University of Central Florida
CGS 2545
Database Concepts

DEPARTMENT OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE

COMPUTER SCIENCE DIVISION

Using Sequences

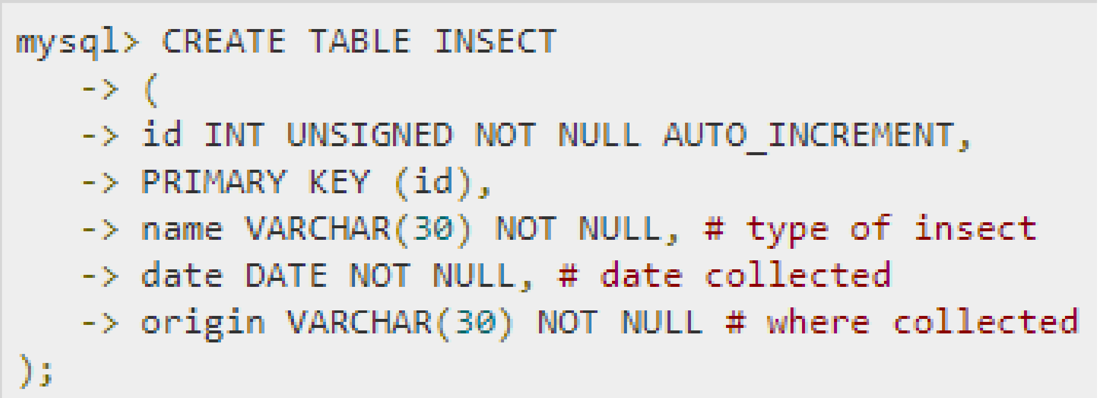
- A sequence is a set of integers 1, 2, 3, ... that are generated in order on demand.
- Sequences are frequently used in databases because many applications require each row in a table to contain a unique value and sequences provide an easy way to generate them.

Using Sequences

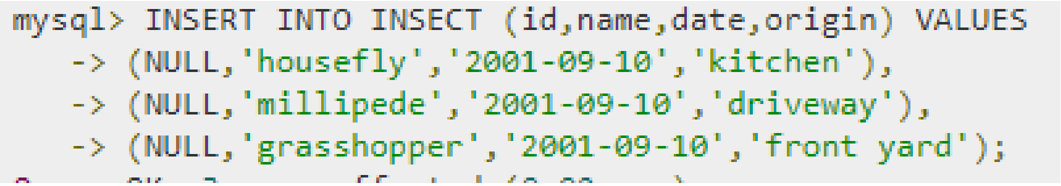
- Using AUTO_INCREMENT column
  - The simplest way in MySQL to use sequences is to define a column as AUTO_INCREMENT and leave the rest to MySQL to take care.
- Example
  - The following example will create a table and after that it will insert a few rows in this table where it is not required to give a record ID because its auto-incremented by MySQL.

Using Sequences

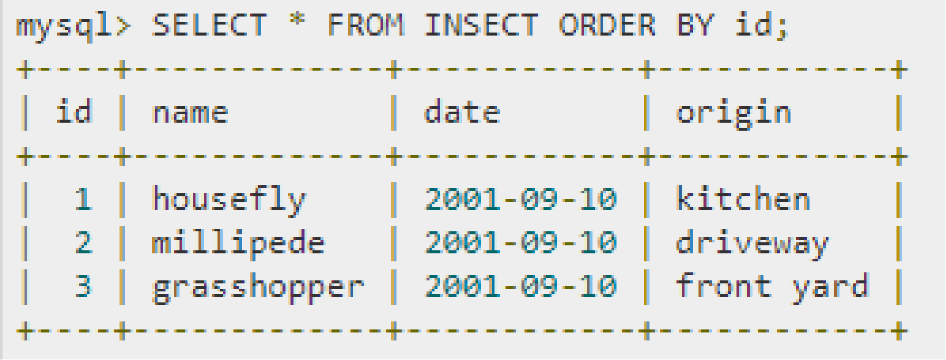
- Example



```
mysql> CREATE TABLE INSECT
   -> (
   -> id INT UNSIGNED NOT NULL AUTO_INCREMENT,
   -> PRIMARY KEY (id),
   -> name VARCHAR(30) NOT NULL, # type of insect
   -> date DATE NOT NULL, # date collected
   -> origin VARCHAR(30) NOT NULL # where collected
);
```



```
mysql> INSERT INTO INSECT (id,name,date,origin) VALUES
   -> (NULL,'housefly','2001-09-10','kitchen'),
   -> (NULL,'millipede','2001-09-10','driveway'),
   -> (NULL,'grasshopper','2001-09-10','front yard');
```



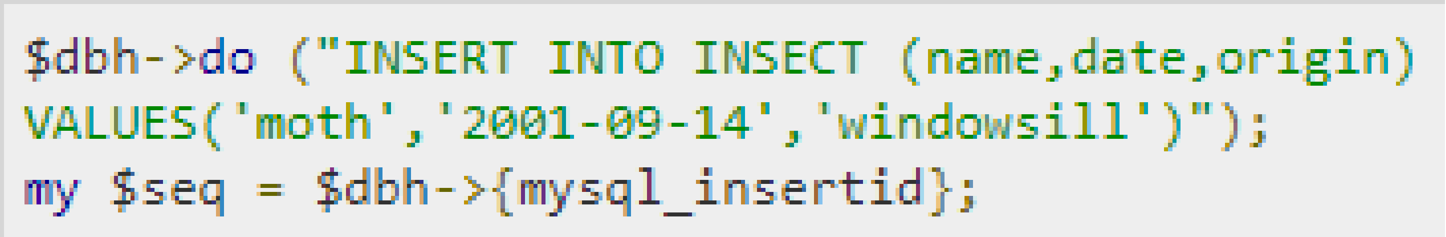
```
mysql> SELECT * FROM INSECT ORDER BY id;
+----+-------------+------------+------------+
| id | name        | date       | origin     |
+----+-------------+------------+------------+
|  1 | housefly    | 2001-09-10 | kitchen    |
|  2 | millipede   | 2001-09-10 | driveway   |
|  3 | grasshopper | 2001-09-10 | front yard |
+----+-------------+------------+------------+
```

Using Sequences

- Obtain AUTO_INCREMENT Values
  - The LAST_INSERT_ID( ) is an SQL function, so you can use it from within any client that understands how to issue SQL statements.
  - Otherwise PERL and PHP scripts provide exclusive functions to retrieve auto-incremented value of last record.

Using Sequences

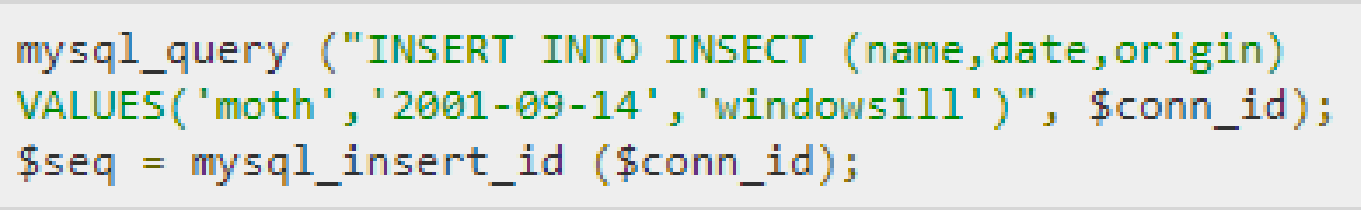
- PERL Example
  - Use the **mysql_insertid** attribute to obtain the AUTO_INCREMENT value generated by a query.
  - This attribute is accessed through either a database handle or a statement handle, depending on how you issue the query.
  - The following example references it through the database handle.



```
$dbh->do ("INSERT INTO INSECT (name,date,origin)
VALUES('moth','2001-09-14','windowsill')");
my $seq = $dbh->{mysql_insertid};
```

Using Sequences

- PHP Example
  - After issuing a query that generates an AUTO_INCREMENT value, retrieve the value by calling the **mysql_insert_id( )** function.



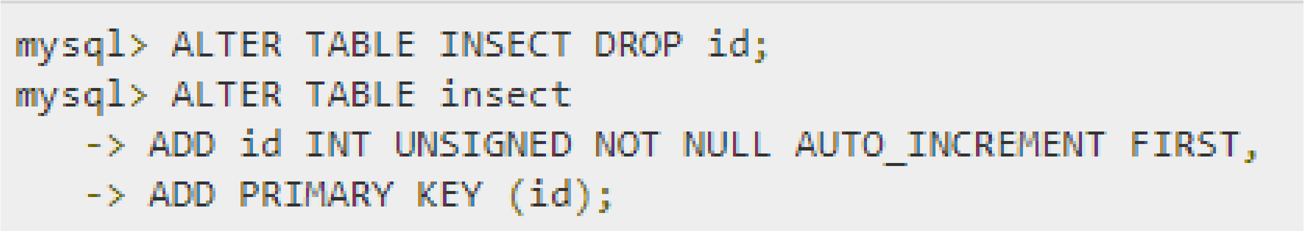
```
mysql_query ("INSERT INTO INSECT (name,date,origin)
VALUES('moth','2001-09-14','windowsill')", $conn_id);
$seq = mysql_insert_id ($conn_id);
```

Using Sequences

- Renumbering an Existing Sequence
  - There may be a case when you have deleted many records from a table and you want to re-sequence all the records.
  - This can be done by using a simple trick, but you should be very careful to do this and check if your table is having a join with another table or not.
  - If you determine that resequencing an AUTO_INCREMENT column is unavoidable, the way to do it is to drop the column from the table, then add it again.

Using Sequences

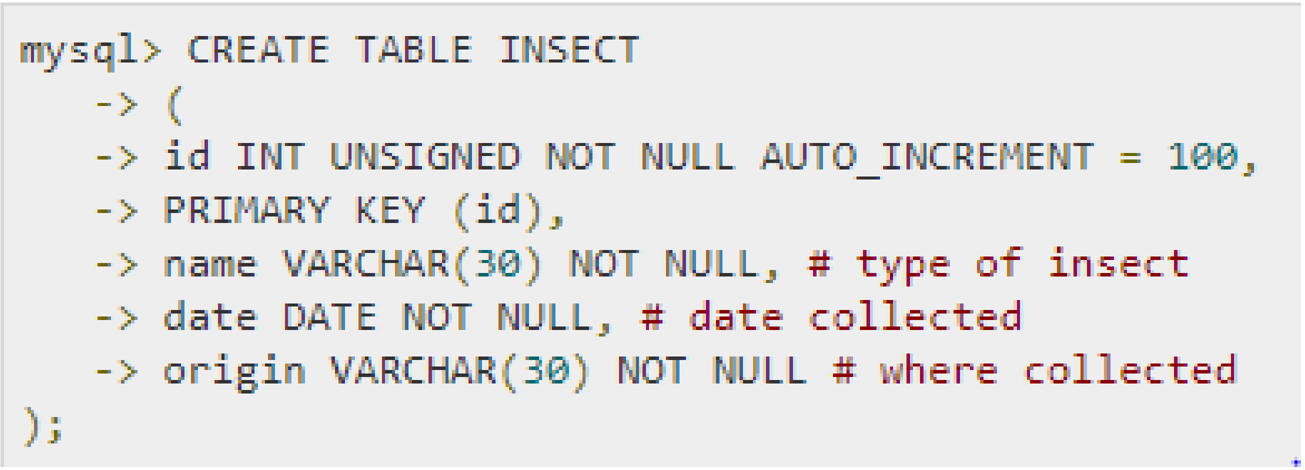
- Renumbering an Existing Sequence
  - The following example shows how to renumber the id values in the insect table using this technique.



```
mysql> ALTER TABLE INSECT DROP id;
mysql> ALTER TABLE insect
   -> ADD id INT UNSIGNED NOT NULL AUTO_INCREMENT FIRST,
   -> ADD PRIMARY KEY (id);
```

Using Sequences

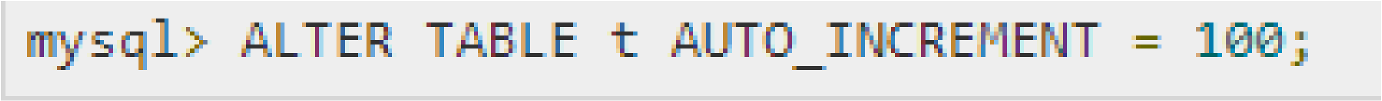
- Starting a Sequence at a Particular Value
  - By default, MySQL will start the sequence from 1, but you can specify any other number as well at the time of table creation.
  - The following code block has an example where MySQL will start sequence from 100.



```
mysql> CREATE TABLE INSECT
    -> (
    -> id INT UNSIGNED NOT NULL AUTO_INCREMENT = 100,
    -> PRIMARY KEY (id),
    -> name VARCHAR(30) NOT NULL, # type of insect
    -> date DATE NOT NULL, # date collected
    -> origin VARCHAR(30) NOT NULL # where collected
);
```

Using Sequences

- Starting a Sequence at a Particular Value
  - Alternatively, you can create the table and then set the initial sequence value with ALTER TABLE.



```
mysql> ALTER TABLE t AUTO_INCREMENT = 100;
```