

# POSTGRESQL - PERL INTERFACE

[http://www.tutorialspoint.com/postgresql/postgresql\\_perl.htm](http://www.tutorialspoint.com/postgresql/postgresql_perl.htm)

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## Installation

The PostgreSQL can be integrated with Perl using Perl DBI module, which is a database access module for the Perl programming language. It defines a set of methods, variables and conventions that provide a standard database interface.

Here are simple steps to install DBI module on your Linux/Unix machine:

```
$ wget http://search.cpan.org/CPAN/authors/id/T/TI/TIMB/DBI-1.625.tar.gz
$ tar xvfz DBI-1.625.tar.gz
$ cd DBI-1.625
$ perl Makefile.PL
$ make
$ make install
```

If you need to install SQLite driver for DBI, then it can be installed as follows:

```
$ wget http://search.cpan.org/CPAN/authors/id/T/TU/TURSTEP/DBD-Pg-2.19.3.tar.gz
$ tar xvfz DBD-Pg-2.19.3.tar.gz
$ cd DBD-Pg-2.19.3
$ perl Makefile.PL
$ make
$ make install
```

Before you start using Perl PostgreSQL interface, find **pg\_hba.conf** file in your PostgreSQL installation directory and add the following line:

```
# IPv4 local connections:
host      all             all             127.0.0.1/32          md5
```

You can start/restart postgres server in case it is not running using the following command:

```
[root@host]# service postgresql restart
Stopping postgresql service: [ OK ]
Starting postgresql service: [ OK ]
```

## DBI Interface APIs

Following are important DBI routines which can suffice your requirement to work with SQLite database from your Perl program. If you are looking for a more sophisticated application, then you can look into Perl DBI official documentation.

S.N.	API & Description
1	<b>DBI-&gt;connect(\$data_source, "userid", "password", \%attr)</b>  Establishes a database connection, or session, to the requested \$data_source. Returns a database handle object if the connection succeeds.  Datasource has the form like : <b>DBI:Pg:dbname=\$database;host=127.0.0.1;port=5432</b> Pg is PostgreSQL driver name and testdb is the name of database.
2	<b>\$dbh-&gt;do(\$sql)</b>  This routine prepares and executes a single SQL statement. Returns the number of rows affected or undef on error. A return value of -1 means the number of rows is not known, not applicable, or not available. Here \$dbh is a handle returned by DBI->connect() call.

3	<b><code>\$dbh-&gt;prepare(\$sql)</code></b>  This routine prepares a statement for later execution by the database engine and returns a reference to a statement handle object.
4	<b><code>\$sth-&gt;execute()</code></b>  This routine performs whatever processing is necessary to execute the prepared statement. An undef is returned if an error occurs. A successful execute always returns true regardless of the number of rows affected. Here \$sth is a statement handle returned by \$dbh->prepare(\$sql) call.
5	<b><code>\$sth-&gt;fetchrow_array()</code></b>  This routine fetches the next row of data and returns it as a list containing the field values. Null fields are returned as undef values in the list.
6	<b><code>\$DBI::err</code></b>  This is equivalent to \$h->err, where \$h is any of the handle types like \$dbh, \$sth, or \$drh. This returns native database engine error code from the last driver method called.
7	<b><code>\$DBI::errstr</code></b>  This is equivalent to \$h->errstr, where \$h is any of the handle types like \$dbh, \$sth, or \$drh. This returns the native database engine error message from the last DBI method called.
8	<b><code>\$dbh-&gt;disconnect()</code></b>  This routine closes a database connection previously opened by a call to DBI->connect().

## Connecting To Database

Following Perl code shows how to connect to an existing database. If database does not exist, then it will be created and finally a database object will be returned.

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver    = "Pg";
my $database  = "testdb";
my $dsn = "DBI:$driver:dbname=$database:host=127.0.0.1;port=5432";
my $userid = "postgres";
my $password = "pass123";
my $dbh = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
    or die $DBI::errstr;

print "Opened database successfully\n";
```

Now, let's run above program to open our database **testdb**, if database is successfully opened then it will give following message:

```
Open database successfully
```

## Create a Table

Following Perl program will be used to create a table in previously created database:

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver    = "Pg";
my $database  = "testdb";
my $dsn       = "DBI:$driver:dbname=$database;host=127.0.0.1;port=5432";
my $userid    = "postgres";
my $password  = "pass123";
my $dbh = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
    or die $DBI::errstr;
print "Opened database successfully\n";

my $stmt = qq(CREATE TABLE COMPANY
              (ID INT PRIMARY KEY      NOT NULL,
               NAME TEXT      NOT NULL,
               AGE INT      NOT NULL,
               ADDRESS CHAR(50),
               SALARY REAL););
my $rv = $dbh->do($stmt);
if($rv < 0){
    print $DBI::errstr;
} else {
    print "Table created successfully\n";
}
$dbh->disconnect();
```

When above program is executed, it will create COMPANY table in your **testdb** and it will display the following messages:

```
Opened database successfully
Table created successfully
```

## INSERT Operation

Following Perl program shows how we can create records in our COMPANY table created in above example:

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver    = "Pg";
my $database  = "testdb";
my $dsn       = "DBI:$driver:dbname=$database;host=127.0.0.1;port=5432";
my $userid    = "postgres";
my $password  = "pass123";
my $dbh = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
    or die $DBI::errstr;
print "Opened database successfully\n";

my $stmt = qq(INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY)
              VALUES (1, 'Paul', 32, 'California', 20000.00 ));
my $rv = $dbh->do($stmt) or die $DBI::errstr;

$stmt = qq(INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY)
          VALUES (2, 'Allen', 25, 'Texas', 15000.00 ));
$rv = $dbh->do($stmt) or die $DBI::errstr;

$stmt = qq(INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY)
          VALUES (3, 'Teddy', 23, 'Norway', 20000.00 ));
$rv = $dbh->do($stmt) or die $DBI::errstr;

$stmt = qq(INSERT INTO COMPANY (ID,NAME,AGE,ADDRESS,SALARY)
          VALUES (4, 'Mark', 25, 'Rich-Mond ', 65000.00 ));
$rv = $dbh->do($stmt) or die $DBI::errstr;
```

```
print "Records created successfully\n";
$dbh->disconnect();
```

When above program is executed, it will create given records in COMPANY table and will display the following two lines:

```
Opened database successfully
Records created successfully
```

## SELECT Operation

Following Perl program shows how we can fetch and display records from our COMPANY table created in above example:

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver   = "Pg";
my $database = "testdb";
my $dsn = "DBI:$driver:dbname=$database;host=127.0.0.1;port=5432";
my $userid = "postgres";
my $password = "pass123";
my $dbh = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
    or die $DBI::errstr;
print "Opened database successfully\n";

my $stmt = qq(SELECT id, name, address, salary from COMPANY);
my $sth = $dbh->prepare( $stmt );
my $rv = $sth->execute() or die $DBI::errstr;
if($rv < 0){
    print $DBI::errstr;
}
while(my @row = $sth->fetchrow_array()) {
    print "ID = ". $row[0] . "\n";
    print "NAME = ". $row[1] . "\n";
    print "ADDRESS = ". $row[2] . "\n";
    print "SALARY = ". $row[3] . "\n\n";
}
print "Operation done successfully\n";
$dbh->disconnect();
```

When above program is executed, it will produce the following result:

```
Opened database successfully
ID = 1
NAME = Paul
ADDRESS = California
SALARY = 20000

ID = 2
NAME = Allen
ADDRESS = Texas
SALARY = 15000

ID = 3
NAME = Teddy
ADDRESS = Norway
SALARY = 20000

ID = 4
NAME = Mark
ADDRESS = Rich-Mond
SALARY = 65000

Operation done successfully
```

## UPDATE Operation

Following Perl code shows how we can use UPDATE statement to update any record and then fetch and display updated records from our COMPANY table:

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver    = "Pg";
my $database  = "testdb";
my $dsn       = "DBI:$driver:dbname=$database;host=127.0.0.1;port=5432";
my $userid    = "postgres";
my $password  = "pass123";
my $dbh       = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
                or die $DBI::errstr;
print "Opened database successfully\n";

my $stmt = qq(UPDATE COMPANY set SALARY = 25000.00 where ID=1;);
my $rv = $dbh->do($stmt) or die $DBI::errstr;
if( $rv < 0 ){
    print $DBI::errstr;
}else{
    print "Total number of rows updated : $rv\n";
}
$stmt = qq(SELECT id, name, address, salary from COMPANY;);
my $sth = $dbh->prepare( $stmt );
$rv = $sth->execute() or die $DBI::errstr;
if($rv < 0){
    print $DBI::errstr;
}
while(my @row = $sth->fetchrow_array()) {
    print "ID = ". $row[0] . "\n";
    print "NAME = ". $row[1] . "\n";
    print "ADDRESS = ". $row[2] . "\n";
    print "SALARY = ". $row[3] . "\n\n";
}
print "Operation done successfully\n";
$dbh->disconnect();
```

When above program is executed, it will produce the following result:

```
Opened database successfully
Total number of rows updated : 1
ID = 1
NAME = Paul
ADDRESS = California
SALARY = 25000

ID = 2
NAME = Allen
ADDRESS = Texas
SALARY = 15000

ID = 3
NAME = Teddy
ADDRESS = Norway
SALARY = 20000

ID = 4
NAME = Mark
ADDRESS = Rich-Mond
SALARY = 65000

Operation done successfully
```

## DELETE Operation

Following Perl code shows how we can use DELETE statement to delete any record and then fetch and display

remaining records from our COMPANY table:

```
#!/usr/bin/perl

use DBI;
use strict;

my $driver    = "Pg";
my $database  = "testdb";
my $dsn       = "DBI:$driver:dbname=$database;host=127.0.0.1;port=5432";
my $userid    = "postgres";
my $password  = "pass123";
my $dbh       = DBI->connect($dsn, $userid, $password, { RaiseError => 1 })
                or die $DBI::errstr;
print "Opened database successfully\n";

my $stmt = qq(DELETE from COMPANY where ID=2;);
my $rv = $dbh->do($stmt) or die $DBI::errstr;
if( $rv < 0 ){
    print $DBI::errstr;
}else{
    print "Total number of rows deleted : $rv\n";
}
$stmt = qq(SELECT id, name, address, salary from COMPANY;);
my $sth = $dbh->prepare( $stmt );
$rv = $sth->execute() or die $DBI::errstr;
if($rv < 0){
    print $DBI::errstr;
}
while(my @row = $sth->fetchrow_array()) {
    print "ID = ". $row[0] . "\n";
    print "NAME = ". $row[1] . "\n";
    print "ADDRESS = ". $row[2] . "\n";
    print "SALARY = ". $row[3] . "\n\n";
}
print "Operation done successfully\n";
$dbh->disconnect();
```

When above program is executed, it will produce the following result:

```
Opened database successfully
Total number of rows deleted : 1
ID = 1
NAME = Paul
ADDRESS = California
SALARY = 25000

ID = 3
NAME = Teddy
ADDRESS = Norway
SALARY = 20000

ID = 4
NAME = Mark
ADDRESS = Rich-Mond
SALARY = 65000

Operation done successfully
```