```
SQL> cl scr
```

SQL> SELECT

- 2 Deptno,
- 3 SUM(Sal) TotSal
- 4 FROM Emp
- 5 GROUP BY ROLLUP(Deptno);

TOTSAL	DEPTNO	
8750	10	
10875	20	
9400	30	
29025		

- SQL> SELECT
 - 2 Job,
 - 3 SUM(Sal)
 - 4 FROM Emp
 - 5 GROUP BY ROLLUP(Job);

JOB	SUM(SAL)
ANALYST	6000
CLERK	4150
MANAGER	8275
PRESIDENT	5000
SALESMAN	5600
	29025

6 rows selected.

SOL> ED

Wrote file afiedt.buf

- 1 SELECT
- 2 Ename,
- 3 SUM(Sal)
- 4 FROM Emp
- 5* GROUP BY ROLLUP(Ename)

SQL>

ENAME	SUM(SAL)		
ADAMS	1100		

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..... ALLEN 1600 BLAKE 2850 CLARK 2450 FORD 3000 950 **JAMES** JONES 2975 KING 5000 MARTIN 1250 1300 MILLER SCOTT 3000 800 SMITH TURNER 1500 1250 WARD 29025 15 rows selected. SOL> SELECT 2 Job, 3 TO_CHAR(SUM(Sal), '99G999D99') JobSalSum 4 FROM Emp 5 GROUP BY ROLLUP(Job); JOB JOBSALSUM ANALYST 6,000.00 CLERK 4,150.00 8,275.00 MANAGER PRESIDENT 5,000.00 5,600.00 SALESMAN 29,025.00 6 rows selected. SQL> SELECT 2 Job, 3 TO_CHAR(AVG(Sal), '99G999D99') JobSalAvg, TO_CHAR(SUM(Sal), '99G999D99') JobSalSum FROM Emp 6 GROUP BY ROLLUP(Job); JOB JOBSALAVG JOBSALSUM ANALYST 3,000.00 6,000.00 1,037.50 CLERK 4,150.00

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```
MANAGER 2,758.33 8,275.00

PRESIDENT 5,000.00 5,000.00

SALESMAN 1,400.00 5,600.00

2,073.21 29,025.00
```

6 rows selected.

SQL> ED

Wrote file afiedt.buf

- 1 SELECT
- 2 Deptno,
- 3 TO_CHAR(AVG(Sal), '99G999D99') JobSalAvg,
- 4 TO_CHAR(SUM(Sal), '99G999D99') JobSalSum
- 5 FROM Emp
- 6* GROUP BY ROLLUP(Deptno)

SQL> /

DEPTNO	JOBSALAVG	JOBSALSUM
10	2,916.67	8,750.00
20	2,175.00	10,875.00
30	1,566.67	9,400.00
	2,073.21	29,025.00

SQL> ED

Wrote file afiedt.buf

- 1 SELECT
- 2 Deptno,
- 3 TO_CHAR(AVG(Sal), '99G999D99') JobSalAvg,
- 4 COUNT(*) Staff,
- 5 TO_CHAR(SUM(Sal), '99G999D99') JobSalSum
- 6 FROM Emp
- 7* GROUP BY ROLLUP(Deptno)

SQL> /

DEPTNO	JOBSALAVG	STAFF	JOBSALSUM
10	2,916.67 2,175.00	3 5	0,,00.00
30	1,566.67	6	9,400.00
	2,073.21	14	29,025.00

SQL> SELECT * FROM Emp;

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COMM	EMPNO ENAME DEPTNO	JOB	MGR	HIREDATE	SAL
1.0	7839 KING	PRESIDENT		17-NOV-81	5000
10 30	7698 BLAKE	MANAGER	7839	01-MAY-81	2850
10	7782 CLARK	MANAGER	7839	09-JUN-81	2450
	7566 JONES	MANAGER	7839	02-APR-81	2975
20	7654 MARTIN	SALESMAN	7698	28-SEP-81	1250
1400	30 7499 ALLEN	SALESMAN	7698	20-FEB-81	1600
300	30 7844 TURNER	SALESMAN	7698	08-SEP-81	1500
0	30 7900 JAMES	CLERK	7698	03-DEC-81	950
30	7521 WARD	SALESMAN	7698	22-FEB-81	1250
500	30 7902 FORD	ANALYST	7566	03-DEC-81	3000
20	7369 SMITH	CLERK	7902	17-DEC-80	800
20	7788 SCOTT	ANALYST	7566	09-DEC-82	3000
20	7876 ADAMS	CLERK	7788	12-JAN-83	1100
20	7934 MILLER	CLERK	7782	23-JAN-82	1300
10					
	_				

14 rows selected.

SQL> SELECT

- 2 Deptno,
 - 3 SUM(Sal) SUMSal,
 - 4 AVG(Sal) AVGSal,
 - 5 MAX(Sal) MaxSal,
 - 6 MIN(Sal) MinSal
 - 7 FROM Emp
 - GROUP BY ROLLUP(Deptno);

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.....

DEPTNO	SUMSAL	AVGSAL	MAXSAL	MINSAL
10	8750	2916.66667	5000	1300
20	10875	2175	3000	800
30	9400	1566.66667	2850	950
	29025	2073.21429	5000	800

SQL> COLUMN Deptno FORMAT A15

SQL> SELECT

- 2 NVL(TO_CHAR(Deptno), 'All Departments') Deptno,
- 3 AVG(SAL) AVGSal
- 4 FROM Emp
- 5 GROUP BY ROLLUP(Deptno);

DEP'	INO	AVGSAL
10		2916.66667
20		2175
30		1566.66667
Δ]]	Departments	2073 21429

SOL> ED

Wrote file afiedt.buf

- 1 SELECT
- 2 NVL(TO_CHAR(Deptno), 'All Departments') Deptno,
- 3 TO_CHAR(SUM(SAL), '99G999D99') SUMSal
- 4 FROM Emp
- 5* GROUP BY ROLLUP(Deptno)

SQL> /

DEP:	ΓΝΟ	SUMSAL
10	•	8,750.00
20		10,875.00
30		9,400.00
All	Departments	29,025.00

SQL> SELECT

- 2 Deptno,
- 3 Job,
- 4 SUM(Sal) Salary
- 5 FROM Emp
- 6 GROUP BY ROLLUP(Deptno, Job);

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•

DEPTNO	JOB	SALARY
#########	CLERK	1300
#########	MANAGER	2450
#########	PRESIDENT	5000
#########		8750
#########	CLERK	1900
#########	ANALYST	6000
#########	MANAGER	2975
#########		10875
#########	CLERK	950
#########	MANAGER	2850
#########	SALESMAN	5600
#########		9400
		29025

13 rows selected.

SQL> COLUMN Deptno FORMAT 99

SQL> SELECT

- 2 Deptno,
- 3 Job,
- 4 SUM(Sal) Salary
- 5 FROM Emp
- 6 GROUP BY ROLLUP(Deptno, Job);

DEPTNO	JOB	SALARY
10	CLERK	1300
10	MANAGER	2450
10	PRESIDENT	5000
10		8750
20	CLERK	1900
20	ANALYST	6000
20	MANAGER	2975
20		10875
30	CLERK	950
30	MANAGER	2850
30	SALESMAN	5600
30		9400
	- The second sec	29025

13 rows selected.

SQL> SET AUTOTRACE ON EXPLAIN

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.....

```
SOL> ED
Wrote file afiedt.buf
   SELECT Deptno, Job, SUM(Sal) Salary
  2 FROM Emp
  3
    GROUP BY Deptno, Job
  4 UNION
  5 SELECT Deptno, NULL, SUM(Sal)
  6 FROM Emp
  7
    GROUP BY Deptno
  8 UNION
  9 SELECT NULL, NULL, SUM(Sal)
 10* FROM Emp
SQL> /
                 SALARY
DEPTNO JOB
   10 CLERK
                      1300
   10 MANAGER
                     2450
   10 PRESIDENT
                     5000
   10
                      8750
    20 ANALYST
                      6000
    20 CLERK
                     1900
    20 MANAGER
                     2975
    20
                     10875
    30 CLERK
                       950
    30 MANAGER
                      2850
    30 SALESMAN
                      5600
    30
                      9400
                     29025
13 rows selected
Execution Plan
Plan hash value: 3412076862
```

| Name | Rows | Bytes | Cost (%CPU) | Time Operation

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· · · · · ·	ELECT STATEMENT		1	29	825	14	(79)
· · · · · ·	SORT UNIQUE			29	825	14	(79)
00:00:01							
2	UNION-ALL						
3	HASH GROUP BY			14	448	5	(40)
00:00:01							
4	TABLE ACCESS I	FULL EMP		14	448	3	(0)
00:00:01						#	1.
5	HASH GROUP BY			14	364	5	(40)
00:00:01					•	4	
6	TABLE ACCESS I	FULL EMP		14	364	3	(0)
00:00:01						4	
7	SORT AGGREGATE			1	13	4	(25)
00:00:01					4 1		
8	TABLE ACCESS I	FULL EMP		14	182	3	(0)
00:00:01			•	4			·

Note

- dynamic sampling used for this statement (level=2)

SQL> SELECT

- 2 Deptno,
- 3 Job,
- 4 SUM(Sal) Salary
- 5 FROM Emp
- 6 GROUP BY ROLLUP(Deptno, Job);

DEPTNO	JOB	SALARY
10	CLERK	1300
10	MANAGER	2450
10	PRESIDENT	5000
10		8750
20	CLERK	1900
20	ANALYST	6000
20	MANAGER	2975
20		10875
30	CLERK	950
30	MANAGER	2850
30	SALESMAN	5600

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..... 30 9400 29025 13 rows selected. Execution Plan Plan hash value: 52302870 Id | Operation | Name | Rows | Bytes | Cost (%CPU) | Time _____ 0 | SELECT STATEMENT 14 448 4 (25) 00:00:01 1 | SORT GROUP BY ROLLUP 00:00:01 2 | TABLE ACCESS FULL | EMP 448 (0) 00:00:01 Note - dynamic sampling used for this statement (level=2) SOL> ED Wrote file afiedt.buf 1 SELECT 2 Deptno, 3 Job, 4 SUM(Sal) Salary 5 FROM Emp 6* GROUP BY Deptno, Job SQL> / SALARY DEPTNO JOB 20 MANAGER 2975 30 SALESMAN 5600 30 CLERK 950

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	орос					- ,				
10 30	CLERK PRESIDEN' MANAGER CLERK	190 F 500 285 130	0 0							
	MANAGER ANALYST	245 600								X
9 rows	selected							4		
Execut	ion Plan							A		9
Plan h	ash value	: 406722088	4							
 Id 	Operati	on	Name	Rows	B	ytes	Cost	(%C	 PU)	Time
0	SELECT	STATEMENT		14	2	448		4 (25)	00:00:01
1	HASH G	ROUP BY		14		448	[4 (25)	00:00:01
2	TABLE	ACCESS FUL	L EMP	14	1	448	l	3	(0)	00:00:01
Note - d	ynamic sa	mpling used	for this	s state	ment	(lev	el=2)			
SQL> Since 2 No. 3 No. 3	ELECT VL(TO_CHA	tno FORMAT A R(Deptno), All Jobs')	'All Depa	ırtment	s')	Deptno	ο,			
5 F	ROM Emp	OLLUP(Deptno	o, Job);							
DEPTNO		JOBS	SALAR	2Y						
10		CLERK MANAGER	130							

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			•••••	••••••	•••••	•••••	
10 10 20 20 20 20 30 30 30 30 All Departments	MANAGER All Jobs CLERK MANAGER SALESMAN All Jobs	5000 8750 1900 6000 2975 10875 950 2850 5600 9400 29025					
13 rows selecte	d.			N			
Execution Plan							
Plan hash value	: 52302870			0			
 Id	on	Name R	ows E	Bytes Co)st (%CPU) Ti	.me
 0 SELECT 00:00:01		51		448		•	
1 SORT G 00:00:01	ROUP BY ROLLUP		14	448	4	(25)	
•	ACCESS FULL	EMP	14	448	3	(0)	
Note	dt.buf	this sta	tement ((level=2)			

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```
4 SUM(Sal) Salary
```

6* GROUP BY Deptno, ROLLUP(Job)

SQL> /

DEPTNO	JOBS	SALARY
10	CLERK	1300
10	MANAGER	2450
10	PRESIDENT	5000
10		8750
20	CLERK	1900
20	ANALYST	6000
20	MANAGER	2975
20		10875
30	CLERK	950
30	MANAGER	2850
30	SALESMAN	5600
30		9400

12 rows selected.

Execution Plan

Plan hash value: 52302870

Id Operation Name		Rows		Bytes	Cost (%CPU)	Time
	1	1.4		440	4	/ OF \	
0 SELECT STATEMENT 00:00:01	I	14	ı	448	4	(25)	
1 SORT GROUP BY ROLLUP		14		448	4	(25)	
00:00:01							
2 TABLE ACCESS FULL EMP		14		448	3	(0)	
00:00:01							

Note

- dynamic sampling used for this statement (level=2)

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⁵ FROM Emp

SQL> ED Wrote file afiedt.buf

- 1 SELECT
- 2 Deptno Deptno,
- 3 Job Jobs,
- 4 SUM(Sal) Salary
- 5 FROM Emp
- 6* GROUP BY Job, ROLLUP(Deptno)

SQL> /

DEPTNO	JOBS	SALARY
10	CLERK	1300
20	CLERK	1900
30	CLERK	950
	CLERK	4150
20	ANALYST	6000
	ANALYST	6000
10	MANAGER	2450
20	MANAGER	2975
30	MANAGER	2850
	MANAGER	8275
30	SALESMAN	5600
	SALESMAN	5600
10	PRESIDENT	5000
	PRESIDENT	5000
		4 4 6

14 rows selected.

Execution Plan

Plan hash value: 52302870

 Id	Name	Ro	ws	Byte	es C	Cost (%CPU)	Time
0 SELECT STATEMENT 00:00:01			14	44	18	4	(25)	

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1 SORT GROUP BY ROLLUP	14	448	4	(25)
00:00:01 2 TABLE ACCESS FULL EMP 00:00:01	14	448	3	(0)

Note

- dynamic sampling used for this statement (level=2)

SQL> SPOOL OFF

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