**Database Design**

The following is a proposed relational database design in PostgreSQL for the museum application:

**Tables**

**1. Artifacts**

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| **id** | **serial** | Unique identifier for the artifact |
| **title** | **varchar(255)** | Title of the artifact |
| **description** | **text** | Description of the artifact |
| **multimedia\_links** | **jsonb** | JSON object containing multimedia links (e.g., images, videos) |

**2. Quizzes**

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| **id** | **serial** | Unique identifier for the quiz question |
| **question** | **text** | Quiz question |
| **options** | **jsonb** | JSON object containing quiz options |
| **correct\_answer** | **varchar(255)** | Correct answer for the quiz question |
| **artifact\_id** | **integer** | Foreign key referencing the Artifacts table |

**3. Visitors**

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| **id** | **serial** | Unique identifier for the visitor |
| **name** | **varchar(255)** | Name of the visitor |
| **email** | **varchar(255)** | Email address of the visitor |
| **quiz\_scores** | **jsonb** | JSON object containing quiz scores and progress |
| **last\_interaction** | **timestamp** | Timestamp of the visitor's last interaction |

**4. Admins**

| **Column Name** | **Data Type** | **Description** |
| --- | --- | --- |
| **id** | **serial** | Unique identifier for the admin |
| **username** | **varchar(255)** | Username for the admin |
| **password** | **varchar(255)** | Password for the admin (hashed for security) |
| **role** | **varchar(255)** | Role of the admin (e.g., curator, manager) |

**Relationships**

* An artifact can have multiple quiz questions associated with it (one-to-many).
* A quiz question is associated with one artifact (many-to-one).
* A visitor can have multiple quiz scores and progress (one-to-many).
* An admin can manage multiple artifacts and quizzes (one-to-many).

**Indexes**

* Create an index on the **artifact\_id** column in the Quizzes table to improve query performance.
* Create an index on the **email** column in the Visitors table to improve query performance.