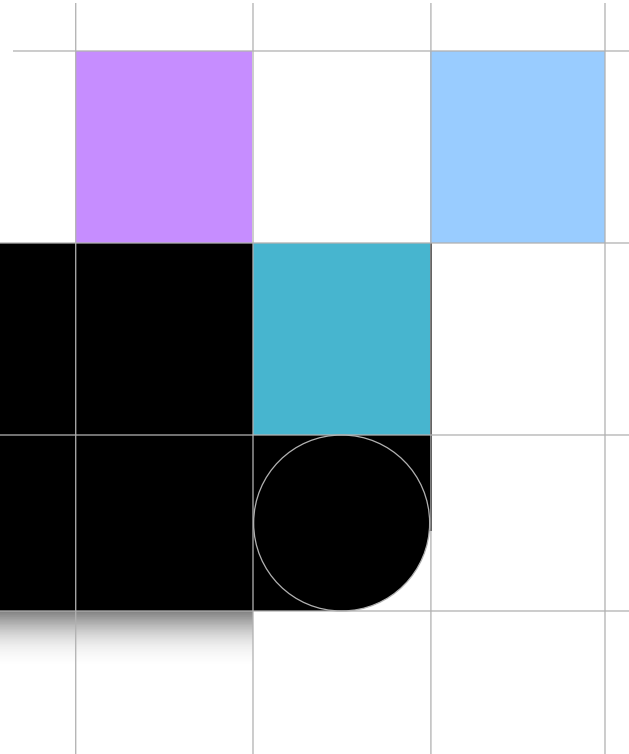


Index



1. Index

```
Select ename from emp where  
empid = 7934 ;
```

DBMS 는 어떻게 처리 할까 ?

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.00	30
7521	WARD	SALESMAN	7698	1981-02-22	1250.00	500.00	30
7566	JONES	MANAGER	7839	1981-04-02	2975.00	NULL	20
7698	BLAKE	MANAGER	7839	1981-05-01	2850.00	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450.00	NULL	10
7844	TURNER	SALESMAN	7698	1981-08-08	1500.00	0.00	30
7654	MARTIN	SALESMAN	7698	1981-08-28	1250.00	1400.00	30
7839	KING	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
7900	JAMES	CLERK	7698	1981-12-03	950.00	NULL	30
7902	FORD	ANALYST	7566	1981-12-03	3000.00	NULL	20
7934	MILLER	CLERK	7782	1982-01-23	1300.00	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000.00	NULL	20
7876	ADAMS	CLERK	7788	1983-01-12	1100.00	NULL	20

100만명의 정보

1. Index

- 방법 1: sequential search 7934

하나라씩
비교

1:1 matching

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.00	30
7521	WARD	SALESMAN	7698	1981-02-22	1250.00	500.00	30
7566	JONES	MANAGER	7839	1981-04-02	2975.00	NULL	20
7698	BLAKE	MANAGER	7839	1981-05-01	2850.00	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450.00	NULL	10
7844	TURNER	SALESMAN	7698	1981-08-08	1500.00	0.00	30
7654	MARTIN	SALESMAN	7698	1981-08-28	1250.00	1400.00	30
7839	KING	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
7900	JAMES	CLERK	7698	1981-12-03	950.00	NULL	30
7902	FORD	ANALYST	7566	1981-12-03	3000.00	NULL	20
7934	MILLER	CLERK	7782	1982-01-23	1300.00	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000.00	NULL	20
7876	ADAMS	CLERK	7788	1983-01-12	1100.00	NULL	20

1. Index

- 방법2: binary search 1934
 - 데이터가 empno 기준으로 정렬되어 있는 경우

필요!!

가운데서 비교

(1)



가운데 비교

(2)

(3)

(4)

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL	20
7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.00	30
7521	WARD	SALESMAN	7698	1981-02-22	1250.00	500.00	30
7566	JONES	MANAGER	7839	1981-04-02	2975.00	NULL	20
7654	MARTIN	SALESMAN	7698	1981-08-28	1250.00	1400.00	30
7698	BLAKE	MANAGER	7839	1981-05-01	2850.00	NULL	30
7782	CLARK	MANAGER	7839	1981-06-09	2450.00	NULL	10
7788	SCOTT	ANALYST	7566	1982-12-09	3000.00	NULL	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
7844	TURNER	SALESMAN	7698	1981-08-08	1500.00	0.00	30
7876	ADAMS	CLERK	7788	1983-01-12	1100.00	NULL	20
7900	JAMES	CLERK	7698	1981-12-03	950.00	NULL	30
7902	FORD	ANALYST	7566	1981-12-03	3000.00	NULL	20
7934	MILLER	CLERK	7782	1982-01-23	1300.00	NULL	10

간접

- 데이터가 갱신 될 때 마다 정렬작업을 하는 것은 비용부담이 크다

1. Index

- 방법3. Index 이용

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Index= keyword + address

1. Index

- 방법3. Index 이용

index (EMPNO) *다른 테이블 검색*

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	7369	SMITH	CLERK	7902	1980-12-17	800.00	NULL	20
7499	7499	ALLEN	SALESMAN	7698	1981-02-20	1600.00	300.00	30
7521	7521	WARD	SALESMAN	7698	1981-02-22	1250.00	500.00	30
7566	7566	JONES	MANAGER	7839	1981-04-02	2975.00	NULL	20
7654	7698	BLAKE	MANAGER	7839	1981-05-01	2850.00	NULL	30
7698	7782	CLARK	MANAGER	7839	1981-06-09	2450.00	NULL	10
7782	7844	TURNER	SALESMAN	7698	1981-08-08	1500.00	0.00	30
7788	7654	MARTIN	SALESMAN	7698	1981-08-28	1250.00	1400.00	30
7839	7839	KING	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
7844	7900	JAMES	CLERK	7698	1981-12-03	950.00	NULL	30
7876	7902	FORD	ANALYST	7566	1981-12-03	3000.00	NULL	20
7900	7934	MILLER	CLERK	7782	1982-01-23	1300.00	NULL	10
7902	7788	SCOTT	ANALYST	7566	1982-12-09	3000.00	NULL	20
7934	7876	ADAMS	CLERK	7788	1983-01-12	1100.00	NULL	20

* 새 정보 들어올때는
EMPNO index 에 정확히
넣음 *연속*

2. Index 의 설정

- Emp 테이블의 ename 컬럼에 인덱스 지정하기

The screenshot shows the SQL Developer interface. On the left, the 'SCHEMAS' pane shows the 'my_db' database with a list of tables. The 'emp' table is selected. On the right, the 'Table Name: emp' is entered. The 'Charset/Collation' is set to 'utf8mb4' and 'utf8mb4_0900_ai_ci'. The 'Comments' field is empty. Below this, a table lists the columns of the 'emp' table:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G
EMPNO	DECIMAL(4,0)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ENAME	VARCHAR(10)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
JOB	VARCHAR(9)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MGR	DECIMAL(4,0)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIREDATE	DATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SAL	DECIMAL(7,2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COMM	DECIMAL(7,2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below the table, the 'Column Name' field is empty. The 'Charset/Collation' is set to 'utf8mb4' and 'utf8mb4_0900_ai_ci'. The 'Comments' field is empty. At the bottom, the 'Columns' tab is selected, and the 'Indexes' tab is highlighted with a red box.

2. Index 의 설정

Query 1 emp emp - Table x

Table Name: emp Schema: my_db

Charset/Collation: utf8mb4 utf8mb4_0900_ai_ci Engine: InnoDB

Comments:

Index Name	Type
PRIMARY	PRIMARY
EMP_SELF_KEY	INDEX
EMP_FOREIGN_KEY	INDEX
(1) emp_ename	INDEX

Column	#	Order	Length
<input type="checkbox"/> EMPNO		ASC	
(2) <input checked="" type="checkbox"/> ENAME	1	ASC	
<input type="checkbox"/> JOB		ASC	
<input type="checkbox"/> MGR		ASC	
<input type="checkbox"/> HIREDATE		ASC	
<input type="checkbox"/> SAL		ASC	
<input type="checkbox"/> COMM		ASC	
<input type="checkbox"/> DEPTNO		ASC	

Index Options

Storage Type:

Key Block Size: 0

Parser:

Visible: ☒

Index Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

(3) Apply Revert

2. Index 의 설정

Apply SQL Script to Database



Review SQL Script

Apply SQL Script

Review the SQL Script to be Applied on the Database

Online DDL

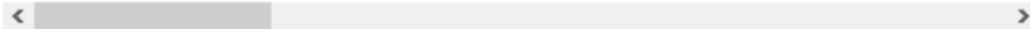
Algorithm:

Default

Lock Type:

Default

```
1 ALTER TABLE `my_db`.`emp`  
2 ADD INDEX `emp_ename` (`ENAME` ASC) VISIBLE;  
3 ALTER TABLE `my_db`.`emp` ALTER INDEX `EMP_FOREIGN_KEY` INVISIBLE;  
4
```

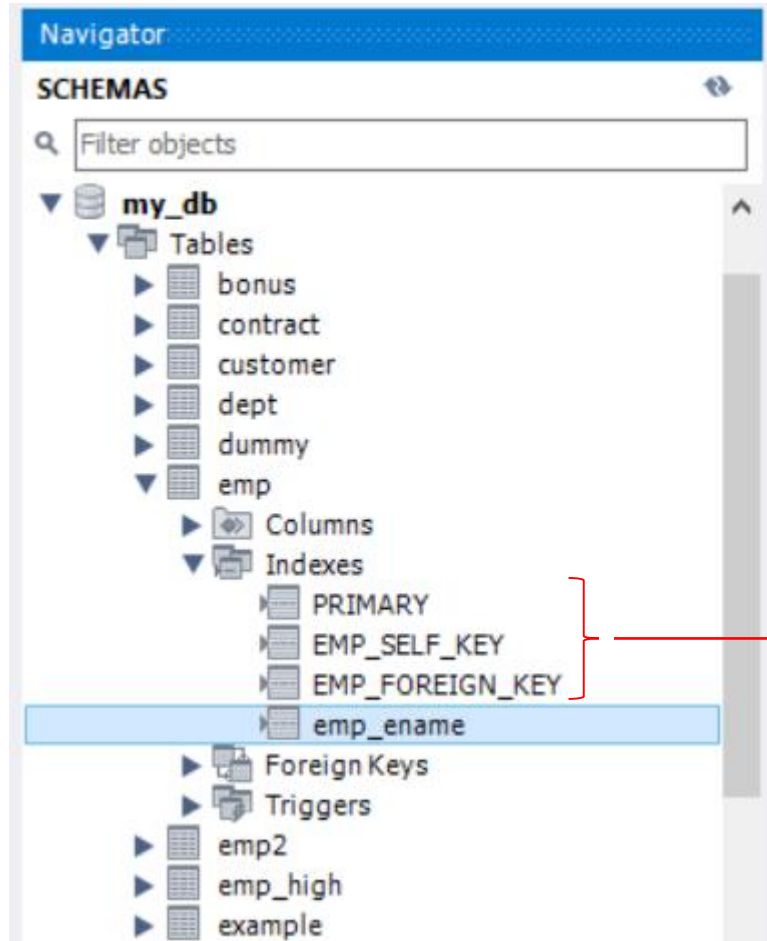


Back

Apply

Cancel

2. Index 의 설정



대부분의 DBMS 는
Primary key, foreign key 에 대해서
자동으로 index를 설정한다

자동으로 index를 설정하는지
확인하기
필요한지
확인하기

2. Index 의 설정

- SQL문으로 index 생성하기

```
create index idx_job on emp (job) ;
```

```
Show index on emp ;
```

emp Table의 job을
인덱스로 사용

```
1 • create index idx_job on emp (job) ;
```

```
2 • Show index from emp ;
```

```
3
```

```
4
```

Result Grid Filter Rows: Export: Wrap Cell Content:							
	Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality
▶	emp	0	PRIMARY	1	EMPNO	A	14
	emp	1	EMP_SELF_KEY	1	MGR	A	7
	emp	1	EMP_FOREIGN_KEY	1	DEPTNO	A	3
	emp	1	emp_ename	1	ENAME	A	14
	emp	1	idx_job	1	JOB	A	5