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# **What's New ... In Eleven Dot Two**

**And will, likely, not be  
announced at OpenWorld**

**... or anywhere else**




presentation for:  
**WWOUG: November 2009**

- damorgan11g@gmail.com
- Oracle Ace Director
- University of Washington, ret.
- The Morgan of Morgan's Library on the web
  - [www.morganslibrary.org](http://www.morganslibrary.org)
- Frequent speaker



# Morgan's Library



## Morgan's Library

[www](#) [library](#)

Morgan's 2009 - 2010 Calendar

SepOctNovDecJanFebMarAprMayJunJulAug

### Oracle User Group Turkey

May 20, 2009


Istanbul

## OUGT

Oracle User Group Turkey does not yet exist ... but it will soon.

Oracle's DBA of the year, Husnu Sensoy is working with Dan Morgan, EMEA user group leaders like Heli Helskyaho (OUGF) and Jackie Rose (Oracle EMEA in London) to make that a thing of the past.

Support for Husnu's efforts has been spectacular. Tom Kyte is planning to be in Turkey and many members of the ACE community have joined our effort as well. Please contact Husnu and offer your support.



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#### Resources

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#### Presentations Map




#### Our Founder



#### Training Events


- [WWOUG](#) - Nov 12, Seattle
- [VicOUG](#) - Nov 19, Victoria, BC, Canada
- [UKOUG](#) - Nov 30 – Dec 2, Birmingham, UK
- [RMOUG](#) - Feb 16 - Feb 18, Denver, CO
- [NZOUG](#) - Mar 15 - Mar 16, Rotorua, NZ
- [OUGN](#) - Apr 14-16, Oslo Norway
- [OUGT](#) - May 20, Istanbul Turkey

#### Oracle Events



[Oracle 11gR2 Seattle Launch - October 12th](#)

#### Morgan





aboard USA-71


#### Library News

- [Morgan's Notepad vi \(Blog\)](#) UPDATED
- [Western Washington OUG](#) NEW
- [Morgan's Oracle Podcast](#)
- [DBA Best Practice Guidelines](#)
- [Bryn Llewellyn's 2009 White Paper](#)
- [Troubleshooting Performance](#)

#### ACE News

 Would you like to become an Oracle ACE? 

Learn more about becoming an ACE



- [ACE Directory](#)
- [ACE Google Map](#)
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# How Can I?

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### A Guide To Meeting Challenges in Oracle Database 11g

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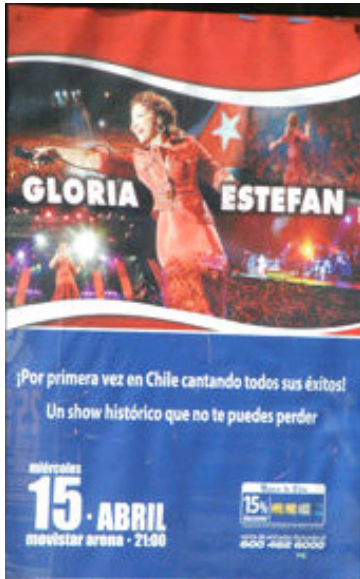


This is the start of a new Morgan's Library feature.  
For the next couple of years, while we learn more about 11gR2,  
we will be focusing our efforts here.  
Please join us while we grow this section  
and learn how to index it so you can find what you need.

Can we code it?

Yes we can!

# Joining the ACEs with Gloria Estefan







# Visiting HQ

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# Oracle OpenWorld 2009

**Oracle Advanced Compression in Oracle Database 11g Release 2:  
Value/Performance (S307442)**  
Thursday, Oct 15 09:00-10:00 *Moscone South, Room 102* Seats Available: 389

  [Email a Friend](#)

**Track:** Database  
**Secondary Track:**

**Description:**

With the release of Oracle Advanced Compression in Oracle Database 11g Release 2, Oracle has implemented columnar compression and redefined the performance and value proposition. This session, hands-on in SQL\*Plus, demonstrates Oracle Advanced Compression's new columnar storage capabilities in normal and partitioned heap tables, demonstrating the syntax and compression capabilities while highlighting the ability to leverage this new feature to generate substantial financial savings on storage subsystems.

**Session Type:** Conference Session

**Tags:**  11gac, Database, Database Maintenance

**Length:** 60 min

**Speakers:** *Daniel Morgan, University of Washington Instructor*  
**with co-presenter: Oak Table Network member Kevin Closson**

**Related Sessions:**

## And a few other places





# Agenda

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- What was new in 11gR1
- What Oracle Will Talk About
- What else is new in 11gR2
- How Can I?

# OpenWorld Unconference

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## Oracle OpenWorld *Unconference*

### Monday - Oct 12

2pm

Overlook I: Fundamentals of Performance (Oracle ACE Director [Cary Millsap](#))

Overlook II: Oracle Scheduler: what front end tools are available: bring your own tools and demonstrate ! ([Ronald Rood](#), [Ciber](#))

Overlook III: [Hudson community meet up](#)

### Tuesday - Oct 13

9am

Overlook I: What's New in Eleven ... Dot Two (that Oracle won't be talking about) presented by Oracle ACE Director Daniel Morgan

Overlook II: Creating Platform as a Service (PaaS) environments with WebLogic Server: Best Practices and Stories from the Trenches. (Bill Dettelback)

Overlook III: Reserved for onsite signups

10am

Overlook I: Oracle Indexes: Q & A Discussion With Oracle ACE Director Richard Foote

Overlook II: Experiences on Java programming within the databases, tips & tricks, tools, open source libraries and more. (Oracle ACE Marcelo F. Ochoa)

Overlook III: Reserved for onsite signups



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# New in 11gR1

- Oracle Database introduced a large number of new features. Among the most notable:
  - ADR
  - Flashback Archive
  - PL/Scope
  - Virtual Columns
  - Invisible Indexes
  - Read Only Tables
  - SKIP LOCKED
  - Interval Partitioning
  - System Partitioning
  - Reference Partitioning
  - New composite partition types
  - Pivot & Unpivot Operators



- Compound Triggers
- Follow Clause
- Continue Statement
- Improved Native Compilation
- Simple Integer Data Type
- New XML Functions
- Pragma Inline

- Many new packages, objects, and parameters in
  - CTX\_DDL
  - DBMS\_ADVISOR
  - DBMS\_AQ and DBMS\_AQELM
  - DBMS\_AUTO\_TASK
  - DBMS\_AW
  - DBMS\_CAPTURE\_ADM
  - DBMS\_CDC\_PUBLISH
  - DBMS\_CONNECTION\_POOL **Connection Pool Management**
  - DBMS\_DATAPUMP
  - DBMS\_DRS
  - DBMS\_EXTENDED\_TTS\_CHECKS
  - DBMS\_FLASHBACK **Transaction Backout**
  - DBMS\_HM **Health Management**

- DBMS\_LOB
- DBMS\_METADATA
- DBMS\_MONITOR
- DBMS\_NETWORK\_ACL\_ADMIN      **Access Control Lists**
- DBMS\_ODCI
- DBMS\_PREDICTIVE\_ANALYTICS
- DBMS\_REGISTRY
- DBMS\_RESOURCE\_MANAGER
- DBMS\_RESULT\_CACHE      **Result Cache**
- DBMS\_SCHEDULER
- DBMS\_SERVICE
- DBMS\_SESSION
- DBMS\_SHARED\_POOL
- DBMS\_SQL
- DBMS\_SQLDIAG
- DBMS\_SQLPA
- DBMS\_SQLTUNE
- DBMS\_STATS

# New in 11gR1

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- DBMS\_STREAMS
- DBMS\_SYSTEM
- DBMS\_TTS
- DBMS\_WARNING
- DBMS\_WORKLOAD\_CAPTURE
- DBMS\_WORKLOAD\_REPLAY
- DBMS\_XA
- DBMS\_XPLAN
- UTL\_XML

**Streams**

**PL/SQL Warnings**

**Real Application Testing**

**Distributed Transactions**

**Explain Plan**



- And in 11.1.0.7
  - DBMS\_AUDIT\_MANAGEMENT
  - DBMS\_BACKUP\_RESTORE
  - DBMS\_IR
  - DBMS\_LOGSTDBY
  - DBMS\_METADATA
  - DBMS\_SCHEDULER
  - DBMS\_SQLPA
  - DBMS\_SQLTUNE
  - DBMS\_WORKLOAD\_CAPTURE
  - DBMS\_WORKLOAD\_REPLAY
  - DBMS\_XPLAN
  - UTL\_XML

**Incident Reporting**

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What Oracle  
will talk about  
"here at OpenWorld"

# What Oracle Will Talk About

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- DBMS\_REDEFINITION - 9.0.1
  - Tables, Constraints, Indexes, and Triggers
- Edition Based Redefinition - 11.2.0.1
  - Functions, Operators, Packages, Procedures, Synonyms
- New Grid Features
  - Single Node RAC, New ASM Capabilities, DBFS, the Grid
- Advanced Compression
- Exadata V2 and Hybrid Columnar Compression

**Bryn Llewellyn**

# Two New Features in Exadata V2

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## Warehouse Compression

- 10x average storage savings
- 10x reduction in Scan IO

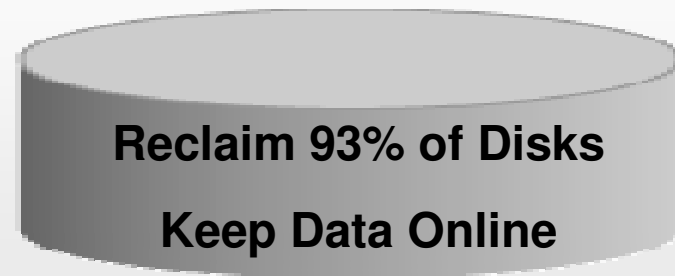
**Optimized for Speed**



## Archive Compression

- 15x average storage savings
  - Up to 70x on some data
- Some access overhead
- For cold or historical data

**Optimized for Space**

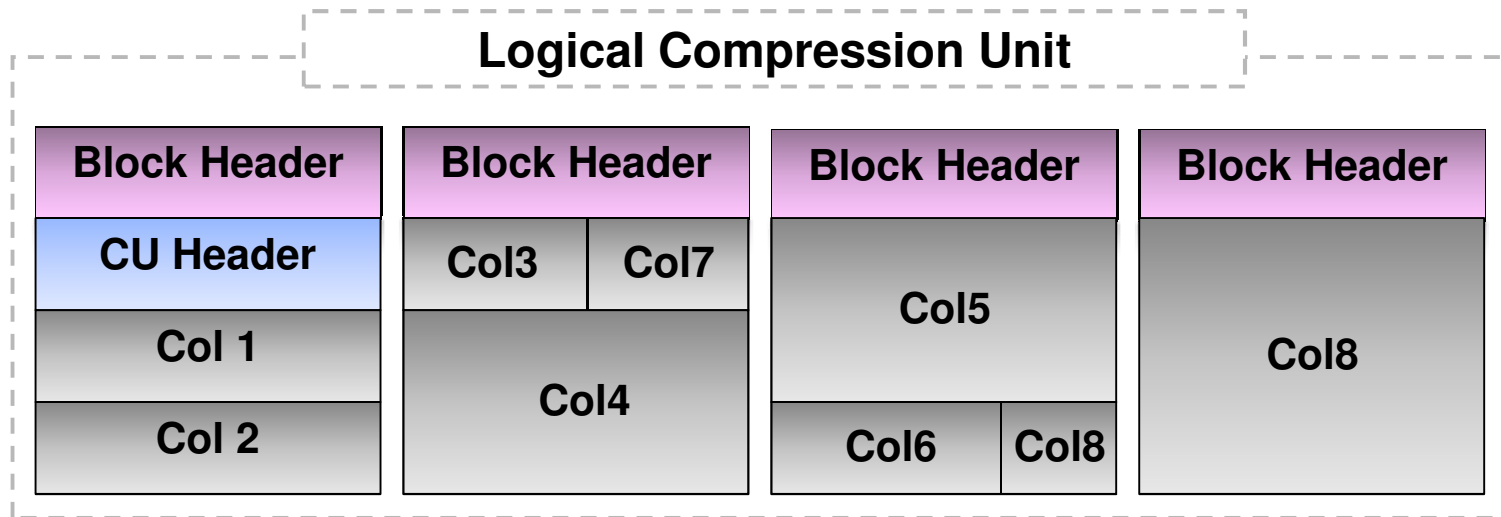


**Totally application transparent**



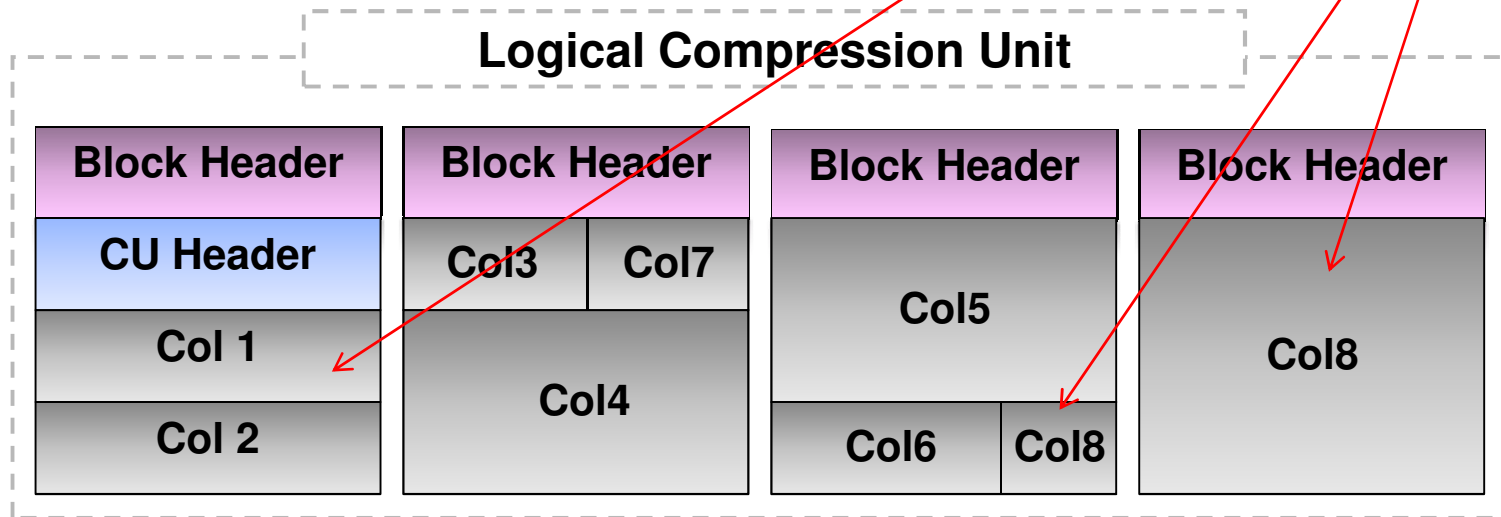
# Logical Compression Unit

- Tables are organized into Compression Units (CU)
  - CU's are logical structure spanning multiple database blocks
    - Typically 32K - (4 x 8K block size)
  - Data is organized by column during data load
  - Each column is compressed separately
  - Column organization brings similar values close together



# Logical Compression Unit

```
CREATE TABLE demo (  
  person_id      NUMBER(10) ,  
  first_name     VARCHAR2(20) ,  
  mid_initial    VARCHAR2(4) ,  
  last_name      VARCHAR2(35) ,  
  date_of_birth  DATE ,  
  hire_date      DATE ,  
  status         VARCHAR2(5) ,  
  comments       VARCHAR2(500) ;
```



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New in 11gR2 and  
you won't hear about  
from your Oracle rep

# Database Level Changes

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- Structure Changes in the ADR
- DataGuard Compressed Table Support for Logical Standbys and LogMiner
- DataPump Legacy Mode

Demo



# Execute for Directory Objects

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- In 10g we granted READ and/or WRITE
- But this also allowed executing the ORACLE\_LOADER access driver
- Only a user that has been given EXECUTE access to the directory object is allowed to run programs in it

```
CREATE DIRECTORY stage on /home/oracle/stage
```

```
GRANT read ON stage;
```

```
GRANT write ON stage;
```

```
GRANT execute ON stage;
```

## ■ In-Memory Parallel Query

- Traditionally, parallel execution has access to large amounts of data by taking full advantage of the I/O capacity of the system
- With, Oracle maps fragments of the object into the buffer caches of active instances so it knows which buffer cache to access
- As clusters scale-out this new functionality optimizes large parallel operations by minimizing or eliminating physical I/O if parallel operation can be satisfied in memory

```
parallel_adaptive_multi_user=TRUE  
parallel_automatic_tuning=FALSE  
parallel_degree_limit=CPU  
parallel_force_local=FALSE
```

*Ok they did have one session on IMPQ*

```
PARALLEL_DEGREE_POLICY = {MANUAL | LIMITED | AUTO}  
parallel_degree_limit=AUTO
```

- Automatic Block Repair

```
RMAN> BLOCKRECOVER DATAFILE 2 BLOCK 12,13 DATAFILE 3  
      BLOCK 5,98,99 DATAFILE 4 BLOCK 19;
```

```
RMAN> BACKUP VALIDATE DATABASE;  
RMAN> BLOCKRECOVER CORRUPTION LIST;
```

- New options for DUPLICATE DATABASE
- Enhanced Tablespace PITR

- Tablespaces
  - Enhancements to SecureFiles
  - New Tablespace Master Rekey
- Indexes
  - Zero-size unusable indexes & index partitions
- Tables
  - Segment creation on demand (deferred segment creation)

```
CREATE TABLE uwclass.later (  
  col1 NUMBER,  
  col2 VARCHAR2(20) )  
SEGMENT CREATION DEFERRED;
```

Demo

- New Analytic Functions
  - LISTAGG
  - NTH\_VALUE
  - RESPECT or IGNORE NULLS

```
SELECT department_id "Dept.",  
LISTAGG(last_name, ';' ' ) WITHIN GROUP (ORDER BY hire_date) "Employees"  
FROM employees  
GROUP BY department_id;
```

```
SELECT prod_id, channel_id, MIN(amount_sold),  
NTH_VALUE(MIN(amount_sold), 2)  
  OVER (PARTITION BY prod_id ORDER BY channel_id ROWS  
        BETWEEN UNBOUNDED PRECEDING AND UNBOUNDED FOLLOWING) NV  
FROM sales  
WHERE prod_id BETWEEN 13 AND 16  
GROUP BY prod_id, channel_id;
```

```
FIRST_VALUE(<expression> [<RESPECT | IGNORE> NULLS]) OVER (<analytic clause>)
```

- ALTER DATABASE LINK
- IGNORE\_ROW\_ON\_DUPKEY\_INDEX Hint for INSERT Statements
- Improved Flashback Archive allows more DDL
- DATABASE\_ROLE constant for SYS\_CONTEXT
  - PRIMARY
  - PHYSICAL STANDBY
  - LOGICAL STANDBY
  - SNAPSHOT STANDBY

```
SELECT sys_context('USERENV', 'DATABASE_ROLE') FROM dual;
```

Demo

- Recursive Queries
  - CONNECT BY
- Recursive Common Table Expressions (WITH)

```
WITH <alias> AS
    (subquery_sql_statement)
    SEARCH <BREADTH | DEPTH>
    FIRST BY <column_name> [ASC | DESC] [NULLS FIRST | NULLS LAST]
    SET <ordering_column>
    CYCLE (alias) SET <cycle_mark_alias>
    TO <cycle_value> DEFAULT <no_cycle_value>
SELECT <column_name_list>
FROM <alias_one>, <alias_two>
WHERE <join_condition>;
```

- New NO\_DATA\_NEEDED Predefined Exception
  - ORA-06528: For parallel access and pipelined table functions
- Improved fine grained dependency tracking
- Warnings
  - Severe
    - 5018 - omitted optional AUTHID clause
    - 5019 - deprecated language element
    - 5020 - parameter name must be identified
  - Informative
    - 6016 - native code generation turned off (size/time)
    - 6017 - operation will raise an exception
    - 6018 - an infinity or NaN value computed or used
  - Performance
    - None

Demo



# Built-in Packages

---

- New Packages (26 in all)
  - DBMS\_COMPRESSION
  - DBMS\_CUBE\_LOG
  - DBMS\_PARALLEL\_EXECUTE
- Packages with new Functions and Procedures (108)
  - DBMS\_BACKUP\_RESTORE
  - DBMS\_CUBE
  - DBMS\_LOB
  - DBMS\_LOGSTDBY
  - DBMS\_METADATA
  - DBMS\_METADATA\_UTIL
  - DBMS\_NETWORK\_ACL\_ADMIN
  - DBMS\_RESULT\_CACHE
  - DBMS\_SCHEDULER

**File Watcher**

# Built-in Packages

---

- Packages with new Functions and Procedures
  - DBMS\_SESSION
  - DBMS\_SPACE\_ADMIN
  - DBMS\_SPM
  - DBMS\_SQLDIAG
  - DBMS\_SQLPA
  - DBMS\_SQLTUNE
  - DBMS\_STATS
  - DBMS\_STREAMS & STREAMS\_ADM
  - DBMS\_UTILITY
  - DBMS\_WLM
  - DBMS\_WORKLOAD\_CAPTURE & REPLAY
  - DBMS\_WORKLOAD\_REPOSITORY
  - DBMS\_XPLAN

# Built-in Packages

---

- Packages with new Functions and Procedures
  - UTL\_HTTP
  - UTL\_SMTP
- And many have new overloads (39)
- Or new parameters (13)
- Or new types (1)
- Or new constants (3)
- Adding additional functional capabilities

# New in Database 11.2 Summary

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..... We did not come here to fear the future



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Please join us while we grow this section  
and learn how to index it so you can find what you need.

Can we code it?

Yes we can!

# read a list of operating system files using PL/SQL

---

```
DECLARE
  TYPE file_rec IS RECORD (FileName dbms_sql.varchar2_table);
  frec file_rec;

  CURSOR fcur IS
    SELECT fname_krbmsft AS FileName
    FROM x$krbmsft
    WHERE fname_krbmsft LIKE '%.%';

  dirname VARCHAR2(1024) := 'c:\tmp';
  ns      VARCHAR2(1024);
BEGIN
  dbms_backup_restore.searchfiles(dirname, ns);

  OPEN fcur;
  FETCH fcur BULK COLLECT INTO frec;
  CLOSE fcur;

  FOR i IN 1 .. frec.FileName.COUNT LOOP
    dbms_output.put_line(frec.FileName(i));
  END LOOP;
END;
/
```

Demo

# create a data type that will only hold 0s and 1s

---

```
DECLARE
  SUBTYPE flagtype IS PLS_INTEGER RANGE 0..1;
  x flagtype;
BEGIN
  BEGIN
    x := 0;
    dbms_output.put_line('Success: ' || TO_CHAR(x));
  EXCEPTION
    WHEN others THEN
      dbms_output.put_line('Can not assign 0 to flagtype');
  END;

  BEGIN
    x := 1;
    dbms_output.put_line('Success: ' || TO_CHAR(x));
  EXCEPTION
    WHEN others THEN
      dbms_output.put_line('Can not assign 1 to flagtype');
  END;

  ....
END;
/
```

Demo

**ERROR at line 1:**

**ORA-00028: your session has been killed**

**All demos at [morganslibrary.org](http://morganslibrary.org)**

- **Library**
- **How Can I?**

**Thank you**