Requirement of the Art & Artist Management System

Project3: The key requirement of Project3 is to enhance the system's performance and data access speed. To achieve this, I will implement a Redis-based caching mechanism for frequently accessed artwork details. This will reduce the load on MongoDB database and provide faster data retrieval for end-users.

Functionalities to be used as an in-memory key-value storage:

- Artwork Details Caching:
  - Cache frequently accessed artwork details (title, medium, dimension, and price) in Redis;
  - Reduce the number of direct queries to MongoDB, leading to performance optimization.
- Exhibition's Artworks Counts Tracking
  - If tracking the number of artworks of exhibitions is of interest, Redis can be used to store and update the artwork counts for each exhibition;
  - This can be used to generate the real-time artworks counts ranking.

This project aims to create a relational database for an Art & Artist Management System that offers a comprehensive platform to catalog artworks, record artist profiles, detail exhibitions, store gallery information, and capture collector/buyer data. There will be a class to contains details of individual artists. There will be a class to represent the individual pieces of art in the system. There will be a class to represent the art exhibition and there will be a class to represent the art galleries that host exhibition. There will be a class to represent the enthusiasts or collectors for artworks.

Rules of the database:

1. Each artwork has a unique Artwork ID
2. Every artist **possesses** a unique Artist ID
3. Artworks can **belong to** only one artist but an artist can create multiple artworks
4. Artworks can be part of multiple exhibitions
5. Each exhibition has a unique Exhibition ID
6. Galleries can **host** multiple exhibitions but each exhibition is **happened** at one gallery
7. Each gallery has a unique Gallery ID
8. Collector/buyer has unique Buyer ID and can one collector/buyer can make multiple **purchases**
9. Artworks can have different availability statuses (e.g., available, sold, reserved)
10. Each artist has a style (e.g., abstract, realism, impressionism)
11. Each artwork has a medium (e.g., painting, sculpture, digital)
12. Each artwork has dimensions to represent the size
13. Each artwork has a price for the collector to purchase
14. Each gallery has its location and contact detail
15. Each collector has a preference

Business rules:

1. Before an artwork is **added**, the artist associated with the work must exist in the system
2. The availability of artwork must update once it is **sold**
3. An exhibition can't **exist** without at least one associated artwork

4. The collector/buyer's details must be **recorded** when the artwork is sold
5. Artists can **participate** in multiple exhibitions, but each participation must be recorded individually

Nouns:

1. Artwork
2. Artist
3. Exhibition
4. Gallery
5. Collector/buyer
6. Availability statuses
7. Medium
8. Style
9. Dimensions
10. Price
11. Location
12. Contact details
13. Preferences

Actions:

1. Belong to
2. Exhibit
3. Host
4. Purchase
5. Record
6. Possess
7. Happen
8. Update
9. Add
10. Sell
11. Participate