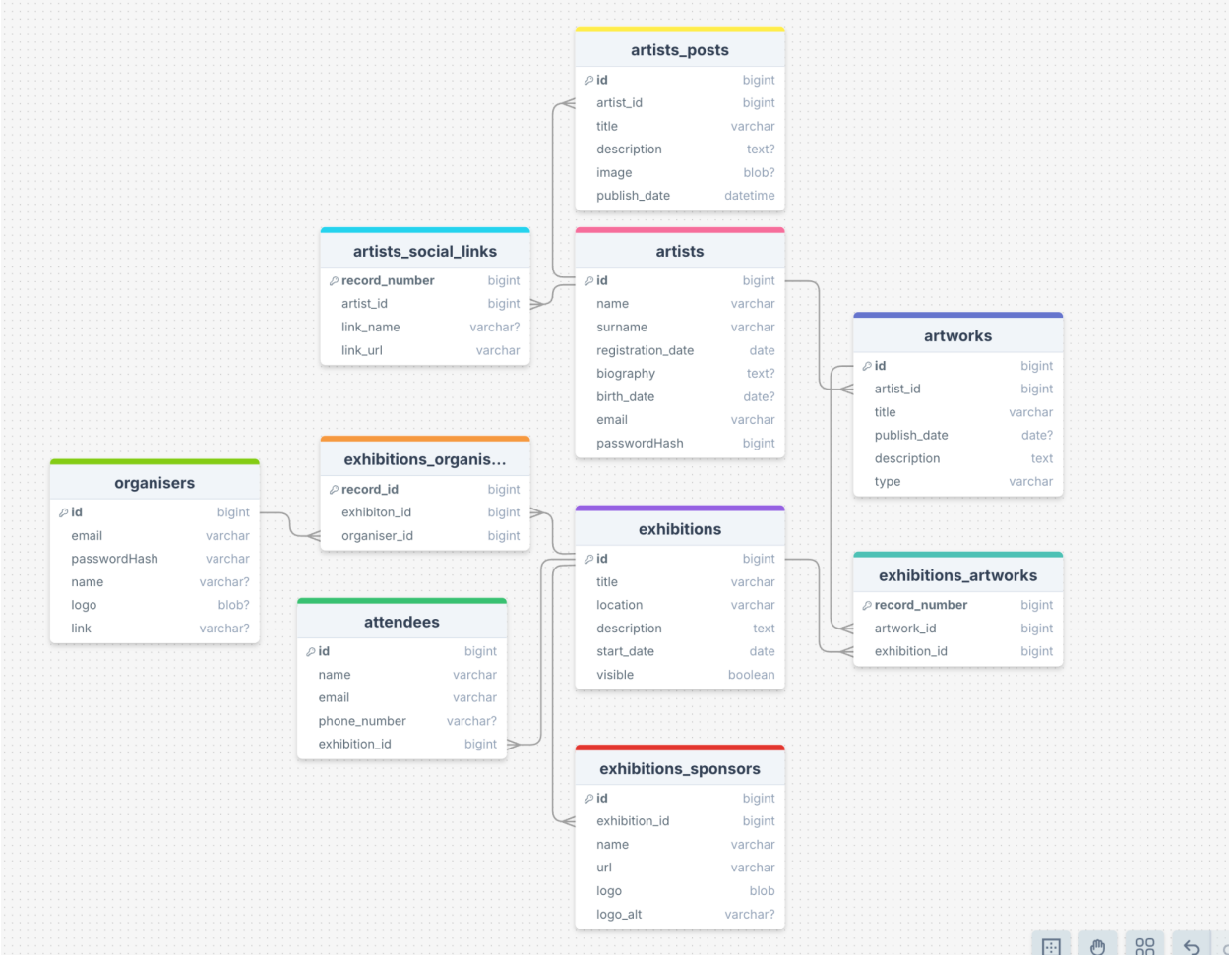
Gallery Platform — ERD, UML Domain Model & Consistency Checks

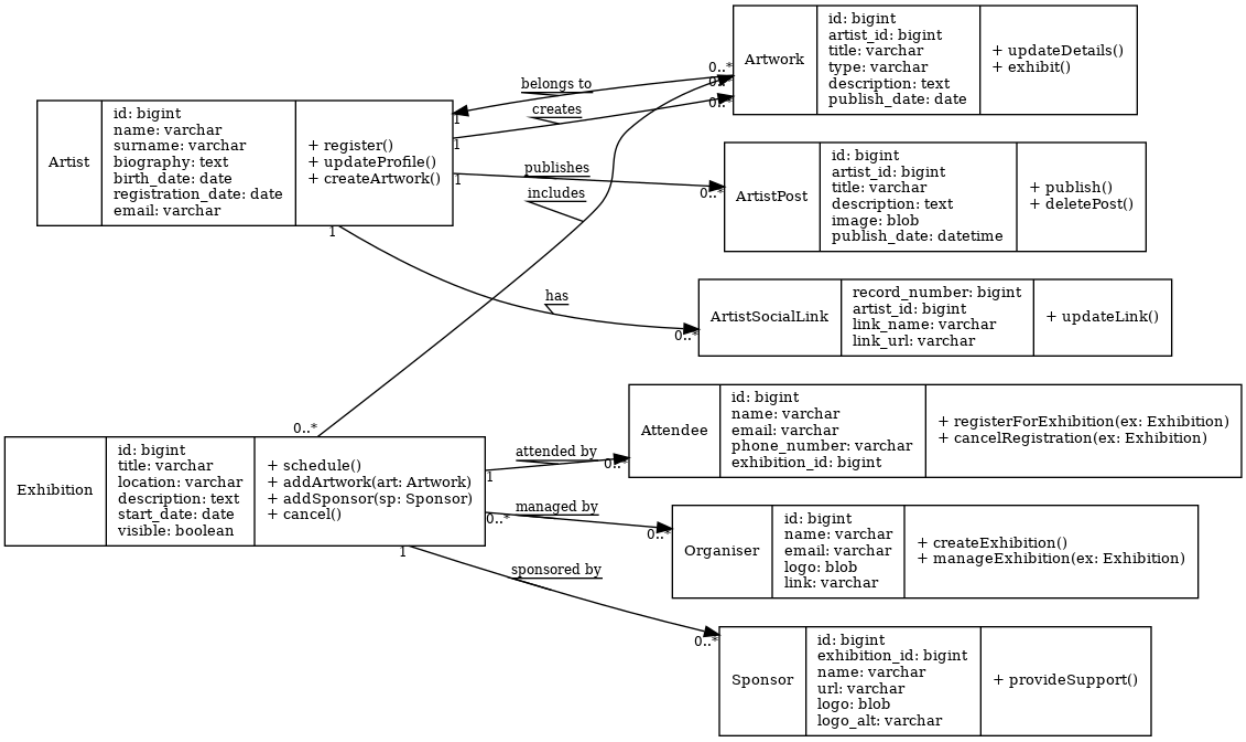
1. Entity-Relationship Diagram (ERD)

The following ERD reflects the physical database schema used by the application.



2. UML Class Diagram (Domain Model)

The UML class diagram abstracts the domain objects and their relationships. Join tables from the ERD are represented as associations with multiplicities.



3. Relationships & Multiplicities

- Artist 1 — 0..* Artwork (an artist creates many artworks; each artwork belongs to one artist).
- Artist 1 — 0..* ArtistPost (an artist can publish multiple posts).
- Artist 1 — 0..* ArtistSocialLink (an artist can have multiple social links).
- Exhibition 0..* — 0..* Artwork (artworks can appear in multiple exhibitions; exhibitions include many artworks).
- Exhibition 0..* — 0..* Organiser (many organisers can manage many exhibitions).
- Exhibition 1 — 0..* Sponsor (an exhibition can have multiple sponsors).
- Exhibition 1 — 0..* Attendee (an exhibition can have multiple attendees).

4. Consistency Checks

- Referential integrity: All foreign keys must reference existing parents (e.g., artwork.artist_id → artists.id).
- Uniqueness: Emails for artists, organisers, and attendees must be unique.
- Date validity: birth_date ≤ registration_date; publish_date ≤ current date;
- Visibility rule: Exhibitions with visible = false must not appear in public listings.
- Multiplicity enforcement: An artwork must belong to exactly one artist; sponsors must be linked to a single exhibition.
- Cascade behavior: Deleting an artist should cascade to their artworks, posts, and social links, or be restricted explicitly.

- Many-to-many mapping: Exhibition–Artwork and Exhibition–Organiser are realized with junction tables in the ERD; in the UML they appear as associations.
- Data type sanity: phone_number follows E.164; email is syntactically valid; URLs are valid http(s).
- File constraints: logo/image blobs should respect size/type white-lists; store paths or hashes where possible.

5. ERD ↔ UML Mapping Notes

Junction tables (exhibitions_artworks, exhibitions_organisers) in the ERD implement many-to-many associations present in the UML diagram. Attributes are renamed with domain-friendly casing in UML. Methods in UML are illustrative to show behavior and are not required by the database layer.