

index skip scan 으로 유도하자!

index skip scan 이란?

인덱스 스킵 스캔은 결합 컬럼 인덱스의 첫 번째 컬럼이 WHERE 조건에 존재하지 않아도 인덱스를 이용할 수 있는 인덱스 액세스 방식

	인덱스 엑세스 방법	관련 힌트
1	index range scan	index
2	index unique scan	index
3	index full scan	index
4	index skip scan	index_ss
5	index fast full scan	index_ffs
6	index merge scan	and_equal
7	index bitmap merge scan	index_combine

결합 컬럼 인덱스의 첫번째 컬럼이 where 절에 없을 때

- 결합 컬럼 인덱스의 첫번째 컬럼이 where 절에 없다면 full table scan으로 실행계획이 수행됩니다.

- 결합 컬럼 인덱스가 select 절에서 사용되기 위해서는 결합 컬럼 인덱스의 첫번째 컬럼이 where 절에 검색조건 으로 있어야 합니다.

create index emp_deptno_job on emp(deptno,job);

emp_deptno_job 인덱스

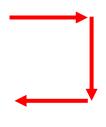
DEPTNO	JOB	ROWID
10	CLERK	AAAW+FAAHAAAAK1AAN
10	MANAGER	AAAW+FAAHAAAAK1AAC
10	PRESIDENT	AAAW+FAAHAAAAK1AAA
20	ANALYST	AAAW+FAAHAAAAK1AAJ
20	ANALYST	AAAW+FAAHAAAAK1AAL
20	CLERK	AAAW+FAAHAAAAK1AAK
20	CLERK	AAAW+FAAHAAAAK1AAM
20	MANAGER	AAAW+FAAHAAAAK1AAD
30	CLERK	AAAW+FAAHAAAAK1AAH
30	MANAGER	AAAW+FAAHAAAAK1AAB
30	SALESMAN	AAAW+FAAHAAAAK1AAE
30	SALESMAN	AAAW+FAAHAAAAK1AAF
30	SALESMAN	AAAW+FAAHAAAAK1AAG
30	SALESMAN	AAAW+FAAHAAAAK1AAI

emp 테이블

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	СОММ	DEPTNO
7839	KING	PRESIDENT		1981-11-17	5000		10
7698	BLAKE	MANAGER	7839	1981-05-01	2850		30
7782	CLARK	MANAGER	7839	1981-05-09	2450		10
7566	JONES	MANAGER	7839	1981-04-01	2975		20
7654	MARTIN	SALESMAN	7698	1981-09-10	1250	1400	30
7499	ALLEN	SALESMAN	7698	1981-02-11	1600	300	30
7844	TURNER	SALESMAN	7698	1981-08-21	1500	0	30
7900	JAMES	CLERK	7698	1981-12-11	950		30
7521	WARD	SALESMAN	7698	1981-02-23	1250	500	30
7902	FORD	ANALYST	7566	1981-12-11	3000		20
7369	SMITH	CLERK	7902	1980-12-09	800		20
7788	SCOTT	ANALYST	7566	1982-12-22	3000		20
7876	ADAMS	CLERK	7788	1983-01-15	1100		20
7934	MILLER	CLERK	7782	1982-01-11	1300		10
	7839 7698 7782 7566 7654 7499 7844 7900 7521 7902 7369 7788 7876	7839 KING 7698 BLAKE 7782 CLARK 7566 JONES 7654 MARTIN 7499 ALLEN 7844 TURNER 7900 JAMES 7521 WARD 7902 FORD 7369 SMITH 7788 SCOTT 7876 ADAMS	7839 KING PRESIDENT 7698 BLAKE MANAGER 7782 CLARK MANAGER 7566 JONES MANAGER 7654 MARTIN SALESMAN 7499 ALLEN SALESMAN 7844 TURNER SALESMAN 7900 JAMES CLERK 7521 WARD SALESMAN 7902 FORD ANALYST 7369 SMITH CLERK 7788 SCOTT ANALYST 7876 ADAMS CLERK	7839 KING PRESIDENT 7698 BLAKE MANAGER 7839 7782 CLARK MANAGER 7839 7566 JONES MANAGER 7839 7654 MARTIN SALESMAN 7698 7499 ALLEN SALESMAN 7698 7844 TURNER SALESMAN 7698 7900 JAMES CLERK 7698 7521 WARD SALESMAN 7698 7902 FORD ANALYST 7566 7369 SMITH CLERK 7902 7788 SCOTT ANALYST 7566 7876 ADAMS CLERK 7788	7839 KING PRESIDENT 1981-11-17 7698 BLAKE MANAGER 7839 1981-05-01 7782 CLARK MANAGER 7839 1981-05-09 7566 JONES MANAGER 7839 1981-05-09 7564 MARTIN SALESMAN 7698 1981-04-01 7499 ALLEN SALESMAN 7698 1981-02-11 7844 TURNER SALESMAN 7698 1981-08-21 7900 JAMES CLERK 7698 1981-02-11 7521 WARD SALESMAN 7698 1981-02-23 7902 FORD ANALYST 7566 1981-12-11 7369 SMITH CLERK 7902 1980-12-09 7788 SCOTT ANALYST 7566 1982-12-22 7876 ADAMS CLERK 7788 1983-01-15	7839 KING PRESIDENT 1981-11-17 5000 7698 BLAKE MANAGER 7839 1981-05-01 2850 7782 CLARK MANAGER 7839 1981-05-09 2450 7566 JONES MANAGER 7839 1981-04-01 2975 7654 MARTIN SALESMAN 7698 1981-09-10 1250 7499 ALLEN SALESMAN 7698 1981-02-11 1600 7844 TURNER SALESMAN 7698 1981-08-21 1500 7900 JAMES CLERK 7698 1981-12-11 950 7521 WARD SALESMAN 7698 1981-02-23 1250 7902 FORD ANALYST 7566 1981-12-11 3000 7369 SMITH CLERK 7902 1980-12-09 800 7788 SCOTT ANALYST 7566 1982-12-22 3000 7876 ADAMS CLERK 7788 1983-01-15	7839 KING PRESIDENT 1981-11-17 5000 7698 BLAKE MANAGER 7839 1981-05-01 2850 7782 CLARK MANAGER 7839 1981-05-09 2450 7566 JONES MANAGER 7839 1981-04-01 2975 7654 MARTIN SALESMAN 7698 1981-09-10 1250 1400 7499 ALLEN SALESMAN 7698 1981-02-11 1600 300 7844 TURNER SALESMAN 7698 1981-08-21 1500 0 7900 JAMES CLERK 7698 1981-12-11 950 7521 WARD SALESMAN 7698 1981-02-23 1250 500 7902 FORD ANALYST 7566 1981-12-11 3000 7369 SMITH CLERK 7902 1980-12-09 800 7788 SCOTT ANALYST 7566 1982-12-22 3000 7876 ADAMS

select /*+ index(emp emp_deptno_job) */ ename,deptno, job from emp where deptno = 10 and job = 'MANAGER';

emp_deptno_job 인덱스 index range scan! emp 테이블



DEPTNO	JOB	ROWID
10	CLERK	AAAXAaAANAAAAE9AAN
10	MANAGER	AAAXAaAANAAAAE9AAC
10	PRESIDENT	AAAXAaAANAAAAE9AAA
20	ANALYST	AAAXAaAANAAAAE9AAJ
20	ANALYST	AAAXAaAANAAAAE9AAL
20	CLERK	AAAXAaAANAAAAE9AAK
20	CLERK	AAAXAaAANAAAAE9AAM
20	MANAGER	AAAXAaAANAAAAE9AAD
30	CLERK	AAAXAaAANAAAAE9AAH
30	MANAGER	AAAXAaAANAAAAE9AAB
30	SALESMAN	AAAXAaAANAAAAE9AAE
30	SALESMAN	AAAXAaAANAAAAE9AAF
30	SALESMAN	AAAXAaAANAAAAE9AAG
30	SALESMAN	AAAXAaAANAAAAE9AAI

ROWID	EMPNO	ENAME	JOB	MGR	
AAATc1AAHAAAAHeAAA	7839	KING	PRESIDENT		•••
AAATc1AAHAAAAHeAAB	7698	BLAKE	MANAGER	7839	
AAATc1AAHAAAAHeAAC	7782	CLARK	MANAGER	7839	
AAATc1AAHAAAAHeAAD	7566	JONES	MANAGER	7839	
AAATc1AAHAAAAHeAAE	7654	MARTIN	SALESMAN	7698	
AAATc1AAHAAAAHeAAF	7499	ALLEN	SALESMAN	7698	
AAATc1AAHAAAAHeAAG	7844	TURNER	SALESMAN	7698	
AAATc1AAHAAAAHeAAH	7900	JAMES	CLERK	7698	
AAATc1AAHAAAAHeAAI	7521	WARD	SALESMAN	7698	
AAATc1AAHAAAAHeAAJ	7902	FORD	ANALYST	7566	
AAATc1AAHAAAAHeAAK	7369	SMITH	CLERK	7902	
AAATc1AAHAAAAHeAAL	7788	SCOTT	ANALYST	7566	•••
AAATc1AAHAAAAHeAAM	7876	ADAMS	CLERK	7788	•••
AAATc1AAHAAAAHeAAN	7934	MILLER	CLERK	7782	

select ename,deptno, job from emp where job ='MANAGER';

full table scan!

emp_deptno_job 인덱스

DEPTNO	JOB	ROWID
10	CLERK	AAAW+FAAHAAAAK1AAN
10	MANAGER	AAAW+FAAHAAAAK1AAC
10	PRESIDENT	AAAW+FAAHAAAAK1AAA
20	ANALYST	AAAW+FAAHAAAAK1AAJ
20	ANALYST	AAAW+FAAHAAAAK1AAL
20	CLERK	AAAW+FAAHAAAAK1AAK
20	CLERK	AAAW+FAAHAAAAK1AAM
20	MANAGER	AAAW+FAAHAAAAK1AAD
30	CLERK	AAAW+FAAHAAAAK1AAH
30	MANAGER	AAAW+FAAHAAAAK1AAB
30	SALESMAN	AAAW+FAAHAAAAK1AAE
30	SALESMAN	AAAW+FAAHAAAAK1AAF
30	SALESMAN	AAAW+FAAHAAAAK1AAG
30	SALESMAN	AAAW+FAAHAAAAK1AAI

emp 테이블

ROWID	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	СОММ	DEPTNO
AAATc1AAHAAAAHeAAA	7839	KING	PRESIDENT		1981-11-17	5000		10
АААТс1ААНААААНеААВ	7698	BLAKE	MANAGER	7839	1981-05-01	2850		30
AAATc1AAHAAAAHeAAC	7782	CLARK	MANAGER	7839	1981-05-09	2450		10
AAATc1AAHAAAAHeAAD	7566	JONES	MANAGER	7839	1981-04-01	2975		20
AAATc1AAHAAAAHeAAE	7654	MARTIN	SALESMAN	7698	1981-09-10	1250	1400	30
AAATc1AAHAAAAHeAAF	7499	ALLEN	SALESMAN	7698	1981-02-11	1600	300	30
AAATc1AAHAAAAHeAAG	7844	TURNER	SALESMAN	7698	1981-08-21	1500	0	30
AAATc1AAHAAAAHeAAH	7900	JAMES	CLERK	7698	1981-12-11	950		30
AAATc1AAHAAAAHeAAI	7521	WARD	SALESMAN	7698	1981-02-23	1250	500	30
AAATc1AAHAAAAHeAAJ	7902	FORD	ANALYST	7566	1981-12-11	3000		20
AAATc1AAHAAAAHeAAK	7369	SMITH	CLERK	7902	1980-12-09	800		20
AAATc1AAHAAAAHeAAL	7788	SCOTT	ANALYST	7566	1982-12-22	3000		20
AAATc1AAHAAAAHeAAM	7876	ADAMS	CLERK	7788	1983-01-15	1100		20
AAATc1AAHAAAAHeAAN	7934	MILLER	CLERK	7782	1982-01-11	1300		10

select /*+ index_ss(emp emp_deptno_job) */ ename,deptno, job from emp index skip scan! where job = 'MANAGER';

emp_deptno_job 인덱스

SALESMAN

SALESMAN

SALESMAN

AAAXAaAANAAAAE9AAF

AAAXAaAANAAAAE9AAG

AAAXAaAANAAAAE9AAI

	DEPTNO	JOB	ROWID
—	10	CLERK	AAAXAaAANAAAAE9AAN
←	10	MANAGER	AAAXAaAANAAAAE9AAC
	10	PRESIDENT	AAAXAaAANAAAAE9AAA
→	20	ANALYST	AAAXAaAANAAAAE9AAJ
	20	ANALYST	AAAXAaAANAAAAE9AAL
	20	CLERK	AAAXAaAANAAAAE9AAK
	20	CLERK	AAAXAaAANAAAAE9AAM
▼	20	MANAGER	AAAXAaAANAAAAE9AAD
→	30	CLERK	AAAXAaAANAAAAE9AAH
←	30	MANAGER	AAAXAaAANAAAAE9AAB
	30	SALESMAN	AAAXAaAANAAAAE9AAE

30

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emp 테이블

ROWID	EMPNO	ENAME	JOB	MGR	
АААТс1ААНААААНеААА	7839	KING	PRESIDENT		
АААТс1ААНААААНеААВ	7698	BLAKE	MANAGER	7839	
AAATc1AAHAAAAHeAAC	7782	CLARK	MANAGER	7839	
AAATc1AAHAAAAHeAAD	7566	JONES	MANAGER	7839	
AAATc1AAHAAAAHeAAE	7654	MARTIN	SALESMAN	7698	
АААТс1ААНААААНеААҒ	7499	ALLEN	SALESMAN	7698	
AAATc1AAHAAAAHeAAG	7844	TURNER	SALESMAN	7698	
AAATc1AAHAAAAHeAAH	7900	JAMES	CLERK	7698	
AAATc1AAHAAAAHeAAI	7521	WARD	SALESMAN	7698	
АААТс1ААНААААНеААЈ	7902	FORD	ANALYST	7566	
AAATc1AAHAAAAHeAAK	7369	SMITH	CLERK	7902	
AAATc1AAHAAAAHeAAL	7788	SCOTT	ANALYST	7566	
AAATc1AAHAAAAHeAAM	7876	ADAMS	CLERK	7788	
AAATc1AAHAAAAHeAAN	7934	MILLER	CLERK	7782	

index skip scan의 효과 높이는 결합 컬럼 인덱스는?

select ename, sal, job, deptno from emp where sal = 3000:

첫번째 컬럼의 데이터의 종류가 적은 인덱스

첫번째 컬럼의 데이터의 종류가 많은 인덱스

