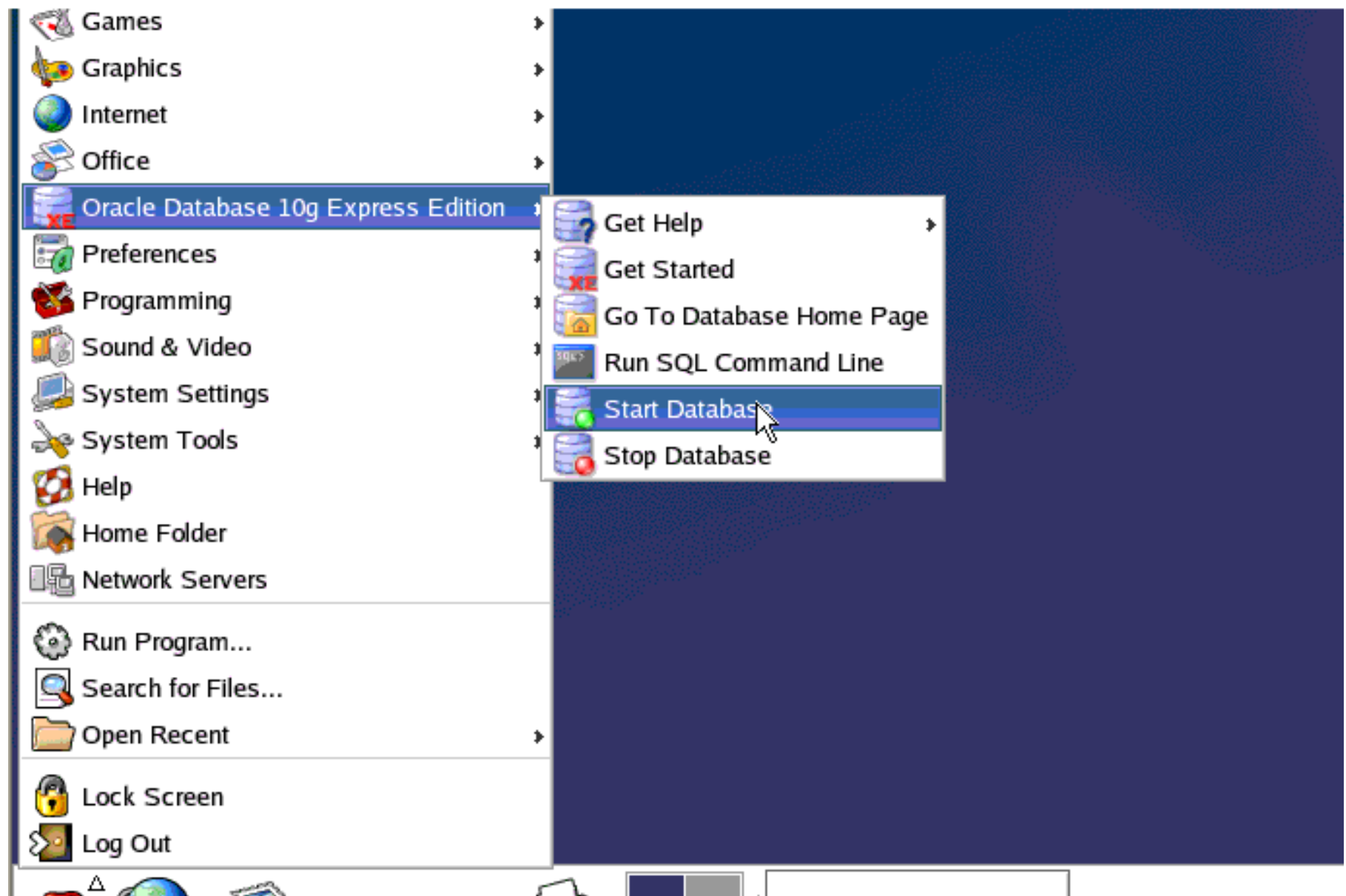
Next



Watch Sheila stop the database on Linux using the following steps:

1. Log in as O/S administration user
2. In the Applications menu, point to **Oracle Database 10g Express Edition**, and then select **Stop Database**.





User: SHEILA

Home > Administration > **Memory**

System Global Area Program Global Area

SGA Target (in MB)

SGA Component	Computed Current Allocation (MB)
Shared Pool	172
Buffer Cache	504
Other	16
Total	692

System Global Area (SGA)

The System Global Area (SGA) is a memory area that contains data shared between all database users such as buffer cache and a shared pool of SQL statements. The SGA is allocated in memory when an Oracle database instance is started, and any change in the value will take effect at the next startup.

After the database is restarted, Sheila verifies whether her SGA and PGA settings are reflected. The total SGA is showing a higher value. Watch as she checks the PGA value

User: SHEILA

Home > Administration > **Memory**

System Global Area **Program Global Area**

Aggregate PGA Target (in MB)

Apply

Current PGA Allocated (MB): 65

Maximum PGA Allocated (MB): 66

Program Global Area (PGA)

A Program Global Area (PGA) is a memory buffer that is allocated for each individual database session and it contains session specific information such as SQL statement data or buffers used for sorting. The value specifies the total memory allocated by all sessions, and changes will take effect as new sessions are started.

The **PGA** value has also been changed. Additional memory will get allocated to the PGA up to the target as more users connect to the database

Next 



The End