



Assignment Project Exam Help

SQL – Part 2

<https://eduassistpro.github.io>

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Data Manipulation Language (DML)

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- Data Manipulation Language

• <https://eduassistpro.github.io>

- UPDATE

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- DELETE

- SELECT

Data Manipulation Language – Insert, Update, Delete

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- The **INSERT** statement is used to add tuples into a relation.

```
INSERT INTO table_name
```

- T
se

```
UPDATE table_name
```

```
SET attribute_name = value...act  
[WHERE selection_condition];
```

- The **DELETE** statement is used to remove tuples from a relation.

```
DELETE FROM table_name
```

```
[WHERE selection_condition];
```



Insert - Examples

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The following three ways of inserting tuples into the relation 'STUDENT' are equivalent.

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```
INSERT INTO STUDENT(Name, StudentID, DOB, Email)
VALUES ('Tom', 456, '25/01/1988', 'tom@gmail.com');
INSERT INTO STUDENT
VALUES (458, 'Peter', '20/02/1991', 'peter@hotmail.com');
```

```
INSERT INTO STUDENT
VALUES (456, 'Tom', '25/01/1988', 'tom@gmail.com');
INSERT INTO STUDENT
VALUES (458, 'Peter', '20/02/1991', 'peter@hotmail.com');
```

Insert - Primary Key Violation

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- Suppose that we have the relation STUDENT with the primary key on StudentID:

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- What would happen if we try to recycle Tom's StudentID?

```
INSERT INTO STUDENT(StudentID, Name, DOB, Email)  
VALUES (456, 'Smith', '27/08/1989', 'smith@gmail.com');
```

- DBMSs will not allow two tuples with the same primary key value in STUDENT.

Insert - Foreign Key Violation

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- Consider the relations `STUDENT` and `ENROL` with the foreign key `[StudentID] \subseteq STUDENT[StudentID]`.

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- If we only have the above three tuples in `S`
following tuple into `ENROL`?

```
INSERT INTO ENROL(StudentID, Cours
VALUES (460, 'COMP2400', '2016 S2', 'active');
```

- Again, DBMSs will not allow a tuple in `ENROL` which has a student ID not appearing in any tuples of `STUDENT` due to the foreign key `[StudentID] \subseteq STUDENT[StudentID]` on `ENROL`.

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Update and Delete - Examples

- If we want to change Tom's email and name stored in the relation STUDENT, then we use

UPDATE STUDENT

- If we use <https://eduassistpro.github.io> we use
DELETE FROM STUDENT WHERE StudentID=456;

- We can delete all the tuples in the relation S

DELETE FROM STUDENT;

- **Question:** What is the difference between the a following one?

DROP Table STUDENT;

- **Answer:** The table STUDENT (empty) exists after the first statement, but would disappear if applying the second one.



Update and Delete - Referential Actions

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- Referential actions specify what happens in case of deleting or updating referenced tuples (via foreign key constraints).

- S

- <https://eduassistpro.github.io>

- **CASCADE** will force the referencing tuples to be deleted (or set to a new primary key value).

- **SET NULL** will force the corresponding value to be set to a null value (i.e., unknown).

- **SET DEFAULT** will force the corresponding values in the referencing tuples to be set to a specified default value.

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Referential Actions – Foreign Key

```
CREATE TABLE STUDENT
```

```
(StudentID INT PRIMARY KEY,  
Name VARCHAR(50),  
DoB Date,
```

```
CRE
```

<https://eduassistpro.github.io>

```
Unit SMALLINT);
```

```
CREATE TABLE ENROL
```

```
(StudentID INT  
CourseNo VARCHAR(20),  
Semester VARCHAR(50),  
Status VARCHAR(50),
```

```
FOREIGN KEY(StudentID) REFERENCES STUDENT(StudentID)
```

```
ON DELETE NO ACTION,
```

```
FOREIGN KEY(CourseNo) REFERENCES COURSE(No));
```

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Referential Actions - Examples

- Consider the following foreign key defined on ENROL:

FOREIGN KEY (StudentID) REFERENCES STUDENT (StudentID)
ON DELETE NO ACTION

StudentID	CourseID	SectionID	Status	EnrolDate
456	COMP2400	2016 S2	active	09/03/2016

STUDENT			
StudentID	Name	DOB	
456	Tom	25/01/19	
458	Peter	20/02/19	

- The deletion of a student who has enrolled at least one course will throw out an error concerning the foreign key.



Referential Actions - Examples

- Consider the following foreign key defined on ENROL:

FOREIGN KEY (StudentID) REFERENCES STUDENT (StudentID)
ON DELETE CASCADE

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StudentID	CourseNo	Semester	Status	EnrolDate
456	COMP2400	2016 S2	active	09/03/2016

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STUDENT			
StudentID	Name	DOB	
456	Tom	25/01/19	
458	Peter	20/02/19	

- Deleting a student in STUDENT will also delete all of his enrolled courses in ENROL. We would have ENROL below after deleting the student 456.

StudentID	CourseNo	Semester	Status	EnrolDate
458	COMP1130	2016 S1	active	25/02/2016