UNIT 3

Lecture 14

Referential Integrity Constraints on SQL

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Integrity Constraints on SQL

- UNIQUE
- NOT NULL
- PRIMARY KEY
- CHECK
- DEFAULT
- FOREIGN KEY

FOREIGN KEY CONSTRAINT

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project(pno)
);
```

FOREIGN KEY CONSTRAINT

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project
);
```

FOREIGN KEY CONSTRAINT

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3),
foreign key (pno) references project
);
```

FOREIGN KEY CONSTRAINT

PK

FK

STUDENT

Rollno	Sname	Sem	Branch	Marks	Pno
1	RAM	3	CSE	40	121
2	SHYAM	5	CSE	50	122
3	MOHAN	7	CSE	55	123
4	GOPAL	5	IT	65	121
5	RINKI	3	MECH	40	122
6	PINKI	3	ETC	90	123
7	DINESH	5	CSE	55	124

PK

PROJECT

Pno	Pname	Duration
121	P1	10
122	P2	20
123	P3	30

FOREIGN KEY CONSTRAINT

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pnum number(3) references project
);
```

FOREIGN KEY CONSTRAINT

```
create table project
(pno number(3) unique,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pnum number(3) references project(pno)
);
```

FOREIGN KEY CONSTRAINT (on delete cascade)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project(pno) on delete cascade
);
```

FOREIGN KEY CONSTRAINT (on delete set null)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project(pno) on delete set null
);
```

FOREIGN KEY CONSTRAINT (on delete restrict)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project(pno) on delete restrict
);
```

[Note : not supported in oracle]

FOREIGN KEY CONSTRAINT (on delete no action)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pno number(3) references project(pno) on delete no action
);
```

[Note : not supported in oracle]

FOREIGN KEY CONSTRAINT (on update cascade)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pnum number(3) references project(pno) on update cascade
);
```

[Note : not supported in oracle]

[Supported in MYSQL]

FOREIGN KEY CONSTRAINT (on update set null)

```
create table project
(pno number(3) primary key,
pname varchar2(20),
duration number(2)
);
```

```
create table student
(rollno number(3) primary key,
sname varchar2(20),
sem number(1),
branch varchar2(20),
marks number(2),
pnum number(3) references project(pno) on update set null
);
```

[Note : not supported in oracle]

[Supported in MYSQL]

GATE QUESTIONS

The following table has two attributes A and C where A is the primary key and C is the foreign key referencing A with on-delete cascade.

A	C
2	4
3	4
4	3
5	2
7	2
9	5
6	4

The set of all tuples that must be additionally deleted to preserve referential integrity when the tuple (2,4) is deleted is:

(A) (3,4) and (6,4)

(B) (5,2) and (7,2)

(C) (5,2), (7,2) and (9,5)

(D) (3,4), (4,3) and (6,4)

[GATE 2005]

GATE QUESTIONS

Consider a relation geq which represents “greater than or equal to”, that is, (x, y) ϵ geq only if y≥x.

create table geq

(lb integer not null,

ub integer not null,

primary key lb,

foreign key (ub) references geq on delete cascade)

Which of the following is possible if a tuple (x, y) is deleted?

(A) A tuple (z,w) with z > y is deleted

(B) A tuple (z,w) with z > x is deleted

(C) A tuple (z,w) with w < x is deleted

(D) The deletion of (x,y) is prohibited

[GATE 2001]

GATE QUESTIONS

Consider the following tables T1 and T2:

T1

P	Q
2	2
3	8
7	3
5	8
6	9
8	5
9	8

T2

R	S
2	2
8	3
3	2
9	7
5	7
7	2

In table T1, P is the primary key, Q is the foreign key referencing R in table T2 with on-delete cascade and on-update cascade. In table T2, R is the primary key and S is the foreign key referencing P in the table T1 with on-delete set NULL and on-update cascade. In order to delete record (3, 8) from table, numbers of additional record that need to be deleted from table T1 is _____.

[GATE 2017]

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The link for my youtube channel is

https://www.youtube.com/channel/UCRWGtE76JlTp1iim6aOTRuw?sub_confirmation=1