

CIS 5500: Database and Information Systems

Homework 2: Relational DB Design

February 26, 2026

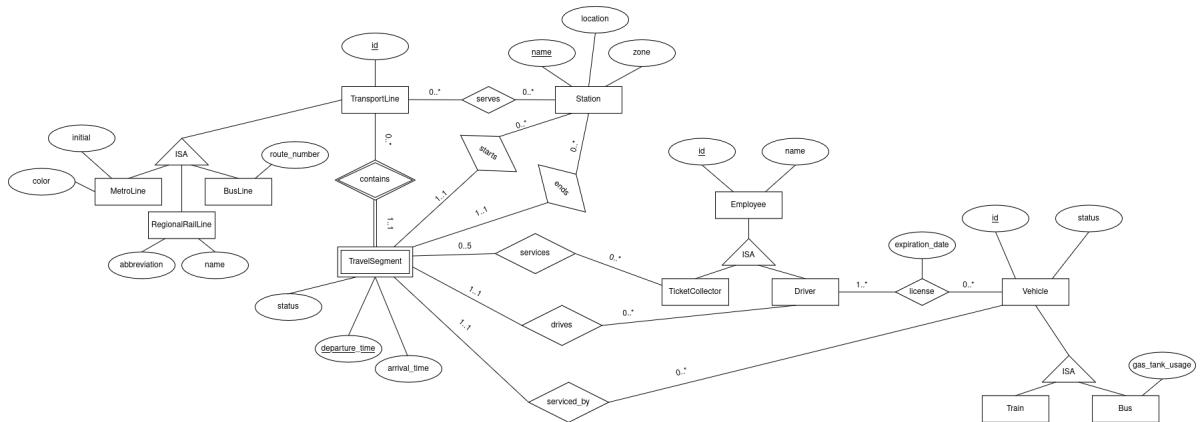
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Spring 2026

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1. Question 1 (30 points)

A. (20 points)



B. (5 points)

Ans: It is possible to have a start or end stop that does not have a TransportLine assigned to it. We can add a not exists constraint to the stations table to check that a station can be a stop if and only if it exists in the TransportLine table **double check this!**

C. (5 points)

Ans: Add an attribute to the relationship **serves** that is called **no_of_platforms**. We also add an attribute to the **Station** entity set **maximum_no_of_platforms**. We add a constraint that ensures that **no_of_platforms** is less than or equal to **maximum_no_of_platforms**.

2. Question 2 (20 points)**A. 12 points****Ans:**

```
CREATE TABLE Artists(
ArtistID INT PRIMARY KEY,
Name VARCHAR(50) NOT NULL,
Nationality VARCHAR(50) NOT NULL,
BirthYear INT(4) NOT NULL
);

CREATE TABLE Customers(
CustomerID INT PRIMARY KEY,
Name VARCHAR(50) NOT NULL,
Email VARCHAR(100) NOT NULL
);

CREATE TABLE Artworks(
ArtworkID INT PRIMARY KEY,
OwnerID INT FOREIGN KEY REFERENCES Customers(CustomerID),
CreatorID INT FOREIGN KEY REFERENCES Artists(ArtistID),
Title VARCHAR(50) NOT NULL,
AYear INT(4),
Medium VARCHAR(50)
);

CREATE TABLE Exhibitions(
ExhibitionID INT PRIMARY KEY,
ExhibitionName VARCHAR(100) NOT NULL
);

CREATE TABLE DisplayedIn(
ArtworkID INT,
ExhibitionID INT,
PRIMARY KEY (ArtworkID, ExhibitionID),
FOREIGN KEY (ArtworkID) REFERENCES Artworks(ArtworkID),
FOREIGN KEY (ExhibitionID) REFERENCES
    Exhibitions(ExhibitionID),
StartDate DATE,
EndDate DATE
);
```

B. 4 points

- C. 4 points
3. Question 3 (40 points)
- A. 4 points
 - B. 4 points
 - C. 6 points
 - D. 5 points
 - E. 2 points
 - F. 2 points
 - G. 12 points
 - H. 5 points