1. CREATE DOMAIN url\_domain AS VARCHAR(2048) CHECK (VALUE ~ '^https?://[^\s/$.?#].[^\s]\*$');
2. ‘book’ table:

CREATE TABLE book (

isbn VARCHAR(10) PRIMARY KEY,

title VARCHAR(300) NOT NULL,

author VARCHAR(255),

publication\_year INTEGER,

publisher VARCHAR(255),

image\_url url\_domain,

created\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (created\_at >= '2024-01-01'),

updated\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (updated\_at >= '2024-01-01')

);

1. ‘user’ table:

CREATE TABLE "user" (

user\_id SERIAL PRIMARY KEY,

username VARCHAR(100) NOT NULL UNIQUE CHECK (username ~ '^[a-zA-Z0-9\_]{2,}$'),

email VARCHAR(100) NOT NULL UNIQUE CHECK (email ~ '^[A-Za-z0-9.\_%-]+@[A-Za-z0-9.-]+\.[A-Za-z]{2,4}$'),

password VARCHAR(64) NOT NULL,

created\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (created\_at >= '2024-01-01'),

updated\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (updated\_at >= '2024-01-01')

)

1. ‘rating’ table:

CREATE TABLE rating (

isbn VARCHAR(10),

user\_id INTEGER,

rating INTEGER CHECK (rating >= 0 AND rating <= 10),

created\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (created\_at >= '2024-01-01'),

updated\_at TIMESTAMP DEFAULT CURRENT\_TIMESTAMP NOT NULL CHECK (updated\_at >= '2024-01-01'),

PRIMARY KEY (isbn, user\_id),

FOREIGN KEY (isbn) REFERENCES book(isbn),

FOREIGN KEY (user\_id) REFERENCES "user"(user\_id)

);

1. Update ‘update\_at’ fields triggers:

CREATE OR REPLACE FUNCTION update\_updated\_at\_trigger\_function()

RETURNS TRIGGER AS $$

BEGIN

NEW.updated\_at = CURRENT\_TIMESTAMP;

RETURN NEW;

END;

$$ LANGUAGE plpgsql;

CREATE TRIGGER set\_book\_updated\_at\_trigger

BEFORE UPDATE ON book

FOR EACH ROW

EXECUTE FUNCTION update\_updated\_at\_trigger\_function();

CREATE TRIGGER set\_rating\_updated\_at\_trigger

BEFORE UPDATE ON rating

FOR EACH ROW

EXECUTE FUNCTION update\_updated\_at\_trigger\_function();

CREATE TRIGGER set\_user\_updated\_at\_trigger

BEFORE UPDATE ON "user"

FOR EACH ROW

EXECUTE FUNCTION update\_updated\_at\_trigger\_function();