

1. Create a Laravel application that allows users to input a number N , calculates the sum of all numbers from 1 to N , and stores this information in a database. The application should display a list of all inputs and their corresponding sums.

Requirements:

Input Form:

A form where users can input a positive integer N

Calculation:

Upon form submission, the application should calculate the sum of all numbers from 1 to N

Database Storage:

The input number N and its corresponding sum should be stored in a database table.

Display Results:

A view that lists all stored numbers and their corresponding sums in a tabular format. Each entry should display the ID, the input number N and the calculated sum.

**** N can be upto 10^{18} ****

2. In an application for a manufacturing company, there's a need to validate the product codes entered by users. Product codes consist of a prefix, followed by a hyphen, and then a unique identifier. The prefix denotes the product category (e.g., "P" for Parts, "A" for Assemblies, "M" for Materials). The unique identifier is a combination of alphanumeric characters.

Your task is to create a form and implement a function `validate_product_code(code: str) -> bool` that takes a product code as input and returns True if the code is valid according to the following rules, and False otherwise:

- The product code must be in the format "PREFIX-IDENTIFIER", where PREFIX is a single uppercase letter denoting the product category, and IDENTIFIER is a combination of alphanumeric characters.
- The PREFIX must be one of the following: "P", "A", or "M".
- The IDENTIFIER must be a string of alphanumeric (A-Z or 1-9) characters.
- The total length of the product code (including the hyphen) must be between 3 and 20 characters.

Sample Test Cases:

`validate_product_code("A-XYZ789")` → True

`validate_product_code("P-")` → False # Missing identifier

***** You can use the upper project for this problem / task with a separate route. Make sure to add bootstrap 5 CDN for design.**