PIMS

Stores product information and Provides utilities.

Problem Statement

Design a system with mentioned Features

Feature 1

Multiple categories may be assigned to one article

Feature 2

category can be assigned to an unlimited number of articles, but only once to each article.

Feature 3

mass-assign multiple categories to a single article in one step.

Feature 4

Deleting a category won't affect articles

Feature 5

sort and filter by appropriate attributes.

Feature 6

Nested Categories

Tech Stack

Backend

Django Framework

Persistence Layer

PostgresSQL

UI layer

HTML, JQuery, CSS

Name Model

Article Model

Article

id	SKU	EAN	Name	Stock_quantity	price	Active
INT	INT	INT	JSON	INT	DECIMAL	BOOLEAN

```
{
    "Category1": true,
    "Category2": false,
    "Category3": true
}
```

User

Id	username
INT	String

API Design

Admin APIs

api/v1/admin/article/fetch   [GET, POST,PUT]

api/v1/admin/article/category/delete   [DELETE]

UI APIs

api/v1/ui/article/fetch/sorted [GET]

api/v1/ui/article/fetch.   [GET]

Features Revisited

Bulk category Assignment: -> PUT: new Category JSON-> Updates Old Category JSON

Category Unlimited Assignment but UNIQUE : -> PUT: new Category JSON-> Updates Old Category JSON-> Updated Category JSON Unique Keys

Single Article Mass Categories Assignment in ONE STEP: ->
CASE1=> Article has at least one category
PUT: new Category JSON-> Updates Old Category JSON-> Updated Category JSON
CASE2=> Article has no category
PUT: new Category JSON-> Updates EMPTY JSON-> Updated Category JSON

Category Deletion: -> DELETE: disable category in Category JSON

Sort and filter by appropriate attributes:-> **FILTER**: SKU,Category **SORT**: Price, StockQuantity
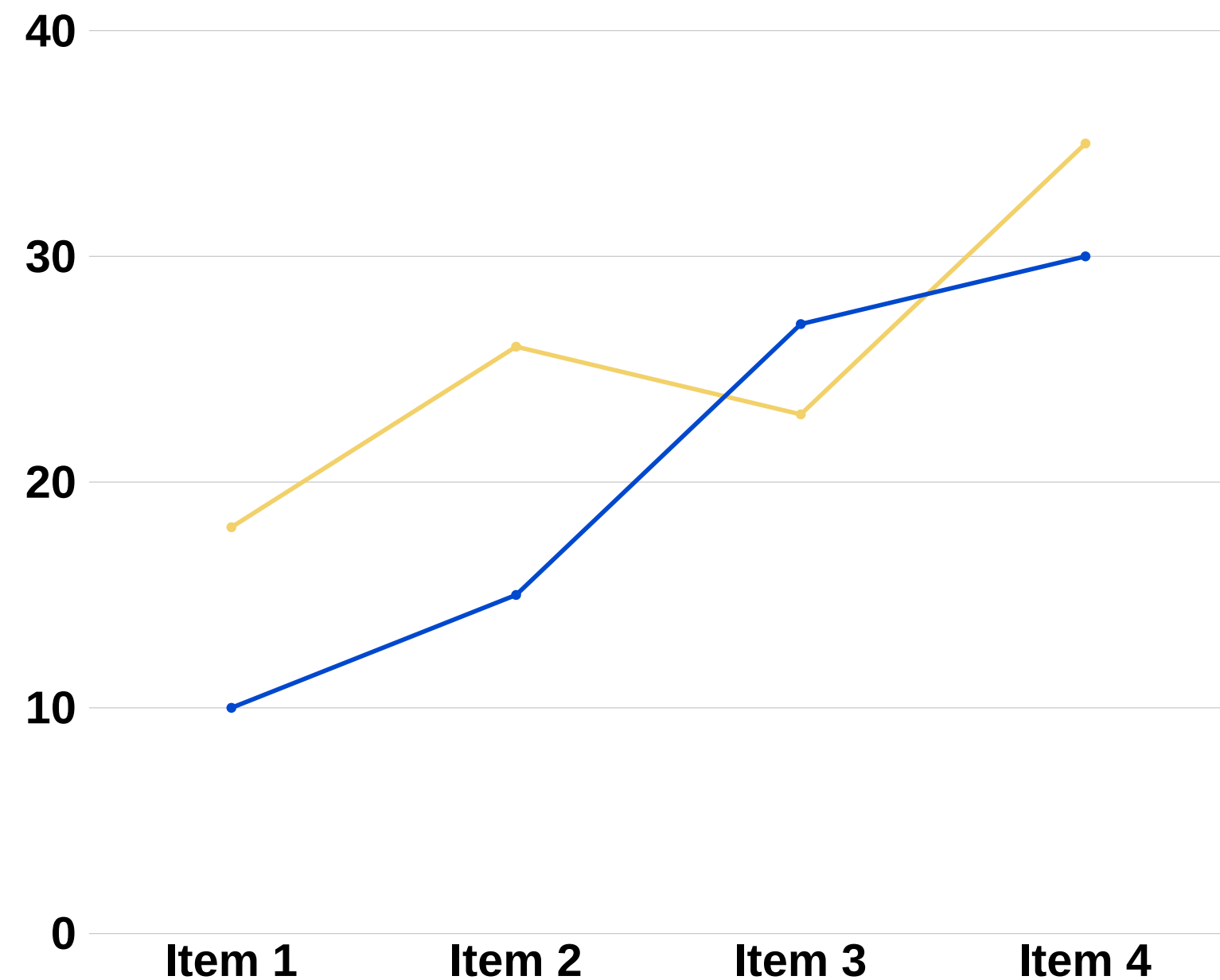
Nested Categories: Name Column Supports NESTED JSON, processing can be enhanced

Performance

- HTTP Caching
  - Category

- DB Indexes on SKU, PRICE

Scaling

- Table partitioning & Sharding
- High Availability K8 deployment
- API gateway Integration

Future Work & Demo

- Partial response API support
- Product catalog APIs
- JWT token Authentication
- Database Backup
- Dockerization
- Database Indexing
- UI cashing

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