Database Schema Design

The schema includes two collections to handle image processing requests and product details:

1. Requests Collection

Schema Name: Request

Fields:

- `request_id` **(String, Required, Unique):** Unique ID for the request, used to track individual requests.
- `status` **(String, Required):** Current status of the request. Possible values are 'PENDING', 'PROCESSING', 'COMPLETED', or 'FAILED'.
- `csv_data` **(String, Optional):** Contains the CSV data related to the request, formatted as a JSON string.
- `created_at` **(Date, Default: Current Date):** Timestamp when the request was created.
- `updated_at` **(Date, Default: Current Date):** Timestamp when the request was last updated.

Operations:

- **Creating a Request:** When a CSV file is uploaded, a new request document is created with a unique `request_id` and status set to 'PENDING'.
- **Updating Request Status:** The request status is updated based on the processing state. It transitions from 'PENDING' to 'PROCESSING', and finally to 'COMPLETED' or 'FAILED' depending on the outcome of the image processing.

2. Products Collection

Schema Name: Product

Fields:

- `request_id` **(String, Required):** Links the product to a specific request using its unique ID.
- `product_name` **(String, Required):** The name of the product.
- `input_image_urls` **(Array of Strings, Required):** List of URLs pointing to the input images associated with the product.
- `output_image_urls` **(Array of Strings, Default: []):** List of URLs pointing to the processed images for the product.

Operations:

- **Creating a Product:** For each row in the CSV file, a new product document is created with the `request_id`, `product_name`, and URLs for the input images.
- **Updating Product Information:** After processing, the product document is updated to include the URLs of the processed images.

Database Interaction

Handling Requests:

- **Create Request:** A request document is created upon uploading a CSV file. The document is initialized with a `request_id` and a status of 'PENDING'.
- **Update Request Status:** As the image processing progresses, the request status is updated from 'PENDING' to 'PROCESSING', and finally to 'COMPLETED' or 'FAILED'.

Managing Products:

- **Create Product:** Each product entry from the CSV file creates a new document with the necessary details including `request_id`, `product_name`, and `input_image_urls`.
- **Update Product Information:** Once the images are processed, the product document is updated to include `output_image_urls`.