



APEX Reporting Performance

Carsten Czarski, Oracle APEX Team

Turn on Debug Mode ...

The screenshot shows a web application interface with a blue header bar containing a menu icon and the text 'xy'. A dark sidebar on the left contains a home icon. The main content area is titled 'Report EMP' and displays a table with 14 rows of employee data. The table columns are Empno, Ename, Job, Mgr, Hiredate, Sal, Comm, and Deptno. A 'Report Total' row is at the bottom of the table, showing a total salary of 29025. Below the table, it indicates 'row(s) 1 - 14 of 14'. At the bottom of the page, a dark footer bar contains several navigation and utility buttons: Home, Application 100, Edit Page 2, Session, View Debug, Debug, Page Info, and Quick B.

Empno ↑	Ename	Job	Mgr	Hiredate	Sal	Comm	Deptno
7369	SMITH	CLERK	7902	17-DEC-80	800	-	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	2975	-	20
7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
7698	BLAKE	MGR1	7839	01-MAY-81	2850	-	30
7782	CLARK	MANAGER	7839	09-JUN-81	2450	-	10
7788	SCOTT	ANALYST	7566	09-DEC-82	3000	-	20
7839	KING	PRESIDENT	-	17-NOV-81	5000	-	10
7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
7876	ADAMS	CLERK	7788	12-JAN-83	1100	-	20
7900	JAMES	CLERK	7698	03-DEC-81	950	-	30
7902	FORD	ANALYST	7566	03-DEC-81	3000	-	20
7934	MILLER	CLERK	7782	23-JAN-82	1300	-	10
Report Total:					29025		

row(s) 1 - 14 of 14

Home Application 100 Edit Page 2 Session View Debug Debug Page Info Quick B

Review the actual SQL Query

0.02957	0.00007	Evaluate which regions should be rendered for display point BODY	4	<input type="checkbox"/>
0.02964	0.00003	> APEX_APPLICATION_PAGE_REGIONS Report EMP	3	<input type="checkbox"/>
0.02967	0.00011	< APEX_APPLICATION_PAGE_REGIONS Report EMP	3	<input type="checkbox"/>
0.02978	0.00111	> APEX_APPLICATION_PAGE_REGIONS Report EMP	3	<input type="checkbox"/>
0.03089	0.00279	>> APEX_APPLICATION_PAGE_REGIONS Report EMP	3	<input type="checkbox"/>
0.03368	0.00425	<pre>select i.*, count(*) over () as APEX\$TOTAL_ROW_COUNT from (select "EMPNO","ENAME","JOB","MGR","HIREDATE","SAL","COMM","DEPTNO", (sum(to_number("SAL" default null on conversion error))over()) "APEX\$SUM6_TOTAL" from ((select /*+ qb_name(apex\$inner) */d."EMPNO",d."ENAME",d."JOB",d."MGR",d."HIREDATE",d."SAL",d."COMM",d."DEPTNO" from (select x.* from "EMP" x) d)) i) i where 1=1 order by "EMPNO" asc nulls last</pre>	4	<input type="checkbox"/>
0.03793	0.00189	14 rows fetched	4	<input type="checkbox"/>
0.03982	0.00907	rows loop: 15 row(s)	4	<input type="checkbox"/>
0.04188	0.00000	<< APEX_APPLICATION_PAGE_REGIONS Report EMP	3	<input type="checkbox"/>

Switch to Debug Level 9

localhost:48083/ords/f?p=100:2:1063500620945:::LEVEL9:::

Apps DevEnv Team Bugs APEX Community Tools Doc Specs

xy

Report EMP



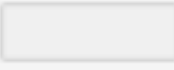
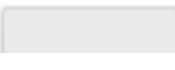
LEVEL9

Empno ↑	Ename	Job	Mgr	Hiredate	Sal	Comm	Deptno
7369	SMITH	CLERK	7902	17-DEC-80	800	-	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	2975	-	20
7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-MAY-81	2850	-	30

Review the *full* SQL Query

0.20958	0.00047	prepare_array_statement	8	<input type="text"/>
0.21005	0.00085	statement line cnt: 12, statement characters: 524	9	<input type="text"/>
0.21090	0.00040	SQL Statement prepared/rewritten: line count=12, first index=995, last index=1006, characters=524, found binds=0	9	<input type="text"/>
0.21129	0.00030	<pre>select * from(select a.*,row_number() over (order by null) apex\$rownum from(select i.*, count(*) over () as APEX\$TOTAL_ROW_COUNT from (select "EMPNO","ENAME","JOB","MGR","HIREDATE","SAL","COMM","DEPTNO", (sum(to_number("SAL" default null on conversion error))over()) "APEX\$SUM6_TOTAL" from ((select /*+ qb_name(apex\$inner) */d."EMPNO",d."ENAME",d."JOB",d."MGR",d."HIREDATE",d."SAL",d."COMM",d."DEPTNO" from (select x.* from "EMP" x) d)) i) i where 1=1 order by "EMPNO" asc nulls last)a)where apex\$rownum<=:p\$_max_rows</pre>	9	<input type="text"/>
0.21160	0.00108	parse_as_user p_cursor=>477274364,p_username=>CCZARSKI,p_lfflg=>>false,p_use_roles=>>false	8	<input type="text"/>

And review the execution plan

Elapsed	Execution	Message	Level	Graph																																																															
0.21353	0.35512	determining execution plan	9																																																																
0.56866	0.00066	<p>SQL_ID 4f52s3my7r5qd, child number 1</p> <pre> select * from(select a.*,row_number() over (order by null) apx\$rownum from(select i.*, count(*) over () as APEX\$TOTAL_ROW_COUNT from (select "EMPNO","ENAME","JOB","MGR","HIREDATE","SAL","COMM","DEPTNO",(sum(to_num ber("SAL" default null on conversion error))over()) "APEX\$SUM6_TOTAL" from ((select /*+ qb_name(apex\$inner) */d."EMPNO",d."ENAME",d."JOB",d."MGR",d."HIREDATE",d."SAL",d."COMM",d."D EPTNO" from (select x.* from "EMP" x) d)) i) i where 1=1 order by "EMPNO" asc nulls last)a)where apx\$rownum<=:p\$_max_rows Plan hash value: 1334134270 </pre> <table border="1"> <thead> <tr> <th>Id</th> <th>Operation</th> <th>Name</th> <th>Rows</th> <th>Bytes</th> <th>Cost (CPU)</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>SELECT STATEMENT</td> <td></td> <td></td> <td></td> <td>2 (100)</td> <td></td> </tr> <tr> <td>* 1</td> <td>VIEW</td> <td></td> <td>14</td> <td>1764</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>* 2</td> <td>WINDOW NOSORT STOPKEY</td> <td></td> <td>14</td> <td>1582</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>3</td> <td>VIEW</td> <td></td> <td>14</td> <td>1582</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>4</td> <td>WINDOW SORT</td> <td></td> <td>14</td> <td>1274</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>5</td> <td>VIEW</td> <td></td> <td>14</td> <td>1274</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>6</td> <td>WINDOW BUFFER</td> <td></td> <td>14</td> <td>532</td> <td>2 (0)</td> <td>00:00:01</td> </tr> <tr> <td>7</td> <td>TABLE ACCESS FULL</td> <td>EMP</td> <td>14</td> <td>532</td> <td>2 (0)</td> <td>00:00:01</td> </tr> </tbody> </table> <p>Predicate Information (identified by operation id):</p> <pre> 1 - filter("APX\$ROWNUM"<=:P\$_MAX_ROWS) 2 - filter(ROW_NUMBER() OVER (ORDER BY NULL)<=:P\$_MAX_ROWS) </pre>	Id	Operation	Name	Rows	Bytes	Cost (CPU)	Time	0	SELECT STATEMENT				2 (100)		* 1	VIEW		14	1764	2 (0)	00:00:01	* 2	WINDOW NOSORT STOPKEY		14	1582	2 (0)	00:00:01	3	VIEW		14	1582	2 (0)	00:00:01	4	WINDOW SORT		14	1274	2 (0)	00:00:01	5	VIEW		14	1274	2 (0)	00:00:01	6	WINDOW BUFFER		14	532	2 (0)	00:00:01	7	TABLE ACCESS FULL	EMP	14	532	2 (0)	00:00:01	9	
Id	Operation	Name	Rows	Bytes	Cost (CPU)	Time																																																													
0	SELECT STATEMENT				2 (100)																																																														
* 1	VIEW		14	1764	2 (0)	00:00:01																																																													
* 2	WINDOW NOSORT STOPKEY		14	1582	2 (0)	00:00:01																																																													
3	VIEW		14	1582	2 (0)	00:00:01																																																													
4	WINDOW SORT		14	1274	2 (0)	00:00:01																																																													
5	VIEW		14	1274	2 (0)	00:00:01																																																													
6	WINDOW BUFFER		14	532	2 (0)	00:00:01																																																													
7	TABLE ACCESS FULL	EMP	14	532	2 (0)	00:00:01																																																													
0.56931	0.00043	populate_buffer p_columns_values_row=>,p_context.query_result.has_more=>true	8																																																																
0.56974	0.00058	fetch_rows	8																																																																

Some settings come at a cost

The screenshot shows a software interface with a green notification bar at the top that says "Changes saved" with a checkmark and a close button. Below the notification is a toolbar with icons for "Go", "Refresh", "Undo", "Redo", "Zoom In", "Zoom Out", "Save", and "Play". The main interface has a sidebar with "Page Search" and "Help" buttons, and a central area with "Attributes", "Filter", "CSS Classes", and "Show Null Values as" settings. A settings menu is open, listing various pagination options. The selected option is "Row Ranges X to Y of Z (with pagination)".

Changes saved

Go Refresh Undo Redo Zoom In Zoom Out Save Play

Page Search Help

Attributes Filter

CSS Classes

Show Null Values as

rt Column Toggle Report

Messages

- No Pagination (Show All Rows)
- Row Ranges X to Y (no pagination)
- Row Ranges X to Y of Z (no pagination)
- Row Ranges X to Y of Z (with pagination)
- Row Ranges 1-15 16-30 (with set pagination)
- Row Ranges 1-15 16-30 in select list (with pagination)
- Search Engine 1,2,3,4 (set based pagination)
- Use Externally Created Pagination Buttons
- Row Ranges X to Y (with next and previous links)

"Optimizer Hint" is added to the most outer query.

The screenshot displays the Oracle APEX interface for editing a report. The top toolbar includes a 'Go' button with the number '2', a 'Save' button, and a blue play button. Below the toolbar, the 'Region' is identified as 'Region'. The 'Type' is set to 'SQL Query'. The 'SQL Query' editor contains the following text:

```
select EMPNO,  
       ENAME,  
       JOB,  
       MGR,  
       HIREDATE,  
       SAL,  
       COMM,  
       DEPTNO  
from EMP
```

Below the SQL editor, the 'Page Items to Submit' section is visible, and the 'Optimizer Hint' field contains the text 'PLACE_HINT_HERE|'. At the bottom, there are options for 'Layout' and report styles like 'Classic Report' and 'Column Toggle Report'.

"Optimizer Hint" is added to the most outer query.

)a)where apx\$rownum<=:p\$_max_rows)		
0.20212	0.00124	parse_as_user p_cursor=>458775079,p_username=>CCZARSKI,p_lfflg=>false,p_use_roles=>false	8	<input type="text"/>
0.20336	0.00034	re_execute_query	8	<input type="text"/>
0.20370	0.00039	execute	8	<input type="text"/>
0.20409	0.08497	determining execution plan	9	<input type="text"/>
		SQL_ID 258k0fn4yp4ph, child number 1 ----- select --+PLACE_HINT_HERE * from (select * from(select a.*,row_number() over (order by null) apx\$rownum from(select i.*, count(*) over () as APEX\$TOTAL_ROW_COUNT from (select "EMPNO","ENAME","JOB","MGR","HIREDATE ","SAL","COMM","DEPTNO",(sum(to_number("SAL" default null on conversion error))over()) "APEX\$SUM6_TOTAL" from ((select /*+ qb_name(apex\$inner) */d."EMPNO",d."ENAME",d."JOB",d."MGR",d."HIREDATE",d."SAL",d."COMM",d."D EPTNO" from (select EMPNO, ENAME, JOB, MGR, HIREDATE, SAL, COMM, DEPTNO from EMP) d)) i) i where 1=1 order by "EMPNO" asc nulls last)a)where apx\$rownum<=:p\$_max_rows) Plan hash value: 1334134270 ----- Id Operation Name Rows Bytes Cost (CPU) Time ----- 0 SELECT STATEMENT 2 (100) * 1 VIEW 14 1764 2 (0) 00:00:01 * 2 WINDOW NOSORT STOPKEY 14 1582 2 (0) 00:00:01 3 VIEW 14 1582 2 (0) 00:00:01 4 WINDOW SORT 14 1274 2 (0) 00:00:01 5 VIEW 14 1274 2 (0) 00:00:01 6 WINDOW BUFFER 14 532 2 (0) 00:00:01 7 TABLE ACCESS FULL EMP 14 532 2 (0) 00:00:01 -----		
0.28906	0.00054		9	<input type="text"/>



Thank You!

@cczarski #orclapex