

Assignment Name: Query Builder in Laravel

Task 1: Explain what Laravel's query builder is and how it provides a simple and elegant way to interact with databases.

Explanation:

Laravel's query builder is a database abstraction layer that allows developers to interact with databases using a simple and elegant API. It provides a fluent, chainable interface for building and executing database queries, eliminating the need for writing raw SQL statements.

With the query builder, you can perform various operations like selecting, inserting, updating, and deleting data. The fluent interface allows you to chain methods together, making the code concise and readable.

The query builder also ensures database agnosticism, meaning you can switch between different database systems without changing your code. It handles parameter binding, protecting against SQL injection attacks, and provides query logging and debugging capabilities.

Overall, Laravel's query builder simplifies database interactions by abstracting the complexity of SQL, offering a clean and intuitive syntax. It enhances productivity, improves code maintainability, and provides a convenient way to work with databases in Laravel applications.

Task 2: Write the code to retrieve the "excerpt" and "description" columns from the "posts" table using Laravel's query builder. Store the result in the \$posts variable. Print the \$posts variable.

Controller method:

```
function getExcerptDescription() {  
    $posts = DB::table( 'posts' )->select( 'excerpt', 'description' )->get(); return $posts;  
}
```

Route:

```
Route::get( '/getExcerptDescription', [AssignmentController::class,  
'getExcerptDescription'] );
```

Task 3: Describe the purpose of the `distinct()` method in Laravel's query builder. How is it used in conjunction with the `select()` method?

Describe:

The **`distinct()`** method in Laravel's query builder is used to retrieve only unique rows from a table. It ensures that the query results do not contain any duplicate rows.

When used in conjunction with the **`select()`** method, **`distinct()`** modifies the select statement to return only distinct (unique) values for the specified columns. It filters out any duplicate rows based on the selected columns.

Example:

```
$uniquePosts = DB::table('posts')->select('title')->distinct()->get();
```

Task 4: Write the code to retrieve the first record from the "posts" table where the "id" is 2 using Laravel's query builder. Store the result in the `$posts` variable. Print the "description" column of the `$posts` variable.

Controller method:

```
function firstRecordDescription() {  
    $posts = DB::table( 'posts' )->where( 'id', '=', '2' )->first(); return $posts->description;  
}
```

Route:

```
Route::get( '/firstRecordDescription', [AssignmentController::class, 'firstRecordDescription'] );
```

Task 5: Write the code to retrieve the "description" column from the "posts" table where the "id" is 2 using Laravel's query builder. Store the result in the `$posts` variable. Print the `$posts` variable.

Controller method:

```
function getDescription() {  
    $posts = DB::table( 'posts' )->where( 'id', 2 )->pluck( 'description' ); return $posts;  
}
```

Route:

```
Route::get( '/getDescription', [AssignmentController::class, 'getDescription'] );
```

Task 6: Explain the difference between the `first()` and `find()` methods in Laravel's query builder. How are they used to retrieve single records?

Explanation:

In Laravel's query builder, the `first()` and `find()` methods are used to retrieve single records from a table, but they differ in how they are used and the underlying logic.

=> The `first()` method is used to retrieve the first record that matches the query conditions. It returns a single object containing the record's data.

Example:

```
$firstPost = DB::table( 'posts' )->first();
```

=> The `find()` method is used to retrieve a record based on its primary key value. It assumes that the primary key column in the table is named "id" by default.

Example:

```
$post = DB::table('posts')->find(2);
```

Task 7: Write the code to retrieve the "title" column from the "posts" table using Laravel's query builder. Store the result in the `$posts` variable. Print the `$posts` variable.

Controller method:

```
function getAllTitle() {  
    $posts = DB::table( 'posts' )->select( 'title' )->get(); return $posts;  
}
```

Route:

```
Route::get( '/getAllTitle', [AssignmentController::class, 'getAllTitle'] );
```

Task 8: Write the code to insert a new record into the "posts" table using Laravel's query builder. Set the "title" and "slug" columns to 'X', and the "excerpt" and "description" columns to 'excerpt' and 'description', respectively. Set the "is_published" column to true and the "min_to_read" column to 2. Print the result of the insert operation.

Route:

```
Route::post( '/insertPost', [AssignmentController::class, 'insertPost'] );
```

Controller method:

```
function insertPost() {  
    $result = DB::table( 'posts' )->insert( [  
        'title'          => 'X',  
        'slug'           => 'x',  
        'excerpt'        => 'excerpt',  
        'description'    => 'description',  
        'is_published' => true,  
        'min_to_read'    => 2,  
    ] );  
    return $result;  
}
```

Task 9: Write the code to update the "excerpt" and "description" columns of the record with the "id" of 2 in the "posts" table using Laravel's query builder. Set the new values to 'Laravel 10'. Print the number of affected rows.

Route:

```
Route::patch( '/update', [AssignmentController::class, 'update'] );
```

Controller method:

```
function update() {  
    $affectedRows = DB::table( 'posts' )->where( 'id', 2 )  
        ->update( [  
            'excerpt'      => 'Laravel 10',  
            'description' => 'Laravel 10',  
        ] );  
  
    return $affectedRows;  
}
```

Task 10: Write the code to delete the record with the "id" of 3 from the "posts" table using Laravel's query builder. Print the number of affected rows.

Route:

```
Route::delete( '/delete', [AssignmentController::class, 'delete'] );
```

Controller method:

```
function delete() {  
    $affectedRows = DB::table( 'posts' )->where( 'id', 3 )->delete(); return  
    $affectedRows;  
}
```

Task 11: Explain the purpose and usage of the aggregate methods `count()`, `sum()`, `avg()`, `max()`, and `min()` in Laravel's query builder. Provide an example of each.

Explanation:

In Laravel's query builder, the aggregate methods (`count()`, `sum()`, `avg()`, `max()`, and `min()`) are used to perform calculations on a specific column or set of columns in a table. These methods allow you to retrieve aggregated values and perform computations on your data. Here's an explanation and an example of each aggregate method:

1: `count()`: The `count()` method is used to retrieve the total count of records that match a specific condition. It returns the number of rows in the result set.

Example:

```
$count = DB::table('posts')->count();
```

2: `sum()`: The `sum()` method calculates the sum of a specific column's values. It is typically used on numeric columns.

Example:

```
$sum = DB::table('orders')->sum('amount');
```

3: `avg()`: The `avg()` method calculates the average value of a specific column. It is commonly used on numeric columns.

Example:

```
$avg = DB::table('orders')->avg('amount');
```

4: `max()`: The `max()` method retrieves the maximum value from a specific column. It is typically used on numeric or date/time columns.

Example:

```
$max = DB::table('orders')->max('amount');
```

5: `min()`: The `min()` method retrieves the minimum value from a specific column. It is commonly used on numeric or date/time columns.

Example:

```
$min = DB::table('orders')->min('amount');
```

Task 12: Describe how the `whereNot()` method is used in Laravel's query builder. Provide an example of its usage.

Describe:

In Laravel's query builder, the `whereNot()` method is used to add a "not equal" condition to the query. It allows you to retrieve records where a specific column's value is not equal to a given value.

The `whereNot()` method is typically used in combination with the `where()` method to add additional conditions to the query. It accepts two parameters: the column name and the value to compare against.

Usage:

```
$posts = DB::table('posts')->whereNot('is_published', '<>', false)->get();
```

Task 13: Explain the difference between the `exists()` and `doesn'tExist()` methods in Laravel's query builder. How are they used to check the existence of records?

Explanation:

In Laravel's query builder, the `exists()` and `doesn'tExist()` methods are used to check the existence of records in a table.

01- `exists()`: The `exists()` method is used to check if any records exist in a table that match a specific condition. It returns `true` if at least one record is found, and `false` otherwise.

Example:

```
$hasPublishedPosts = DB::table( 'posts' )->where( 'is_published', true )->exists();
```

02- `doesn'tExist()`: The `doesn'tExist()` method is the opposite of `exists()`. It is used to check if no records exist in a table that match a specific condition. It returns `true` if no records are found, and `false` otherwise.

Example:

```
$noPublishedPosts = DB::table( 'posts' )->where( 'is_published', false )->doesn'tExist();
```

Task 14: Write the code to retrieve records from the "posts" table where the "min_to_read" column is between 1 and 5 using Laravel's query builder. Store the result in the `$posts` variable. Print the `$posts` variable.

Route:

```
Route::get( '/getPostByMinRead', [AssignmentController::class, 'getPostByMinRead'] );
```

Controller method:

```
function getPostByMinRead() {  
    $posts = DB::table( 'posts' )->whereBetween( 'min_to_read', [1, 5] )->get(); return $posts;  
}
```

Task 15: Write the code to increment the "min_to_read" column value of the record with the "id" of 3 in the "posts" table by 1 using Laravel's query builder. Print the number of affected rows.

Route:

```
Route::post( '/increments', [AssignmentController::class, 'increments'] );
```

Controller method:

```
function increments() {  
    $posts = DB::table( 'posts' )->where( 'id', 3 )->increment( 'min_to_read', 1  
);  
    return $posts;  
}
```