

# Introduction to **Databases with SQL**

Writing



71541 MUSEUM OF FINE ARTS, BOSTON, MASS.

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Create

Read

Update

Delete

# Insert

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
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Profusion of flowers

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12



Farmers working at dawn

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03



Spring outing

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03
3	Spring outing	14.76	1914-01-08

```
INSERT INTO table (column0, ...)  
VALUES  
(value0, ...);
```

```
INSERT INTO table (column0, ...)  
VALUES  
(value0, ...),  
(value1, ...),  
...;
```

.import

```
.import --csv --skip 1
```

```
INSERT INTO table0 (column0, ...)  
SELECT column0, ... FROM table1;
```

# Delete

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03
3	Spring outing	14.76	1914-01-08
4	Imaginative landscape	56.496	NULL
5	Peonies and butterfly	06.1899	1906-01-01
6	Tile Lunette	06.2437	1906-11-08
7	Statuette of a shrew	01.105	1901-02-11

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03
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7	Statuette of a shrew	01.105	1901-02-11

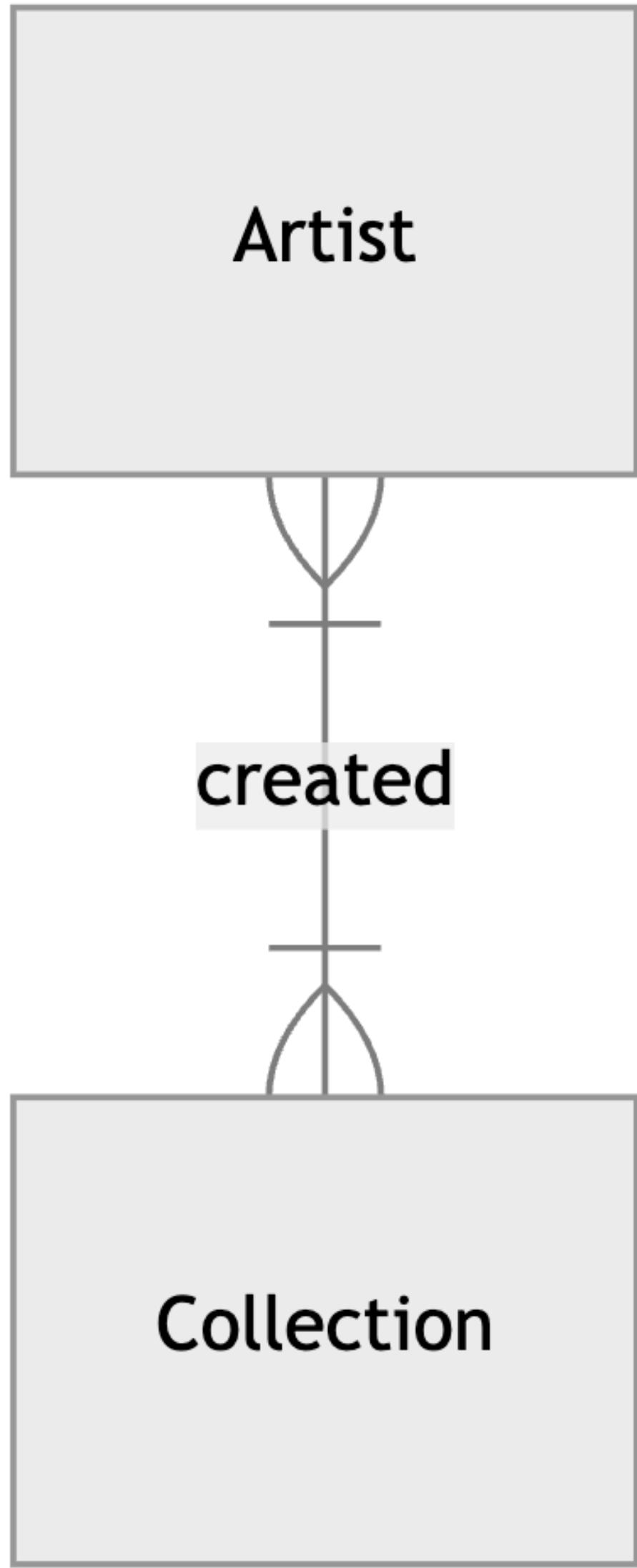
```
DELETE FROM table WHERE condition;
```

<b>id</b>	<b>title</b>	<b>accession_number</b>	<b>acquired</b>
1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03
5	Peonies and butterfly	06.1899	1906-01-01
6	Tile Lunette	06.2437	1906-11-08
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1	Profusion of flowers	56.257	1956-04-12
2	Farmers working at dawn	11.6152	1911-08-03

# Foreign Key Constraints



# artists

<b>id</b>	<b>name</b>
1	Li Yin
2	Qian Weicheng
3	Unidentified artist
4	Zhou Chen

# created

<b>artist_id</b>	<b>collection_id</b>
1	2
2	3
3	1
4	4

# collections

<b>id</b>	<b>title</b>
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# artists

id	name
1	Li Yin
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3	Unidentified artist
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# created

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2	3
3	1
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# created

artist_id	collection_id
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2	3
3	1
4	4

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

FOREIGN KEY("artist\_id") REFERENCES "artists"("id")

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE ...
```

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE RESTRICT
```

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE NO ACTION
```

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE SET NULL
```

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE SET DEFAULT
```

```
FOREIGN KEY("artist_id") REFERENCES "artists"("id")
ON DELETE CASCADE
```

# artists

<b>id</b>	<b>name</b>
1	Li Yin
2	Qian Weicheng
3	Unidentified artist
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# created

<b>artist_id</b>	<b>collection_id</b>
2	3
3	1
1	2
4	4

# collections

<b>id</b>	<b>title</b>
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

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# artists

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1	Li Yin
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4	Zhou Chen

# created

artist_id	collection_id
2	3
1	2
4	4

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# Update

# artists

<b>id</b>	<b>name</b>
1	Li Yin
2	Qian Weicheng
3	Unidentified artist
4	Zhou Chen

# created

<b>artist_id</b>	<b>collection_id</b>
2	3
3	1
1	2
4	4

# collections

<b>id</b>	<b>title</b>
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# artists

id	name
1	Li Yin
2	Qian Weicheng
3	Unidentified artist
4	Zhou Chen

# created

artist_id	collection_id
2	3
3	1
1	2
4	4

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# artists

id	name
1	Li Yin
2	Qian Weicheng
3	Unidentified artist
4	Zhou Chen

# created

artist_id	collection_id
2	3
1	1
1	2
4	4

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

```
UPDATE table  
SET column0 = value0, ...  
WHERE condition;
```

# Triggers

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# transactions

id	title	action

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Spring outing

# transactions

id	title	action

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...

# transactions

id	title	action

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...

# transactions

id	title	action
1	Spring outing	sold

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...

# transactions

id	title	action
1	Spring outing	sold

# collections

<b>id</b>	<b>title</b>
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Peonies and ...

# transactions

<b>id</b>	<b>title</b>	<b>action</b>
1	Spring outing	sold

# collections

id	title
1	Farmers working ...
2	Imaginative land...
3	Profusion of ...
4	Peonies and ...

# transactions

id	title	action
1	Spring outing	sold
2	Peonies and ...	bought

CREATE TRIGGER name

CREATE TRIGGER name

AFTER

CREATE TRIGGER name

BEFORE

CREATE TRIGGER name

BEFORE INSERT ON table

CREATE TRIGGER name

BEFORE UPDATE OF column ON table

CREATE TRIGGER name

BEFORE DELETE ON table

CREATE TRIGGER name

BEFORE DELETE ON table

BEGIN

CREATE TRIGGER name

BEFORE DELETE ON table

BEGIN

...

CREATE TRIGGER name

BEFORE DELETE ON table

BEGIN

...

END;

# Soft Deletions

# collections

<b>id</b>	<b>title</b>	<b>deleted</b>
1	Farmers working ...	0
2	Imaginative land...	0
3	Profusion of ...	0
4	Peonies and ...	0

# collections

<b>id</b>	<b>title</b>	<b>deleted</b>
1	Farmers working ...	0
2	Imaginative land...	0
3	Profusion of ...	0
4	Peonies and ...	0

# collections

id	title	deleted
1	Farmers working ...	1
2	Imaginative land...	0
3	Profusion of ...	0
4	Peonies and ...	0

# Introduction to **Databases with SQL**

Writing