

# Day-3: Building News Platform with Laravel API - Filtering, Sorting, and Pagination

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## Application overview:

Our goal is to create a News Platform's CRUD APIs with the following entities:

- **Category:** To categorize news articles.
- **News:** To store news articles.
- **Image:** To associate image album with news articles.
- **User:** To manage user accounts.

## Training program:

<b>Day-1</b>	Setup. CRUD for Category entity.
<b>Day-2</b>	CRUD for News, and Image entities. Upload image files to server. One-to-Many and Many-to-Many associations.
<b>Day-3</b>	Recap. Filtering, Sorting, and Pagination of list results.
<b>Day-4</b>	Laravel Passport authentication (OAuth2 token-based) Register, Login, Logout, and Profile APIs for User entity. Public vs. Protected endpoints.
<b>Day-5</b>	Integration with a ReactJS Frontend. Localization. Deployment (Docker).

## Learning objectives:

- Apply filtering to resource collection.
- Apply sorting to resource collection.
- Apply pagination to resource collection.
- Hands-on.

## Steps:

### 1- Environment

- Run XAMP control panel.
- Start Apache server
- Start MySQL server
- Open VS Code on previous project.

### 2- News Module (Resource -> Controller): Filter by attribute using `where()` and `whereBetween()`

- To filter by **visible** attribute:
- **Resource**
- Open `app/Http/Resources/NewsResource.php` file.
- Add the attribute to display it
- `'visible' => $this->resource->visible,`
- **Controller**
- Open `app/Http/Controllers/NewsController.php` file.
- The Eloquent `all()` method will return all of the results in the model's table.
- To build queries instead, the `query()` method will return a query builder that allows you to add constraints on the query and then call `get()` method to retrieve the results.
- To read attribute **visible** value from URL parameter **visible**:

```
public function index(Request $request)
{
    $articles = News::query();
    // Filter by attribute
    if($request->exists('visible')) {
        $visible = $request->boolean('visible'); // it parses 0/1, true/false, on/off into boolean
        $articles = $articles->where('visible','=',$visible);
    }
    $articles = $articles->get();
}
```

- To filter by **updated\_at** date attribute:
- **Resource**
- Open `app/Http/Resources/NewsResource.php` file.
- Add the attribute to display it
- `'updated_at' => $this->resource->updated_at,`
- **Controller**
- Open `app/Http/Controllers/NewsController.php` file.
- To read start and end dates from URL parameters **start\_date** and **end\_date**:

```
$start_date = $request->input('start_date');
$end_date = $request->input('end_date');
if ($start_date && $end_date) {
    $articles->whereBetween('updated_at', [$start_date, $end_date]);
}
```

### 3- News Module (Controller): Filter by relation using whereHas()

- **Controller**
- Open **app/Http/Controllers/NewsController.php** file.
- To read category id from URL parameter **category**:

```
- // Filter by category
- $category_id = $request->input('category');
- if ($category_id) {
-     $articles->whereHas('categories', function($query) use($category_id) {
-         $query->where('categories.id', $category_id);
-     });
- }
```
- To read category id **array** from URL parameter **category[]**:

```
- // $query->where('categories.id', $category_id);
- $query->whereIn('categories.id', $category_id);
```

### 4- News Module (Resource -> Controller): Filter by a query string

- To filter by query string in either **title** or **body** attribute:
- **Resource**
- Open **app/Http/Resources/NewsResource.php** file.
- Add the attribute to display it

```
- 'body' => $this->resource-> body,
```
- **Controller**
- Open **app/Http/Controllers/NewsController.php** file.
- To read query string from URL parameter **q**:

```
- // Filter by query string in title or body
- $q = $request->input('q');
- if ($q) {
-     $articles->where(function ($query) use ($q) {
-         $query->where('title', 'LIKE', '%' . $q . '%')->orWhere('body', 'LIKE', '%' . $q . '%');
-     });
- }
```

### 5- News Module (Controller): Sort by field and direction

- **Controller**
- Open **app/Http/Controllers/NewsController.php** file.
- To read sort criteria from URL parameters **sort\_field** and **sort\_direction**:

```
- // Sorting
- $sortField = $request->input('sort_field', 'id');
- $sortDirection = $request->input('sort_direction', 'DESC');
- $articles->orderBy($sortField, $sortDirection);
```

## 6- News Module (Controller): Pagination

- **Controller**

- Open **app/Http/Controllers/NewsController.php** file.

- To read page size from URL parameter **per\_page** or from default static variable **\$perPage**:

```
- // Pagination
- $perPage = $request->input('per_page', Controller::$perPage);
- $articles = $articles->paginate($perPage);
- $articles->appends($request->query());
-
- //$articles = $articles->get();
-
- return response()->json([
-     "status" => "success",
-     "error" => false,
-     //"data" => new NewsCollection($articles),
-     "data" => $articles,
- ],200);
```

- The static variable **\$perPage** above is defined in super class **Controller**:

- Open **app/Http/Controllers/Controller.php** file.

```
- public static $perPage = 5;
```

- the **paginate()** method is not provided for resource collection like eloquent collection, therefore, a specific **macro** can be defined for resource collection. A **macro** allows to add methods or behaviors to existing classes without directly modifying their source code.

- Open **app/Providers/AppServiceProvider.php** file.

- Add the code in Appendix-I.

- **Controller**

- Open **app/Http/Controllers/NewsController.php** file.

- Update the **NewsController** as the following:

```
- // Paginatable collection
- $articles = new NewsCollection($articles->get());
-
- // Pagination
- $perPage = $request->input('per_page', Controller::$perPage);
- $articles = $articles->paginate($perPage);
- $articles->appends($request->query());
-
- //$articles = $articles->get();
-
- return response()->json([
-     "status" => "success",
-     "error" => false,
-     //"data" => new NewsCollection($articles),
-     "data" => $articles,
- ],200);
```

- Another approach without using **macro**:
- **Controller**
- Open **app/Http/Controllers/NewsController.php** file.
- Update the **NewsController** as the following:
 

```

- // Paginatable collection
- // $articles = new NewsCollection($articles->get());
-
- // Pagination
- $perPage = $request->input('per_page', Controller::$perPage);
- $articles = $articles->paginate($perPage);
- $articles->appends($request->query());
-
- // $articles = $articles->get();
-
- return response()->json([
-     "status" => "success",
-     "error" => false,
-     "data" => new NewsCollection($articles),
-     // "data" => $articles,
-     'next_page_url' => $articles->nextPageUrl(),
-     'prev_page_url' => $articles->previousPageUrl(),
-     'current_page' => $articles->currentPage(),
-     'last_page' => $articles->lastPage(),
-     'per_page' => $articles->perPage(),
-     'total' => $articles->total(),
- ],200);
-

```

## 7- Testing API with Postman

- Apache server is started.
- MySQL server started.
- Migrate changes to database schema.
- **php artisan migrate**
- Test the server running
- **php artisan serve**
- Open Postman
- **http://localhost:8000/api/category/\***
- **http://localhost:8000/api/news/\***
- **http://localhost:8000/api/album/\***
- For create, use **Body -> form-data**
- For update, use **Body -> x-www-form-urlencoded**

## Appendix-I

### *AppServiceProvider.php*

```
<?php

namespace App\Providers;

use Illuminate\Support\ServiceProvider;
use Illuminate\Support\Collection;
use Illuminate\Pagination\LengthAwarePaginator;

class AppServiceProvider extends ServiceProvider
{
    /**
     * Register any application services.
     *
     * @return void
     */
    public function register()
    {
        //
    }

    /**
     * Bootstrap any application services.
     *
     * @return void
     */
    public function boot()
    {
        /**
         * Paginate a standard Laravel Collection.
         *
         * @param int $perPage
         * @param int $total
         * @param int $page
         * @param string $pageName
         * @return array
         */
        Collection::macro('paginate', function($perPage, $total = null, $page = null, $pageName = 'page'): LengthAwarePaginator {
            $page = $page ?: LengthAwarePaginator::resolveCurrentPage($pageName);

            return new LengthAwarePaginator(
                $this->forPage($page, $perPage)->values(),
                $total ?: $this->count(),
                $perPage,
```

```
        $page,  
        [  
            'path' => LengthAwarePaginator::resolveCurrentPath(),  
            'pageName' => $pageName,  
        ]  
    );  
});  
}  
}
```