Triggers & Scheduled Events

Sang Shin
www.javapassion.com
“Learning is fun!”

Topics

- What is a trigger?
- OLD and NEW values in UPDATE triggers
- Scheduled events

What is a Trigger?

What is a Trigger?

- A set of SQL statements that are automatically executed (“triggered”) when a specific event occurs
- Used for automating database operations
  - Logging
  - Creating snapshots
  - Computation of interesting values
  - Changing data in one table in response to a change in another

Mechanism of a Trigger

- A trigger is always associated with a particular table
- A trigger can be executed either before or after an event
- An event type can be
  - INSERT'ing record(s) into a table
  - UPDATE'ing record(s) of a table
  - DELETE'ing record(s) from a table
- There could be 6 possible triggers per table
  - 2 (Before/After) * 3 types of events (INSERT/UPDATE/DELETE)

Trigger Example of INSERT event

```
/* Create a trigger - before INSERT - log the change */
CREATE TRIGGER person_bi
  BEFORE INSERT ON person
  FOR EACH ROW
     INSERT INTO person_log (user, message, time)
     VALUES (CURRENT_USER(), 'New record is about to be added to
person table', NOW());

/* Create a trigger - after INSERT - log the change */
CREATE TRIGGER person_ai
  AFTER INSERT ON person
  FOR EACH ROW
     INSERT INTO person_log (user, message, time)
     VALUES (CURRENT_USER(), 'New record has been added to person
table', NOW());
```

Trigger Example of UPDATE event

```
/* Create a trigger - before UPDATE */
CREATE TRIGGER person_bu
  BEFORE UPDATE ON person
  FOR EACH ROW
     INSERT INTO person_log (user, message, time)
     VALUES (CURRENT_USER(), 'A record is about to be updated in
person table', NOW());

/* Create a trigger - after UPDATE */
CREATE TRIGGER person_au
  AFTER UPDATE ON person
  FOR EACH ROW
     INSERT INTO person_log (user, message, time)
     VALUES (CURRENT_USER(), 'A record has been updated in person
table', NOW());
```

OLD and NEW Values in UPDATE Triggers

OLD and NEW Values

- In the UPDATE trigger
  - Old values can be accessible through OLD.<name-of-field>
  - New values can be accessible through NEW.<name-of-field>

OLD & NEW values in Update Trigger

```
/* Create a trigger - before UPDATE */
CREATE TRIGGER person_bu
  BEFORE UPDATE ON person
  FOR EACH ROW
     INSERT INTO person_log2 (user, old_value, new_value, time)
     VALUES (CURRENT_USER(), OLD.first_name, NEW.first_name,
NOW());

/* Create a trigger - after UPDATE */
CREATE TRIGGER person_au
  AFTER UPDATE ON person
  FOR EACH ROW
     INSERT INTO person_log2 (user, old_value, new_value, time)
     VALUES (CURRENT_USER(), OLD.first_name, NEW.first_name,
NOW());
```

Scheduled Events

What is Scheduled Event?

- A set of SQL statements can be executed on a time-based schedule through ON SCHEDULE <interval>
  - Once or repeatedly at predefined intervals
  - Every day, every 90 minutes, every 2 hour
- Like triggers, a scheduled event is always associated with a particular table
- Usage examples
  - Log file rotation
  - Statistics gathering
  - Counter updates

What is Scheduled Event?

- A set of SQL statements can be executed on a time-based schedule through ON SCHEDULE <interval>
  - Once or repeatedly at predefined intervals
  - Every day, every 90 minutes, every 2 hour
- Like triggers, a scheduled event is always associated with a particular table
- Usage examples
  - Log file rotation
  - Statistics gathering
  - Counter updates

Repeating (Recurring) Event Examples

```
/* Create an event handler for every minute */
CREATE EVENT myevent_per_minute
ON SCHEDULE EVERY 1 MINUTE
STARTS CURRENT_TIMESTAMP
ENDS '2020-05-03 10:00:00'
ENABLE
DO
   INSERT INTO person_log3 (user, message, time)
   VALUES (CURRENT_USER(), 'Useless message', NOW());

/* Create an event handler for every hour */
CREATE EVENT myevent_per_hour
ON SCHEDULE EVERY 1 HOUR
STARTS CURRENT_TIMESTAMP
ENABLE
DO
   TRUNCATE person_log3;
```

One-time Event Example

```
/* Create onetime event handler */
CREATE EVENT myevent_onetime
ON SCHEDULE AT '2010-04-08 12:36'
ENABLE
DO
   INSERT INTO person_log3 (user, message, time)
   VALUES (CURRENT_USER(), 'Onetime useless message', NOW());
```

Thank you!

Sang Shin
http://www.javapassion.com
“Learning is fun!”