

Oracle Performance Tuning

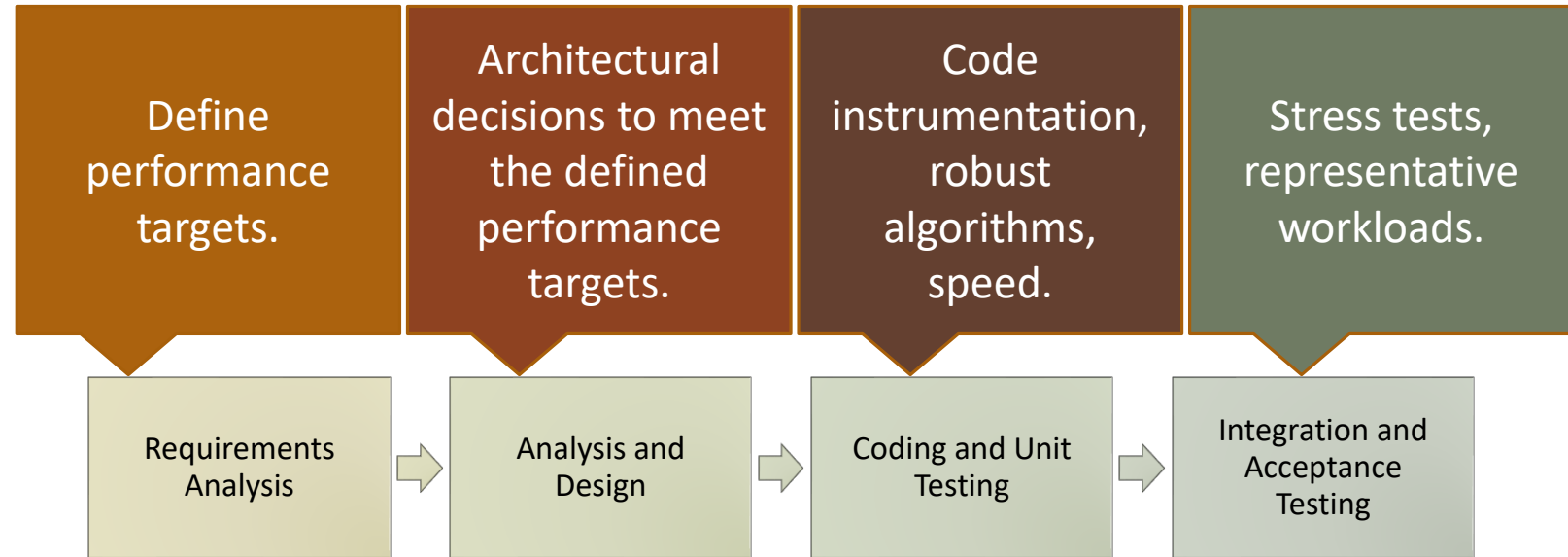
WEEK 6

What Is Performance Tuning?

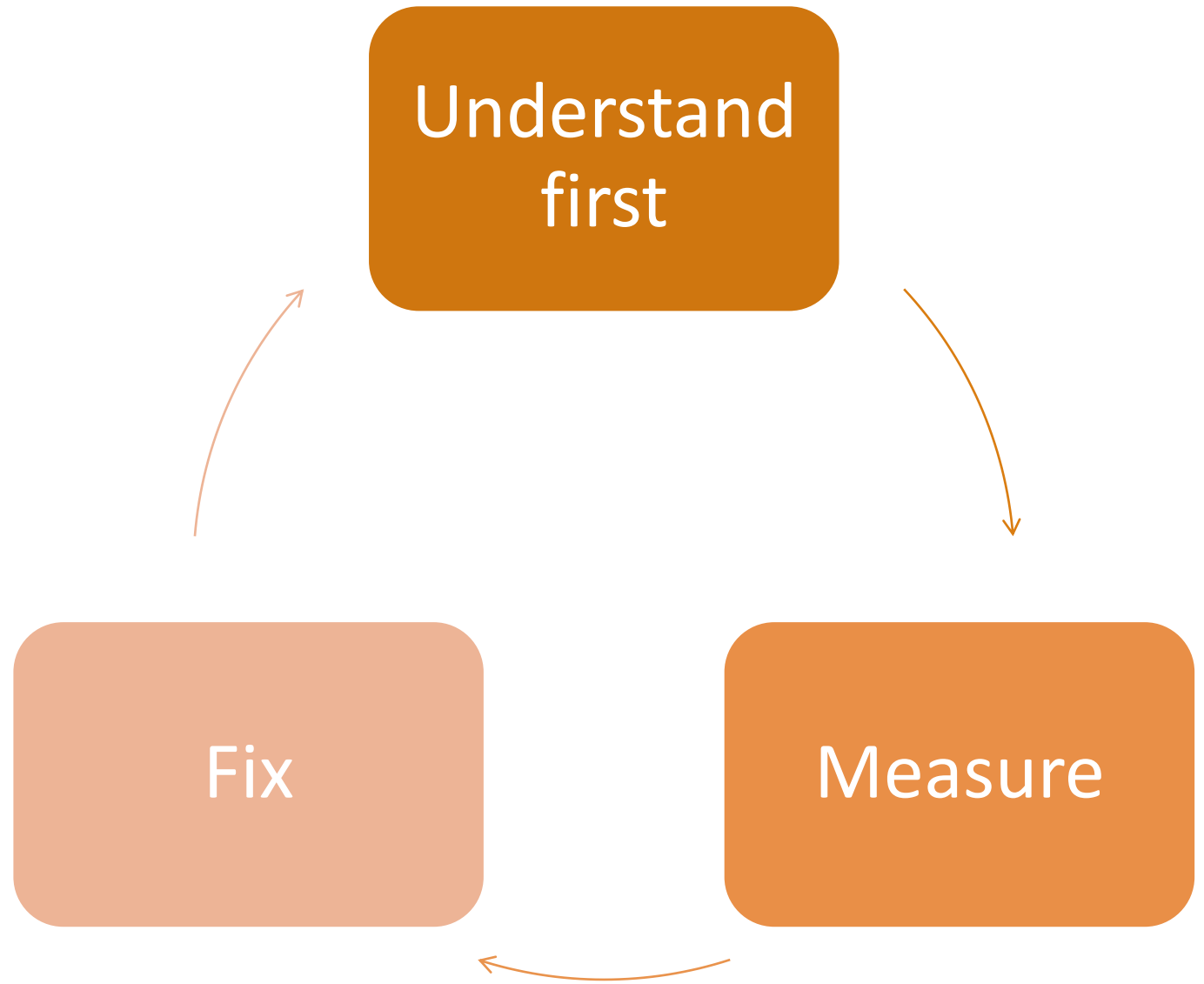
According to the official Oracle documentation:

*The Oracle Server is a sophisticated and highly tunable software product. Its flexibility allows you to make small adjustments that affect database performance. By tuning your system, you can **tailor its performance to best meet your needs.***

Designing for Performance



Systematic Approach



Understand the Problem

The most common complaint you'll hear:

THE DATABASE IS SLOW!!!

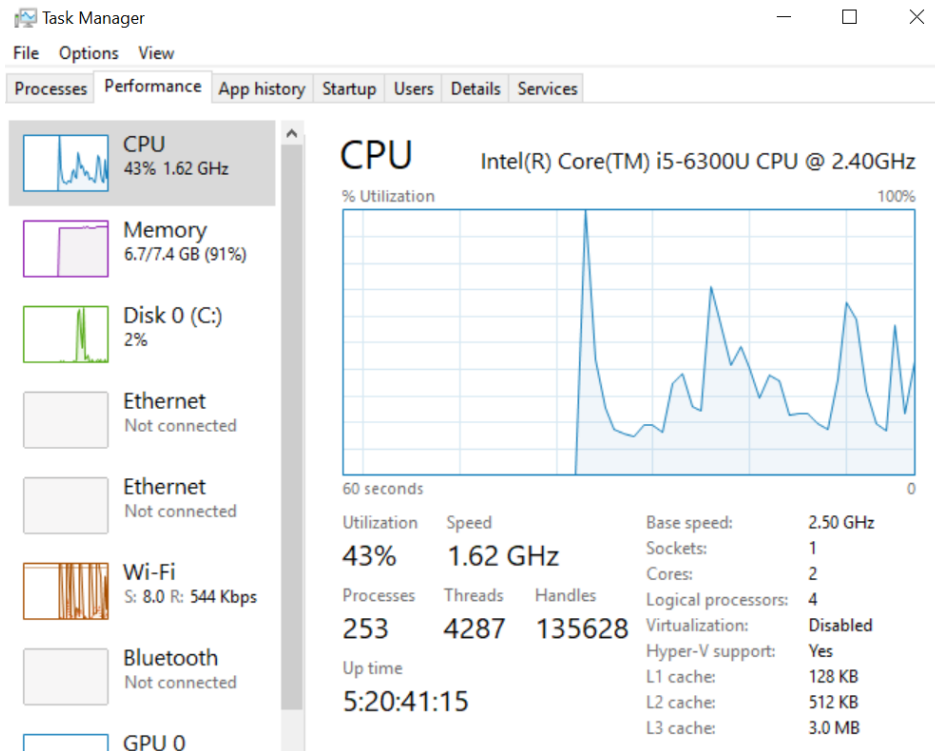
Get as much information as you can about the user's reported problem:

- What is the problem?
- Who is experience the problem?
- How the problem manifests?

Break down a complex problem in smaller pieces (profiling)

Drill down into finer level of details

A Basic Drill Down Example



Task Manager

File Options View

Processes Performance App history Startup Users Details Services

Name	29% CPU	77% Memory	4% Disk	0% Network	7% GPU	GPU Engin
> Google Chrome (41)	1.3%	1,321.9 MB	0.1 MB/s	0 Mbps	0%	GPU 0 -
> Firefox (8)	8.9%	739.5 MB	0.1 MB/s	0 Mbps	2.6%	GPU 0 -
> Bitdefender Security Service	0%	187.3 MB	0.1 MB/s	0 Mbps	0%	
> Skype (4)	1.5%	100.0 MB	0.1 MB/s	0 Mbps	0%	GPU 0 -
> Dropbox (32 bit)	0.1%	75.9 MB	0 MB/s	0 Mbps	0%	
> Desktop Window Manager	3.7%	62.2 MB	0.1 MB/s	0 Mbps	3.2%	GPU 0 -
> Microsoft PowerPoint (32 bit)	0.6%	60.5 MB	1.1 MB/s	0 Mbps	0%	
> Windows Explorer (3)	3.2%	58.4 MB	0.1 MB/s	0 Mbps	0%	
> Microsoft Outlook (32 bit)	0.2%	45.6 MB	0 MB/s	0 Mbps	0%	
> Microsoft Windows Search Inde...	0%	31.9 MB	0 MB/s	0 Mbps	0%	
> Task Manager	1.3%	30.8 MB	0 MB/s	0 Mbps	0%	
> Windows Command Processor ...	0.3%	23.2 MB	0 MB/s	0 Mbps	0%	

Common Scenarios



Throughput



Bottleneck

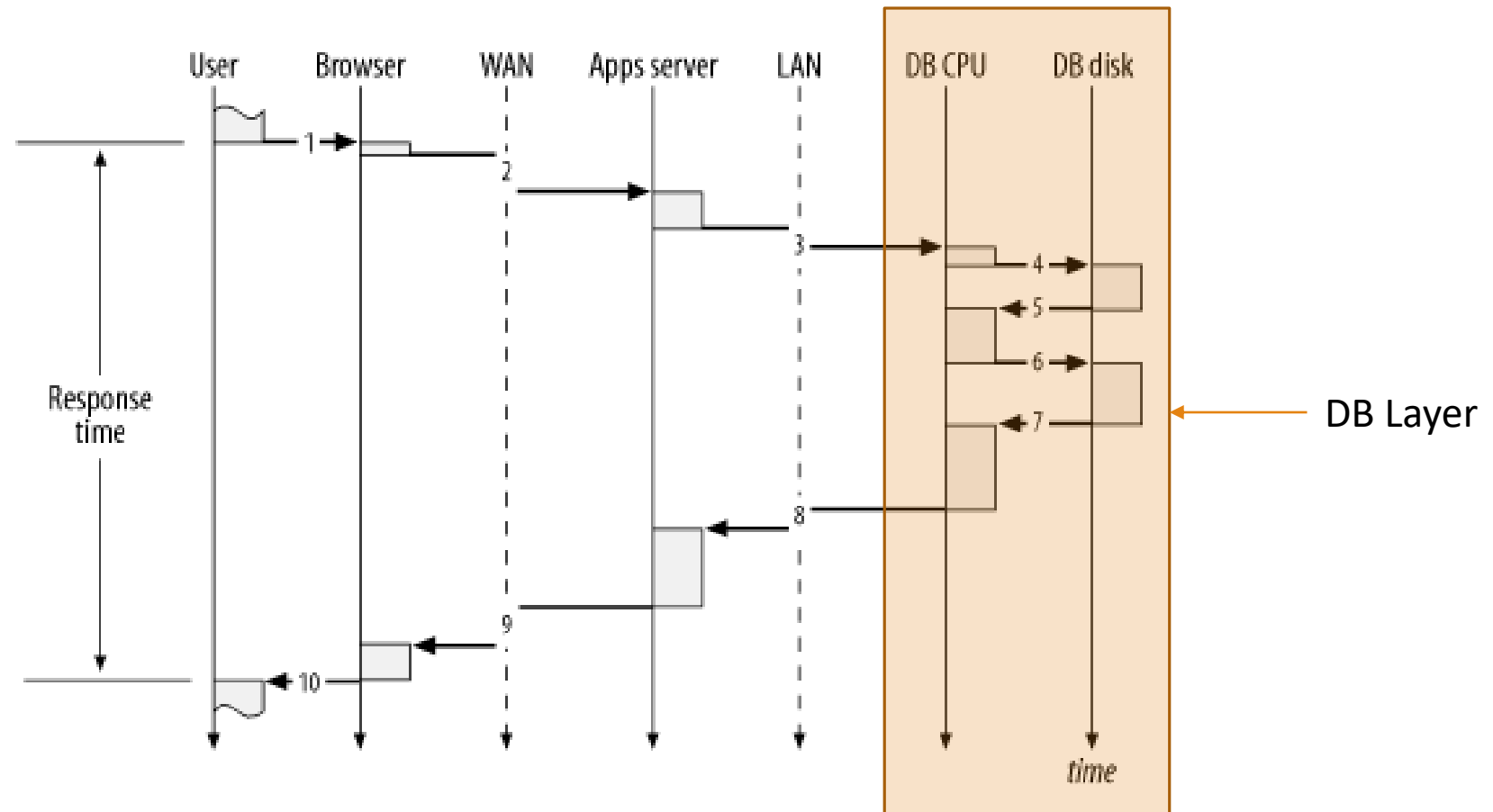


Lock

Measure Response Time

$$\mathbf{RT = ST + WT}$$

User Response Time



If everybody
complains of the
DB performance:

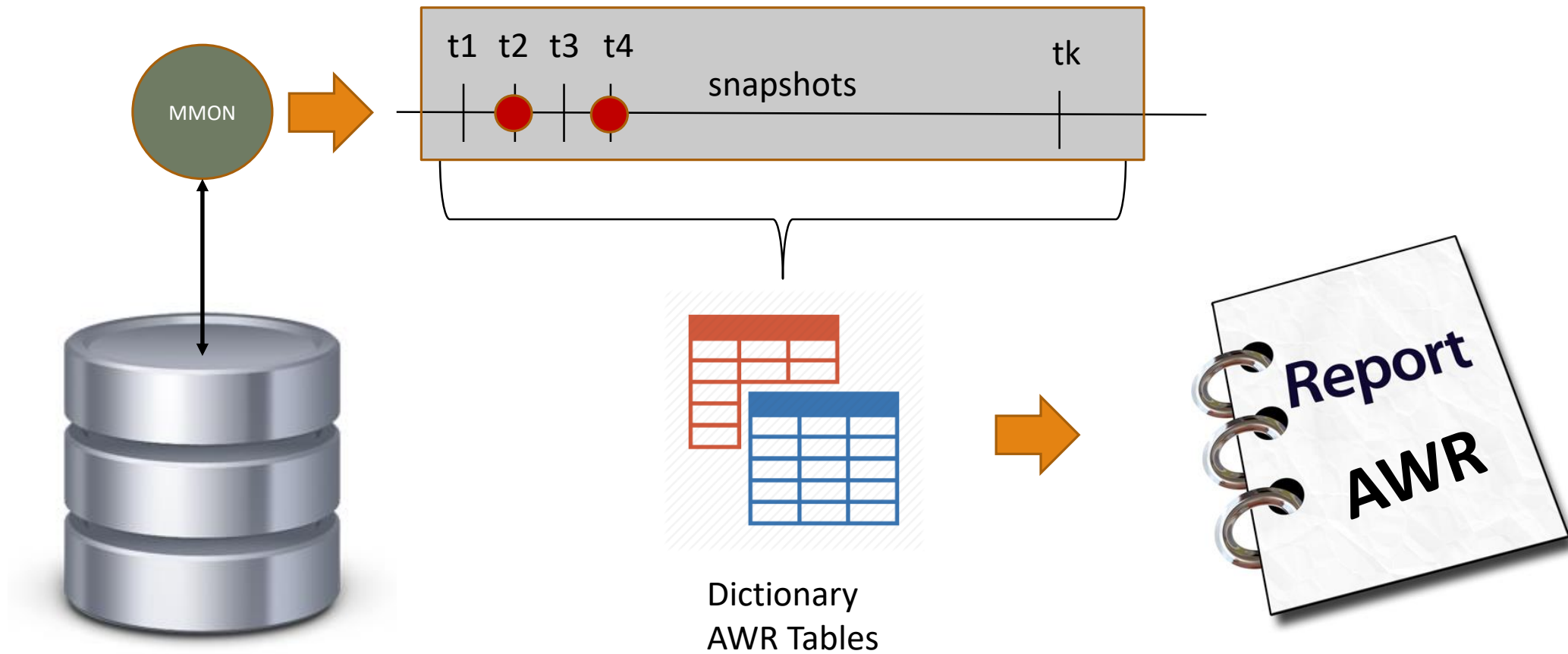
Look at the system
wide metrics: AWR
report, Statspack
etc

If one or just a
few users
complain:

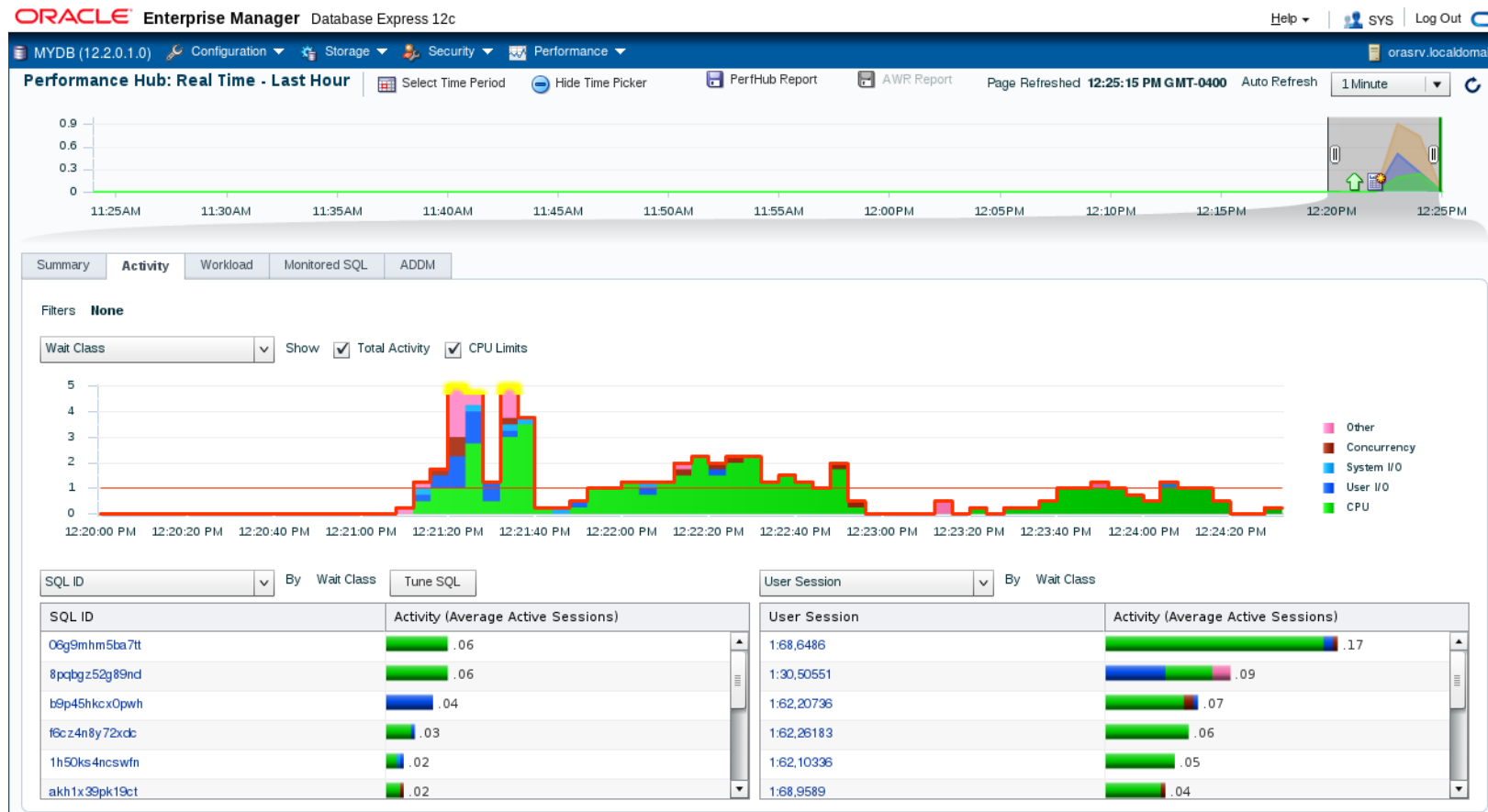
Trace that/those
particular
session(s)

Choose
Scope

The Automatic Workload Repository



Performance Monitoring



Trace an Oracle Session

Session initiated (should be initiated by the application/user):

```
ALTER SESSION SET sql_trace = TRUE;
```

```
ALTER SESSION SET EVENTS '10046 trace name context forever, level 8';
```

DBA initiated:

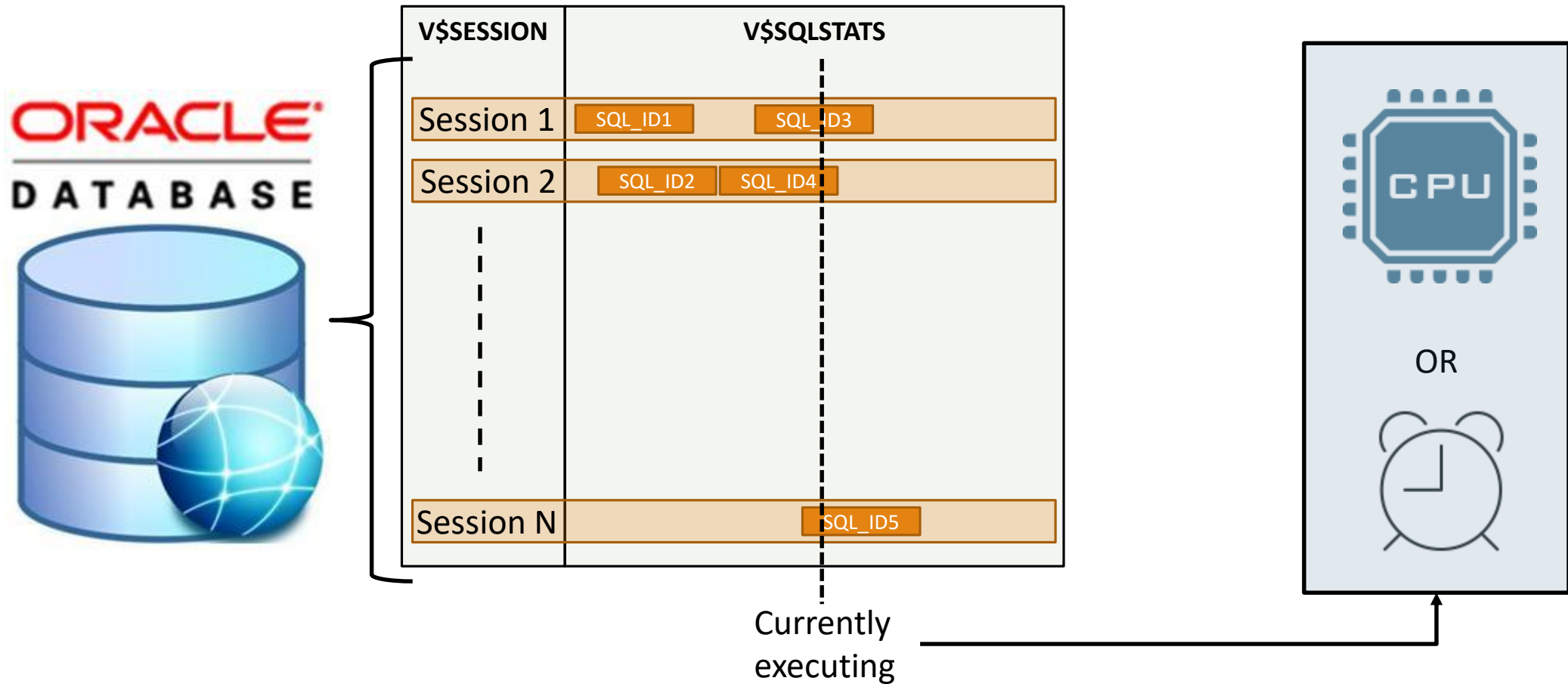
```
EXEC DBMS_SYSTEM.set_sql_trace_in_session(sid=>123, serial#=>1234, sql_trace=>TRUE);
```

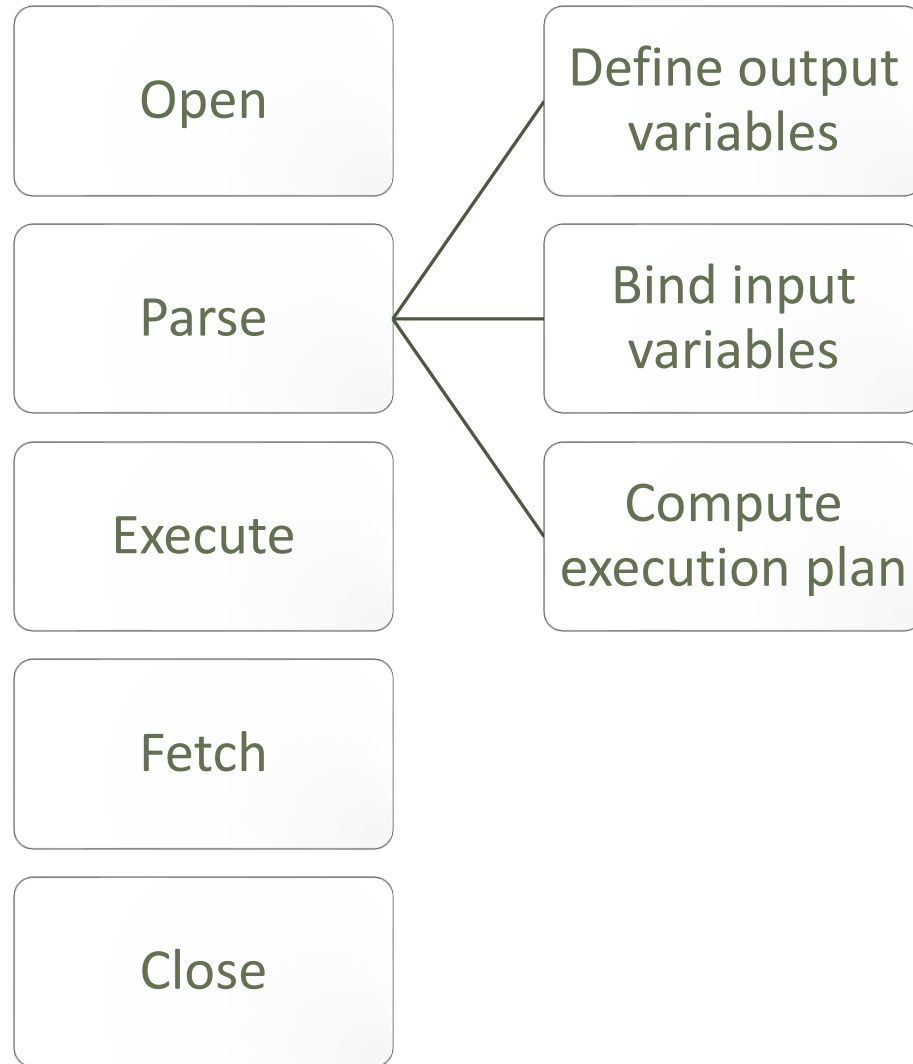
```
EXEC DBMS_SUPPORT.start_trace_in_session(sid=>123, serial=>1234, waits=>TRUE, binds=>FALSE);
```

DEMO

GENERATING THE
AWR REPORT

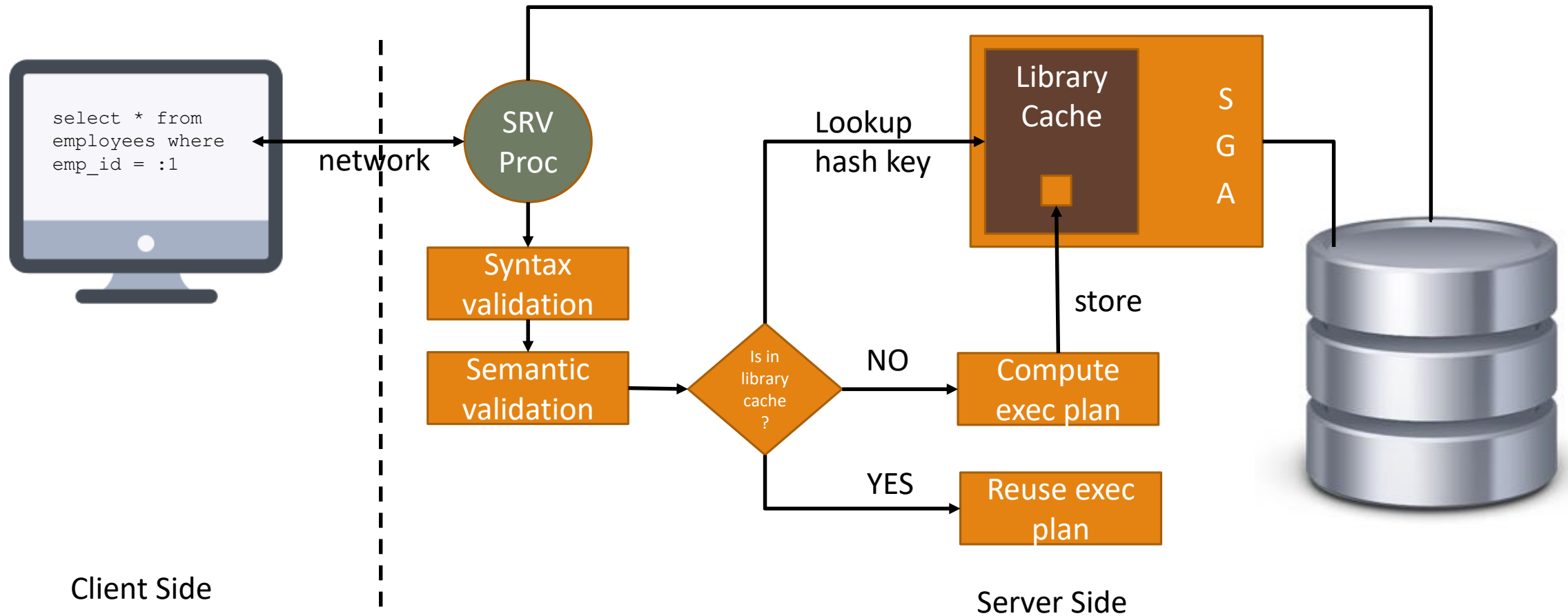
DB Activity

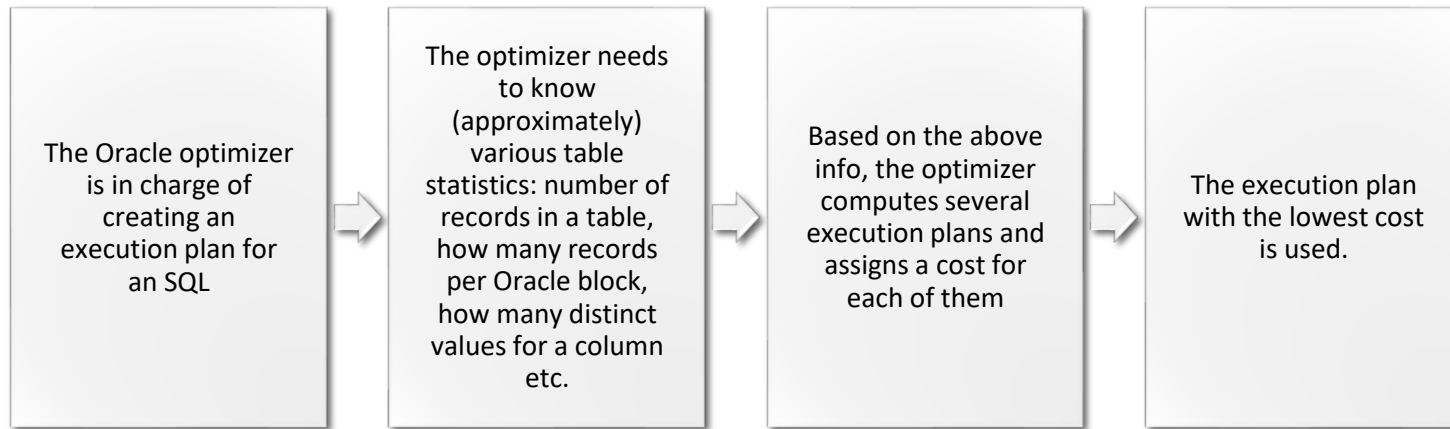




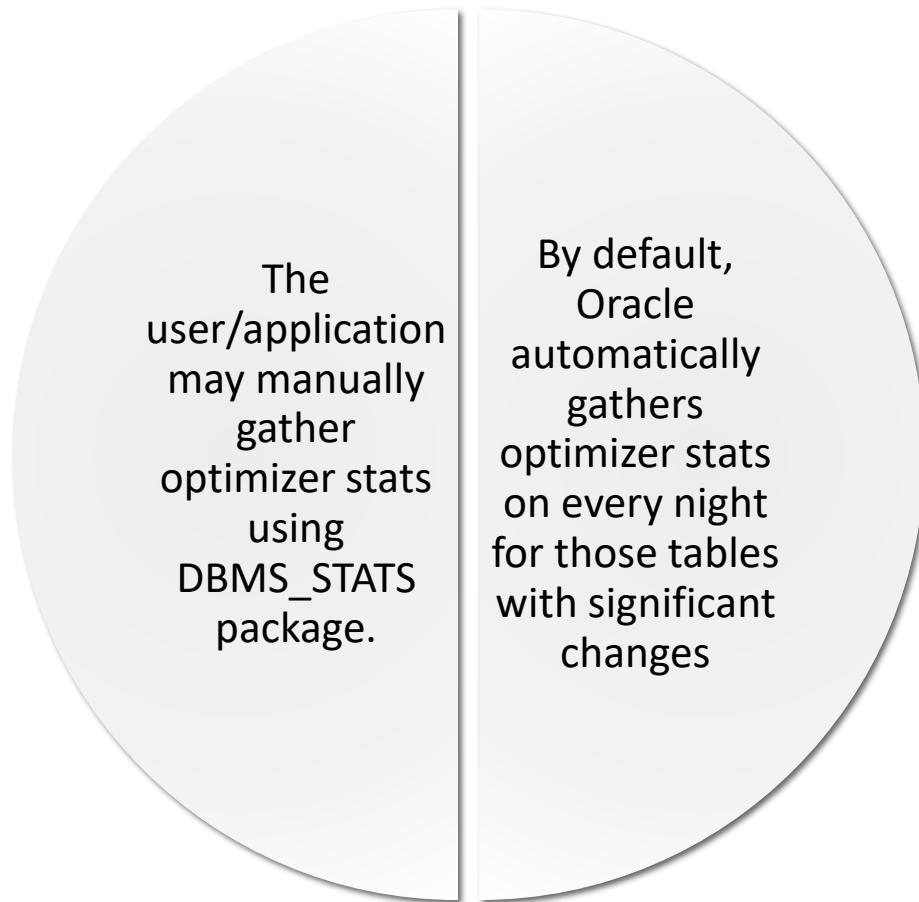
Lifecycle of a Cursor

Hard/Soft Parsing

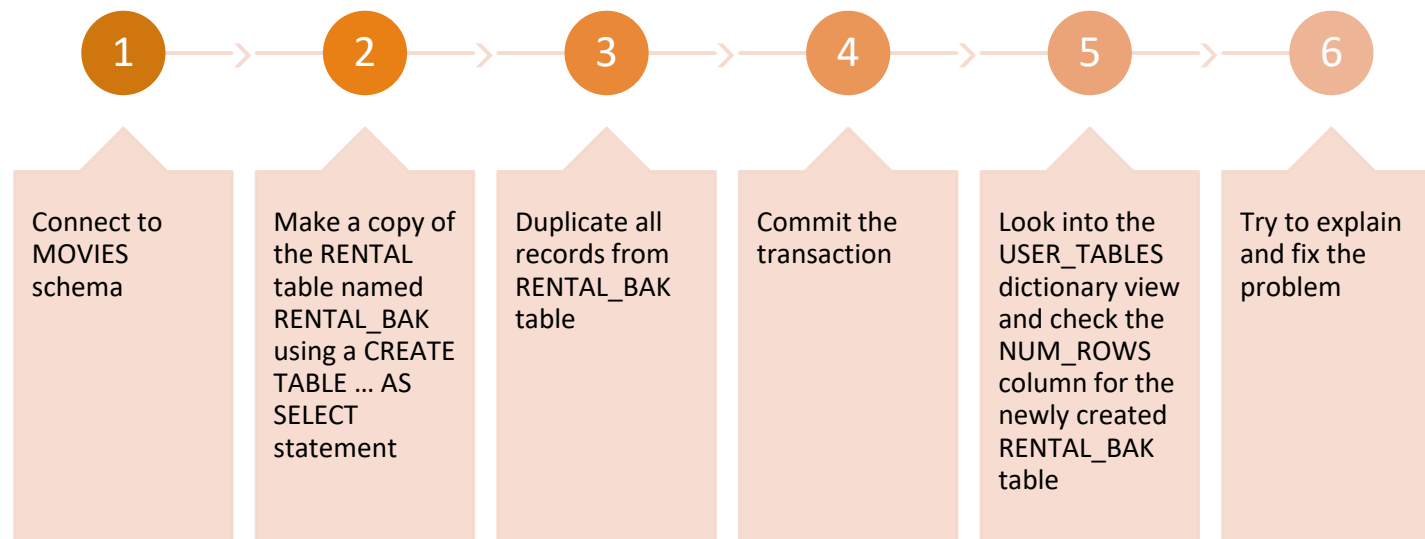




How an Execution Plan is Computed?



How Optimizer Stats are Gathered?



Hands-on Practice

That's all folks!

THANK YOU AND SEE YOU NEXT WEEK...