

Business Template

Museum

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* Business Description
* Business Background

Our museum is dedicated to preserving and showcasing a wide range of historical, artistic, and cultural artifacts. We strive to educate the public, provide meaningful cultural experiences, and preserve history for future generations. Our collections include artwork, historical objects, artifacts, and specimens, all of which are managed and displayed through carefully curated exhibitions. In addition to offering visitors the chance to explore various collections, we provide educational programs, special events, and research opportunities to further enrich the museum experience.

Our primary objective is to manage collections efficiently, offer engaging exhibitions, and create a dynamic visitor experience. We aim to use data and technology to enhance both our internal operations and the services we offer to the public.

* Problems, Current Situation

Currently, the museum faces several challenges related to the management of its large and diverse collection of items. Manual tracking of artifacts, exhibition planning, and visitor interactions is time-consuming, leading to potential errors, inefficiencies, and missed opportunities for improvement. Additionally, organizing exhibition schedules, coordinating staff, and tracking visitor engagement are often done separately, making it difficult to get a clear, integrated view of the museum’s operations.

* Collection Management: Our museum has a vast collection, but the management system for track-ing artifacts, their locations, and conditions is outdated, which leads to misplaced or poorly tracked objects.
* Exhibition Planning: Organizing exhibitions involves coordinating multiple staff members and en-suring that the right artifacts are available for display. Without a centralized system, this process is prone to conflicts and inefficiencies.
* Visitor Experience: Tracking which exhibitions visitors attended and what their preferences were is done manually, making it difficult to provide personalized recommendations or gather meaningful feedback.
* Inventory Management: With artifacts frequently moved between storage and exhibitions, real-time tracking of inventory and artifact conditions is challenging.
* Staff Management: Assigning staff to exhibitions and ensuring proper scheduling for both curatorial duties and visitor engagement roles is a complex, manual process.

These issues hinder our ability to manage operations smoothly and to provide the best possible experience for visitors.

* The Benefits of Implementing a Database. Project Vision

Implementing a centralized database system will streamline the museum’s operations and resolve many of the challenges we currently face. By automating processes such as collection tracking, exhibition scheduling, visitor interactions, and staff management, the museum will operate more efficiently and provide better services to both visitors and employees. The database system will offer several key benefits:

* Efficient Collection Management: A well-organized database will allow us to track the details, location, condition, and provenance of every artifact. This will reduce the likelihood of artifacts being misplaced and help ensure that their preservation needs are met.

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* Streamlined Exhibition Planning: The database will allow curators to easily schedule exhibitions, assign artifacts, and track progress. With integrated tools for exhibition planning, curators can quickly access the information they need and avoid scheduling conflicts.
* Enhanced Visitor Engagement: The database will track visitor interactions and feedback, enabling us to understand visitor preferences and tailor future exhibitions. Personalized recommendations and a better understanding of visitor behavior will improve engagement and satisfaction.
* Real-Time Inventory Management: By maintaining real-time data on artifact locations and con-ditions, staff can instantly find out where an artifact is stored, whether it’s on display, and in what condition, ensuring better control and efficiency.
* Optimized Staff Allocation: With integrated staff scheduling and exhibition assignments, the database will allow us to allocate resources more effectively, ensuring that the right people are as-signed to the right tasks.
* Improved Reporting and Decision Making: The database will provide insights into trends, visitor behaviors, and exhibition performance, helping management make data-driven decisions. It will also improve reporting accuracy and reduce administrative work.

Ultimately, this project will enable us to offer a more efficient, organized, and engaging experience for our visitors and staff. By integrating all aspects of museum operations into a single database system, we will improve operational efficiency, reduce errors, and enhance the visitor experience, while enabling better decision-making through data analysis.

* Model Description

5.1 Definitions & Acronyms

* Artifact – An item from the museum’s collection, including artworks, historical objects, and specimens.
* Exhibition – An organized display of artifacts for public viewing.
* Visitor – A person who attends exhibitions at the museum.
* Employee – A person employed by the museum, including curators, educators, and support staff.
* Collection – A group of artifacts curated and preserved by the museum.
* Exhibition Schedule – A record of dates and details for upcoming and ongoing exhibitions.
* Inventory – A record of all artifacts within the museum, including their storage location and condition.
* Condition – A detailed assessment of an artifact’s current state or health.
* Visitor Interaction – An event tracking the interaction between visitors and artifacts or exhibitions.
* Staff Assignment – A record of which employee is assigned to which exhibition or task.

5.2 Logical Schema

The database will be designed with the following key tables and their relationships:

The database will be designed with the following key tables and their relationships:

* Employee: Stores details of museum staff, including employee ID, name, role, and department.
* Exhibition: Stores information about exhibitions, including exhibition ID, title, start and end dates, and curator information.

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* Artifact: Stores details of each item in the museum’s collection, including artifact ID, description, provenance, and condition.
* Visitor: Stores information about visitors, including visitor ID, contact details, and visit history.
* Inventory: Tracks the location, status, and condition of artifacts, linking each artifact to its specific storage location or exhibition.
* Employee Exhibition: Links employees to the exhibitions they are assigned to, including employee ID, exhibition ID, and role in the exhibition.
* Visitor Exhibition: Tracks which exhibitions visitors attend, including visitor ID, exhibition ID, and visit date.

5.3 Objects

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | | | | | Field | Field Description | Data Type | |  |
|  |  |  |  |  |  |  |  |  |  |
| Employee | | | | | employee id | Unique Identifier for Employee (PK) | INT | |  |
|  |  |  |  |  | First Name | Employee’s First Name | VARCHAR(100) | |  |
|  |  |  |  |  | Last Name | Employee’s Last Name | VARCHAR(100) | |  |
|  |  |  |  |  | Role | Employee’s Role in the organization | VARCHAR(100) | |  |
|  |  |  |  |  | Department | Department the employee belongs to | VARCHAR(100) | |  |
|  |  |  |  |  | Hire Date | Date of Hiring | DATE | |  |
|  |  |  |  |  | Contact Info | Contact information of the employee | TEXT | |  |
|  |  |  |  |  |  |  |  |  |  |
| Visitor | | | | | visitor id | Unique Identifier for Visitor (PK) | INT | |  |
|  |  |  |  |  | First Name | Visitor’s First Name | VARCHAR(100) | |  |
|  |  |  |  |  | Last Name | Visitor’s Last Name | VARCHAR(100) | |  |
|  |  |  |  |  | Email | Visitor’s Email Address (Unique) | VARCHAR(100) | |  |
|  |  |  |  |  | Phone Number | Visitor’s Phone Number (Unique) | VARCHAR(20) | |  |
|  |  |  |  |  | Visit Date | Date of the Visit | DATE | |  |
|  |  |  |  |  | Membership Status | Visitor’s Membership Status | VARCHAR(50) | |  |
|  |  |  |  |  |  |  |  |  |  |
| Visitor |  | Exhibition | | | visitor id | Visitor ID attending the exhibition | INT | |  |
|  |  |  |  |  |  | (FK) |  |  |  |
|  |  |  |  |  | exhibition id | Exhibition ID attended by visitor (FK) | INT | |  |
|  |  |  |  |  | Visit Date | Date of Visit | DATE | |  |
|  |  |  |  |  | Feedback | Visitor’s Feedback on the Exhibition | TEXT | |  |
|  |  |  |  |  | Interaction Type | Type of Interaction with Exhibition | VARCHAR(100) | |  |
|  | | |  |  |  |  |  |  |  |
| Exhibition | | | | | exhibition id | Unique Identifier for Exhibition (PK) | INT | |  |
|  |  |  |  |  | Title | Title of the Exhibition | VARCHAR(255) | |  |
|  |  |  |  |  | Start Date | Exhibition Start Date | DATE | |  |
|  |  |  |  |  | End Date | Exhibition End Date | DATE | |  |
|  |  |  |  |  | Description | Description of the Exhibition | TEXT | |  |
|  |  |  |  |  | Location | Exhibition Location | VARCHAR(255) | |  |
|  |  |  |  |  | Theme | Theme of the Exhibition | VARCHAR(100) | |  |
|  | | |  |  |  |  |  |  |  |
| Artifact | | |  | Exhibition | artifact id | Artifact ID displayed in exhibition | INT | |  |
|  |  |
|  |  |  |  |  |  | (FK) |  |  |  |
|  |  |  |  |  | exhibition id | Exhibition ID displaying artifact (FK) | INT | |  |
|  |  |  |  |  | display Order | Order in which the Artifact is displayed | INT | |  |
|  | | | | |  |  |  |  |  |
| Artifact | | | | | artifact id | Unique Identifier for Artifact (PK) | INT | |  |
|  |  |  |  |  | Name | Name of the Artifact | VARCHAR(255) | |  |
|  |  |  |  |  | Description | Description of the Artifact | TEXT | |  |
|  |  |  |  |  | Date Acquired | Date the Artifact was Acquired | DATE | |  |
|  |  |  |  |  | Category | Category of the Artifact | VARCHAR(100) | |  |

4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Field | Field Description | Data Type | |
|  |  |  |  |  |
|  | Condition | Condition of the Artifact (New, Good, | VARCHAR(50) | |
|  |  | Fair, Damaged) |  |  |
|  | Value | Monetary Value of the Artifact | DECIMAL(10,2) | |
|  | Artist | Artist of the Artifact (if any) | VARCHAR(255) | |
|  | Material Type | Material Type of the Artifact | VARCHAR(100) | |
|  |  |  |  |  |
| Inventory | inventory id | Unique Identifier for Inventory Record | INT | |
|  |  | (PK) |  |  |
|  | artifact id | Related Artifact ID (FK) | INT | |
|  | Storage Location | Location where the Artifact is stored | VARCHAR(255) | |
|  | Quantity | Quantity of the Artifact items | INT | |
|  | Date Updated | Last Update Date for Inventory Record | DATE | |
|  |  |  |  |  |

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5.4 Relationships

Table 2: Entity-Relationship Table

|  |  |  |  |
| --- | --- | --- | --- |
| Entity A | Entity B | Type | Description |
|  |  |  |  |
| Visitor | Exhibition | Many-to-Many (via Visi- | A visitor can attend multiple exhibitions, and |
|  |  | tor Exhibition) | an exhibition can be attended by multiple vis- |
|  |  |  | itors. |
| Visitor | Visitor Exhibition | One-to-Many | A visitor can have multiple records of visiting |
|  |  |  | different exhibitions. |
| Exhibition | Visitor Exhibition | One-to-Many | An exhibition can have multiple visitors at- |
|  |  |  | tending it. |
| Artifact | Artifact Exhibition | One-to-Many | An artifact can have multiple display records |
|  |  |  | linking it to exhibitions. |
| Exhibition | Artifact Exhibition | One-to-Many | An exhibition can have multiple artifacts dis- |
|  |  |  | played in it. |
| Artifact | Exhibition | Many-to-Many (via Arti- | An artifact can be shown in multiple exhibi- |
|  |  | fact Exhibition) | tions, and an exhibition can display multiple |
|  |  |  | artifacts. |
| Artifact | Inventory | One-to-One | Each artifact has a corresponding inventory |
|  |  |  | record for storage and quantity tracking. |
| Employee | Exhibition | One-to-Many (optional) | An employee (e.g., curator) can be responsible |
|  |  |  | for organizing multiple exhibitions. |
|  |  |  |  |

5.5 Example with data

I provided several tables with data, using abbreviations in certain fields and omitting some variables to avoid making the tables too cumbersome. I included only the essential attributes to highlight the relationships between the tables through the foreign keys.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| emp |  | id | First |  | Name | Last |  | Name | Role | Department | Hire |  | Date | Contact |  | Info |
|  |  |  |  | | |  | | |  |  |  | | |  | | |
| 1 |  |  | Alice | | | Smith | | | Curator | Exhibitions | 2018-05-12 | | | alice.smith@ exam- | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | plemuseum.org | | |
|  |  |  |  | | |  | | |  |  |  | | |  | | |
| 2 |  |  | Bob | | | Johnson | | | Archivist | Collections | 2019-08-23 | | | bob.johnson@ ex- | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | amplemuseum.org | | |
|  |  |  |  | | |  | | |  |  |  | | |  | | |
| 3 |  |  | Carol | | | Miller | | | Security Officer | Security | 2020-11-01 | | | carol.miller@ exam- | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  | plemuseum.org | | |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | Table 3: Employee | |  |  |  |  |  |  |

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|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| visitor |  | id | First |  | Name | Last |  | Name | Email | Phone |  | Number | Visit |  | Date | Member | | |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | ship |  | Status |  |
|  |  |  |  | | |  | | |  |  | | |  | | |  | | |  |
| 1 |  |  | David | | | Wilson | | | david.wilson@ | +1234567890 | | | 2025-04-15 | | | Member | | |  |
|  |  |  |  |  |  |  |  |  | gmail.com |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | | |  | | |  |  | | |  | | |  | | |  |
| 2 |  |  | Emma | | | Davis | | | emma.davis@ | +0987654321 | | | 2025-04-16 | | | Non- | | |  |
|  |  |  |  |  |  |  |  |  | yahoo.com |  |  |  |  |  |  | Member | | |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | Table 4: Visitor |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| exhib |  | id | Title | Start |  | Date |  | End |  | Date | Description | | Location | Theme |  |
|  |  |  |  |
|  |  |  |  |  | | |  |  | | |  |  |  |  |  |
| 1 |  |  | Ancient Civiliza- | 2025-03-01 | | |  | 2025-06-30 | | | Exploring | ancient | Main Hall A | History |  |
|  |  |  | tions |  |  |  |  |  |  |  | cultures around the | |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  | world. |  |  |  |  |
|  |  |  |  |  | | |  |  | | |  |  |  |  |  |
| 2 |  |  | Modern Art Show- | 2025-04-01 | | |  | 2025-07-15 | | | Highlights | of con- | Gallery B | Art |  |
|  |  |  | case |  |  |  |  |  |  |  | temporary art. | |  |  |  |
|  |  |  |  |  |  |  |  |  | | |  |  |  |  |  |
|  |  |  |  |  |  |  | Table 5: Exhibition | | | | |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| visitor |  | id | exhib |  | id | Visit |  | Date | Feedback | Interaction |  | Type |
|  |  |  |  |  |  |  | | |  |  | | |
| 1 |  |  | 1 |  |  | 2025-04-15 | | | Amazing exhibit, very in- | Guided Tour | | |
|  |  |  |  |  |  |  |  |  | formative! |  |  |  |
|  |  |  |  |  |  |  | | |  |  | | |
| 2 |  |  | 2 |  |  | 2025-04-16 | | | Loved the interactive in- | Self-Guided | | |
|  |  |  |  |  |  |  |  |  | stallations. |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Table 6: Visitor Exhibition

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| artif |  | id | Name | Descrip. | | Date | | |  | Category | Condition | Value | Artist |  | Material | |  |
|  |  |
|  |  |  |  |  |  |  |  | Acquired | |  |  |  |  |  |  | Type |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | | |  |  |  |  |  |  |  | |  |
| 1 |  |  | Ancient | A | Greek | 2010-09- | | |  | Ceramics | Good | 250.00 | NULL |  | Clay | |  |
|  |  |  | Vase | vase from | | 15 | | |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 5th | cen- |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | tury BC. | |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | |  | | |  |  |  |  |  |  |  | |  |
| 2 |  |  | Modern | A vibrant | | 2022-03- | | |  | Painting | New | 120.50 | Jordan |  | Canvas | |  |
|  |  |  | Abstract | modern | | 22 | | |  |  |  |  | Lee |  | and Oil | |  |
|  |  |  | Painting | art piece. | |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | Table 7: Artifact | |  |  |  |  |  |  |  |

7

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| artif |  | id | exhib |  | id | display |  | Order |  |
|  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 1 |  |  | 1 |  |  | 1 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 2 |  |  | 2 |  |  | 2 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

Table 8: Artifact Exhibition

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| inventory |  | id | artifact |  | id | Storage |  | Location | Quantity | Date |  | Updated |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  | | |  |  | | |  |
| 1 |  |  | 1 |  |  | Storage Room A - Shelf 3 | | | 1 | 2025-04-10 | | |  |
|  |  |  |  |  |  |  | | |  |  | | |  |
| 2 |  |  | 2 |  |  | Gallery B - Wall 5 | | | 1 | 2025-04-10 | | |  |
|  |  |  |  |  |  |  | | |  |  |  |  |  |
|  |  |  |  |  |  | Table 9: Inventory | | |  |  |  |  |  |

8