Senior Backend Developer Position - Technical Skill Assessment

Dear Candidate,

To evaluate your abilities and knowledge in Laravel development, here is a technical skill assessment consisting of three parts. Each part focuses on a specific aspect of backend development. Please find the details below:

Part 1: REST API Development

In this part, you will be building a simple REST API using Laravel. The API should have the following functionality:

1. User Registration:
   - Implement an endpoint to allow users to register by providing their name, email, and password.
   - Validate user input appropriately.

2. Authentication:
   - Implement JWT-based authentication for users to obtain an access token.
   - Use Laravel's built-in authentication middleware to protect sensitive endpoints.

3. Resource Management:
   - Create endpoints to manage a resource of your choice (e.g., products, tasks, articles).
   - Include functionality to create, read, update, and delete the resource.
   - Apply appropriate validation and error handling.

Part 2: Query Writing

In this part, you will demonstrate your ability to write queries using Laravel's query builder. Please complete the following tasks:

1. Task 1:
   - Write a query that retrieves all users who have made a purchase in the last 30 days.
   - Include their names, email addresses, and the total amount they have spent.

2. Task 2:
   - Write a query that retrieves the top 5 most purchased products.
   - Include the product name, total quantity sold, and the average rating.

Part 3: Query Refactoring

In this part, you will be given a complex and poorly performing SQL query, and your task is to refactor it to improve its performance. The query provided below is deliberately written inefficiently, and your goal is to optimize it using Laravel's query builder:

Query to Refactor:

```sql
SELECT *
FROM orders o
JOIN order_items oi ON o.id = oi.order_id
JOIN products p ON oi.product_id = p.id
JOIN categories c ON p.category_id = c.id
WHERE c.name = 'Electronics'
AND o.created_at > DATE_SUB(NOW(), INTERVAL 30 DAYS)
ORDER BY o.created_at DESC
LIMIT 10;
```

- Refactor the given query using Laravel's query builder to improve its performance.
- Ensure the refactored query returns the same results as the original query.
- Optimize the query to minimize the number of database operations and improve execution time.
- Consider indexing, eager loading, and other techniques to enhance performance.

Guidelines:

- Use Laravel framework and follow Laravel best practices.

- Provide clear instructions for running and testing your code.

- Use Git for version control and share your code repository with us.

Deliverables:

- Provide a GitHub or GitLab repository URL containing your project code for Part 1.

- Provide a separate file (e.g., a PHP file or a text file) for Part 2 and Part 3.

- Include a README file with instructions on how to set up and run the project.

Evaluation Criteria:

- Correctness and completeness of the implemented features in Part 1.

- Ability to write complex queries and handle query optimizations in Part 2 and Part 3.

- Code quality, including readability, maintainability, and adherence to Laravel best practices.

- Proper handling of user input validation and error handling.

Confidentiality Note:

The content of this assessment is confidential and should not be shared with anyone without written approval from Order. The tasks and details provided are intended solely for evaluating your skills for the Senior Backend Developer position.

Please complete the tasks within one week and share the respective deliverables with us. If you have any questions or need further clarification regarding the tasks, please don't hesitate to reach out to me.

Good luck, and I look forward to reviewing your work!