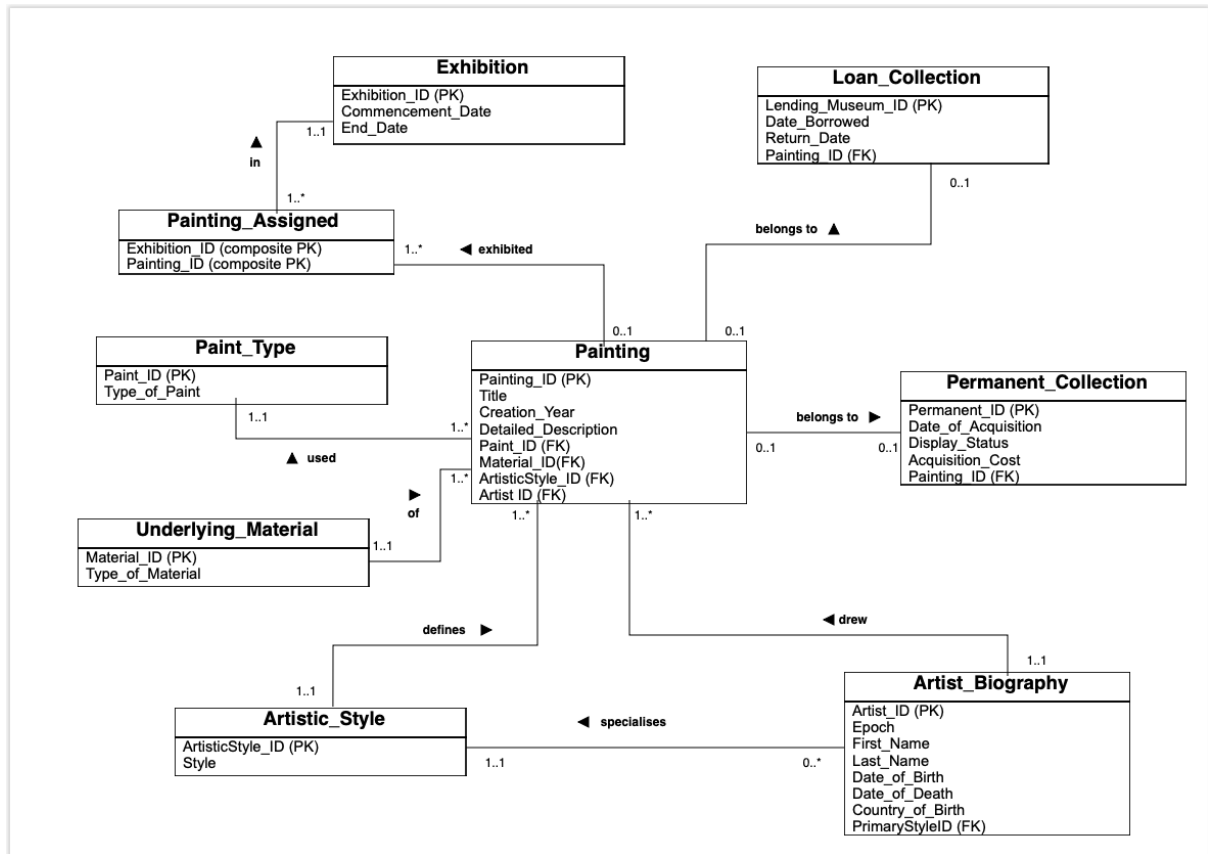


DATABASE DESIGN & IMPLEMENTATION COURSEWORK

By: W20069397

Entity Relationship Diagram



SQL Table Creation

Entity	Primary Key (PK)	Foreign Key (FK)	Rationale for PK
Artist_Biography	Artisit_ID	PrimaryStyleID	Artist_ID is unique to each artist to distinguish them from one another.
Artistic_Style	ArtisticStyle_ID		ArtisticStyle_ID is a unique identifier for each style.
Paint_Type	Paint_ID		Paint_ID is a unique identifier for different paints.
Underlying_Material	Material_ID		Each material should have a unique identifier so as to facilitate efficient data retrieval for specific materials.
Painting	Painting_ID	Paint_ID Material_ID ArtisticStyle_ID	Each painting has to have a unique ID so that in

		Artisit_ID	permanent and loan collection it can be identified.
Permanent_Collection	Permanent_ID	Painting_ID	Each permanent collection item should have a unique identifier.
Loan_Collection	Lending_Museum_ID	Painting_ID	Each loan collection item should have a unique identifier.
Painting_Assigned	Painting_ID Exhibition_ID	Painting_ID Exhibition_ID	They are composite PKs as it is a link entity between painting and exhibition.
Exhibition	Exhibition_ID		To avoid repeats in other tables, an exhibition ID is used as it is unique.

Query Number	Purpose	Tables Involved	SQL	Correct Execution												
1	Show the total number of paintings per artistic style.	1 table: painting	<pre>SELECT ArtisticStyleID, COUNT(*) AS TotalPaintings FROM painting GROUP BY ArtisticStyleID;</pre> <table><thead><tr><th>ArtisticStyleID</th><th>TotalPaintings</th></tr></thead><tbody><tr><td>100</td><td>2</td></tr><tr><td>200</td><td>3</td></tr><tr><td>300</td><td>5</td></tr><tr><td>400</td><td>2</td></tr><tr><td>500</td><td>2</td></tr></tbody></table>	ArtisticStyleID	TotalPaintings	100	2	200	3	300	5	400	2	500	2	Yes
ArtisticStyleID	TotalPaintings															
100	2															
200	3															
300	5															
400	2															
500	2															
2	For each artist except Yayoi Kusama and Ben Franklin, show the number of	2 tables: ArtistBiography and painting	<pre>SELECT an.FirstName, COUNT(p.PaintingID) AS "Number of paintings" FROM ArtistBiography an JOIN painting p ON an.ArtistID = p.ArtistID WHERE an.FirstName NOT IN ("Yayoi","Ben") GROUP BY an.FirstName;</pre>	Yes												

	painting the museum has.		<table><tr><th>FirstName</th><th>Number of paintings</th></tr><tr><td>Mona</td><td>2</td></tr><tr><td>Tom</td><td>1</td></tr><tr><td>Salvador</td><td>2</td></tr><tr><td>Vincent</td><td>1</td></tr><tr><td>Pablo</td><td>3</td></tr><tr><td>Hokusai</td><td>3</td></tr></table>	FirstName	Number of paintings	Mona	2	Tom	1	Salvador	2	Vincent	1	Pablo	3	Hokusai	3		
FirstName	Number of paintings																		
Mona	2																		
Tom	1																		
Salvador	2																		
Vincent	1																		
Pablo	3																		
Hokusai	3																		
3	Show the total number of paintings assigned to each exhibition in the exhibition table.	2 tables: Exhibition and PaintingAssigned	<p>SELECT e.ExhibitionID, COUNT(pa.PaintingID) AS "Total Painting Assigned" FROM Exhibition e LEFT JOIN PaintingAssigned pa ON e.ExhibitionID = pa.ExhibitionID GROUP BY e.ExhibitionID;</p> <table><tr><th>ExhibitionID</th><th>Total Painting Assigned</th></tr><tr><td>1</td><td>2</td></tr><tr><td>2</td><td>1</td></tr><tr><td>3</td><td>3</td></tr><tr><td>4</td><td>3</td></tr><tr><td>5</td><td>2</td></tr></table>	ExhibitionID	Total Painting Assigned	1	2	2	1	3	3	4	3	5	2	Yes			
ExhibitionID	Total Painting Assigned																		
1	2																		
2	1																		
3	3																		
4	3																		
5	2																		
4	Show the total number of artist per country they were born in.	1 table: ArtistBiography	<p>SELECT CountryOfBirth, COUNT(ArtistID) AS "Total Artists" FROM ArtistBiography GROUP BY CountryOfBirth;</p> <table><tr><th>CountryOfBirth</th><th>Total Artists</th></tr><tr><td>France</td><td>2</td></tr><tr><td>Spain</td><td>4</td></tr><tr><td>Germany</td><td>2</td></tr><tr><td>Italy</td><td>2</td></tr></table>	CountryOfBirth	Total Artists	France	2	Spain	4	Germany	2	Italy	2	Yes					
CountryOfBirth	Total Artists																		
France	2																		
Spain	4																		
Germany	2																		
Italy	2																		
5	List the paintings with “express” in the description.	1 Table: painting	<p>SELECT PaintingID, Title, DetailedDescription FROM painting WHERE LOWER(DetailedDescription) LIKE '%express%';</p> <table><tr><th>PaintingID</th><th>Title</th><th>DetailedDescription</th></tr><tr><td>30</td><td>Starry Night</td><td>Strong expression of night sky filled with vivid s</td></tr><tr><td>31</td><td>Run</td><td>The artwork expresses the feeling of chasing after</td></tr><tr><td>51</td><td>Fighting</td><td>Expresses playfulness yet encouraging perserveranc</td></tr><tr><td>80</td><td>Clap</td><td>Expresses the feeling of success, creating a vibra</td></tr></table>	PaintingID	Title	DetailedDescription	30	Starry Night	Strong expression of night sky filled with vivid s	31	Run	The artwork expresses the feeling of chasing after	51	Fighting	Expresses playfulness yet encouraging perserveranc	80	Clap	Expresses the feeling of success, creating a vibra	Yes
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30	Starry Night	Strong expression of night sky filled with vivid s																	
31	Run	The artwork expresses the feeling of chasing after																	
51	Fighting	Expresses playfulness yet encouraging perserveranc																	
80	Clap	Expresses the feeling of success, creating a vibra																	
6	To see if the museum should sell a painting, filter the last 3 painting that has not been exhibited the	2 Tables: Exhibition and PaintingAssigned	<p>SELECT pa.PaintingID FROM PaintingAssigned pa LEFT JOIN Exhibition e ON pa.ExhibitionID = e.ExhibitionID WHERE e.ExhibitionID IS NULL OR (YEAR(e.CommencementDate) BETWEEN 2021</p>	No															

	least from 2021 to 2023.		AND 2023) ORDER BY e.ExhibitionID LIMIT 3; <div>PaintingID</div> <div>20</div> <div>90</div> <div>50</div>	
7	To start searching for new paintings to borrow, filter the 3 earliest return dates and from which museum.	1 Table: LoanCollection	SELECT ReturnDate, LendingMuseumID, PaintingID FROM LoanCollection ORDER BY ReturnDate LIMIT 3; <div>ReturnDate ▲ 1LendingMuseumIDPaintingID</div> <div>2020-10-301230</div> <div>2021-12-311150</div> <div>2023-05-301370</div>	Yes
8				
9	Which paint type is the most used amongst the artists?	2 Tables: painting & ArtistBiography	SELECT PaintID, COUNT(*) AS "Paint Type Count" FROM painting JOIN ArtistBiography ON painting.ArtistID = ArtistBiography.ArtistID GROUP BY PaintID ORDER BY "Paint Type Count" DESC; <div>PaintIDPaint Type Count</div> <div>17</div> <div>27</div>	Yes
10				