**SQL DDL**

***MaintenanceNeedsStationedAt***

CREATE TABLE MaintenanceNeedsStationedAt1(

downtimeDuration TIME PRIMARY KEY,

complexityLevel INTEGER

);

CREATE TABLE MaintenanceNeedsStationedAt3(

parts VARCHAR(20) PRIMARY KEY,

complexityLevel INTEGER

);

CREATE TABLE MaintenanceNeedsStationedAt4(

parts VARCHAR(20),

maintenanceID INTEGER PRIMARY KEY,

maintenanceDate DATE,

coordinateX FLOAT NOT NULL,

coordinateY FLOAT NOT NULL,

aircraftID INTEGER NOT NULL,

FOREIGN KEY (aircraftID)

REFERENCES Aircraft3(aircraftID)

ON DELETE CASCADE

ON UPDATE CASCADE

FOREIGN KEY (coordinateX, coordinateY)

REFERENCES RepairBase(coordinateX, coordinateY)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***SquadronFrom***

CREATE TABLE SquadronFrom1(

name VARCHAR(20) PRIMARY KEY,

dateFormed DATE

);

CREATE TABLE SquadronFrom3(

name VARCHAR(20) PRIMARY KEY,

aircraftCount INTEGER

);

CREATE TABLE SquadronFrom4(

squadronID INTEGER PRIMARY KEY,

name VARCHAR(20);

homeBaseID INTEGER NOT NULL,

FOREIGN KEY (homeBaseID)

REFERENCES HomeBase(homeBaseID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Performed***

CREATE TABLE Performed (

mechanicID INTEGER,

maintenanceID INTEGER,

workingHours INTEGER,

PRIMARY KEY (mechanicID, maintenanceID),

FOREIGN KEY (mechanicID)

REFERENCES Mechanic3(mechanicID)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (maintenanceID)

REFERENCES MaintenanceNeedsStationedAt4(maintenanceID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Works***

CREATE TABLE Works (

mechanicID INTEGER,

coordinateX FLOAT,

coordinateY FLOAT,

PRIMARY KEY (mechanicID, coordinateX, coordinateY),

FOREIGN KEY (mechanicID)

REFERENCES Mechanic3(mechanicID)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (coordinateX, coordinateY)

REFERENCES RepairBase3(coordinateX, coordinateY)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Operate***

CREATE TABLE Operate (

crewID INTEGER,

aircraftID INTEGER,

PRIMARY KEY (crewID, aircraftID),

FOREIGN KEY (crewID)

REFERENCES PilotsAndCrew3(crewID)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (aircraftID)

REFERENCES Aircraft3(aircraftID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Fly***

CREATE TABLE Fly (

crewID INTEGER,

missionID INTEGER,

squadronID INTEGER,

PRIMARY KEY (crewID, missionID, squadronID),

FOREIGN KEY (crewID)

REFERENCES PilotsAndCrew3(crewID)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (missionID)

REFERENCES Missions3(missionID)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (squadronID)

REFERENCES SquadronFrom4(squadronID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Land***

CREATE TABLE Land (

coordinatesX FLOAT,

coordinatesY FLOAT,

aircraftID INTEGER,

landTime DATETIME,

PRIMARY KEY (coordinatesX, coordinatesY, aircraftID),

FOREIGN KEY (coordinatesX, coordinatesY)

REFERENCES RepairBase3(coordinatesX, coordinatesY)

ON DELETE CASCADE

ON UPDATE CASCADE,

FOREIGN KEY (aircraftID)

REFERENCES Aircraft3(aircraftID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Mechanic***

CREATE TABLE Mechanic2(

contact VARCHAR(20) PRIMARY KEY,

name VARCHAR(20)

);

CREATE TABLE Mechanic3(

mechanicID INTEGER PRIMARY KEY,

contact VARCHAR(20)

);

CREATE TABLE Mechanic4(

contact VARCHAR(20) PRIMARY KEY,

availabilityStatus BOOLEAN

);

***Aircraft***

CREATE TABLE Aircraft2(

yearIntroduced INTEGER,

manufacturer VARCHAR(20),

model VARCHAR(20),

PRIMARY KEY (yearIntroduced, manufacturer)

);

CREATE TABLE Aircraft3(

aircraftID INTEGER PRIMARY KEY,

yearIntroduced INTEGER,

manufacturer VARCHAR(20)

);

CREATE TABLE Aircraft4(

yearIntroduced INTEGER,

manufacturer VARCHAR(20),

mainWeapon VARCHAR(20),

PRIMARY KEY (yearIntroduced, manufacturer)

);

***RepairBase***

CREATE TABLE RepairBase2(

city VARCHAR(20) PRIMARY KEY,

country VARCHAR(20)

);

CREATE TABLE RepairBase3(

coordinateX FLOAT,

coordinateY FLOAT,

city VARCHAR(20),

certification VARCHAR(20),

PRIMARY KEY (coordinateX, coordinateY)

);

CREATE TABLE RepairBase4(

certification VARCHAR(20) PRIMARY KEY,

specialization VARCHAR(20)

);

***HomeBase***

CREATE TABLE HomeBase1(

commissionDate DATE,

baseType VARCHAR(20),

region VARCHAR(20),

capacity INTEGER,

PRIMARY KEY (commissionDate, baseType, region)

);

CREATE TABLE HomeBase3(

commissionDate DATE PRIMARY KEY,

baseType VARCHAR(20)

);

CREATE TABLE HomeBase4(

commissionDate DATE,

region VARCHAR(20),

homeBaseID INTEGER PRIMARY KEY

);

***PilotsAndCrew***

CREATE TABLE PilotsAndCrew2(

name VARCHAR(20) PRIMARY KEY,

role VARCHAR(20)

);

CREATE TABLE PilotsAndCrew3(

crewID INTEGER PRIMARY KEY,

name VARCHAR(20)

);

CREATE TABLE PilotsAndCrew4(

name VARCHAR(20) PRIMARY KEY,

rank VARCHAR(20)

);

***Missions***

CREATE TABLE Missions2(

missionLocation VARCHAR(20),

missionDate DATE,

weather VARCHAR(20),

PRIMARY KEY (missionLocation, missionDate)

);

CREATE TABLE Missions3(

missionID INTEGER PRIMARY KEY,

missionDate DATE,

missionLocation VARCHAR(20),

outcome CHAR(1)

);

CREATE TABLE Missions4(

outcome CHAR(1) PRIMARY KEY,

duration TIME

);

***Repair***

CREATE TABLE Repair(

maintenanceID INTEGER PRIMARY KEY,

partReplaced VARCHAR(20),

FOREIGN KEY (maintenanceID)

REFERENCES MaintenanceNeedsStationedAt4(maintenanceID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***Upgrade***

CREATE TABLE Upgrade(

maintenanceID INTEGER PRIMARY KEY,

newParts VARCHAR(20),

FOREIGN KEY (maintenanceID)

REFERENCES MaintenanceNeedsStationedAt4(maintenanceID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

***AircraftDamage***

CREATE TABLE AircraftDamage(

aircraftID INTEGER,

damagePart VARCHAR(20),

date DATE,

PRIMARY KEY (aircraftID, damagePart, date),

FOREIGN KEY (aircraftID)

REFERENCES Aircraft3(aircraftID)

ON DELETE CASCADE

ON UPDATE CASCADE

);

**INSERT STATEMENTS**

**MaintenanceNeedsStationedAt:**

INSERT INTO MaintenanceNeedsStationedAt1 (downtimeDuration, complexityLevel) VALUES

('02:30:00', 3),

('01:45:00', 2),

('03:00:00', 4),

('04:15:00', 5),

('00:50:00', 1);

INSERT INTO MaintenanceNeedsStationedAt3 (parts, complexityLevel) VALUES

('Engine', 5),

('Landing Gear', 3),

('Fuel Tank', 2),

('Hydraulics', 4),

('Wing', 3);

INSERT INTO MaintenanceNeedsStationedAt4 (parts, maintenanceID, maintenanceDate, coordinateX, coordinateY, aircraftID) VALUES

('Engine', 1, '2024-01-10', 52.345, -106.123, 101),

('Landing Gear', 2, '2024-02-15', 49.987, -123.456, 102),

('Fuel Tank', 3, '2024-03-20', 55.678, -120.789, 103),

('Hydraulics', 4, '2024-04-22', 53.432, -122.321, 104),

('Wing', 5, '2024-05-05', 51.234, -124.567, 105);

**SquadronFrom:**

INSERT INTO SquadronFrom1 (name, dateFormed) VALUES

('Eagles', '2020-05-12'),

('Falcons', '2021-06-15'),

('Hawks', '2019-07-20'),

('Raptors', '2022-03-10'),

('Vultures', '2023-01-18');

INSERT INTO SquadronFrom3 (name, aircraftCount) VALUES

('Eagles', 10),

('Falcons', 12),

('Hawks', 8),

('Raptors', 9),

('Vultures', 11);

INSERT INTO SquadronFrom4 (squadronID, name, homeBaseID) VALUES

(1, 'Eagles', 201),

(2, 'Falcons', 202),

(3, 'Hawks', 203),

(4, 'Raptors', 204),

(5, 'Vultures', 205);

**Performed:**

INSERT INTO Performed (mechanicID, maintenanceID, workingHours) VALUES

(1, 1, 10),

(2, 2, 8),

(3, 3, 12),

(4, 4, 7),

(5, 5, 6);

**Works:**

INSERT INTO Works (mechanicID, coordinateX, coordinateY) VALUES

(1, 52.345, -106.123),

(2, 49.987, -123.456),

(3, 55.678, -120.789),

(4, 53.432, -122.321),

(5, 51.234, -124.567);

**Operate:**

INSERT INTO Operate (crewID, aircraftID) VALUES

(1, 101),

(2, 102),

(3, 103),

(4, 104),

(5, 105);

**Fly:**

INSERT INTO Fly (crewID, missionID, squadronID) VALUES

(1, 1001, 1),

(2, 1002, 2),

(3, 1003, 3),

(4, 1004, 4),

(5, 1005, 5);

**Land:**

INSERT INTO Land (coordinatesX, coordinatesY, aircraftID, landTime) VALUES

(52.345, -106.123, 101, '2024-01-01 10:30:00'),

(49.987, -123.456, 102, '2024-02-10 12:45:00'),

(55.678, -120.789, 103, '2024-03-15 14:00:00'),

(53.432, -122.321, 104, '2024-04-22 15:30:00'),

(51.234, -124.567, 105, '2024-05-05 11:45:00');

**Mechanic:**

INSERT INTO Mechanic2 (contact, name) VALUES

('123-456-7890', 'John Doe'),

('123-555-7890', 'Jane Smith'),

('987-654-3210', 'David Brown'),

('789-456-1230', 'Michael Lee'),

('555-123-9876', 'Emily Davis');

INSERT INTO Mechanic3 (mechanicID, contact) VALUES

(1, '123-456-7890'),

(2, '123-555-7890'),

(3, '987-654-3210'),

(4, '789-456-1230'),

(5, '555-123-9876');

INSERT INTO Mechanic4 (contact, availabilityStatus) VALUES

('123-456-7890', TRUE),

('123-555-7890', TRUE),

('987-654-3210', FALSE),

('789-456-1230', TRUE),

('555-123-9876', FALSE);

**Aircraft:**

INSERT INTO Aircraft2 (yearIntroduced, manufacturer, model) VALUES

(2015, 'Boeing', 'F18'),

(2017, 'Lockheed', 'F35'),

(2016, 'Dassault', 'Rafale'),

(2020, 'Saab', 'Gripen'),

(2019, 'Eurofighter', 'Typhoon');

INSERT INTO Aircraft3 (aircraftID, yearIntroduced, manufacturer) VALUES

(101, 2015, 'Boeing'),

(102, 2017, 'Lockheed'),

(103, 2016, 'Dassault'),

(104, 2020, 'Saab'),

(105, 2019, 'Eurofighter');

INSERT INTO Aircraft4 (yearIntroduced, manufacturer, mainWeapon) VALUES

(2015, 'Boeing', 'AIM-120 AMRAAM'),

(2017, 'Lockheed', 'AIM-9 Sidewinder'),

(2016, 'Dassault', 'Meteor'),

(2020, 'Saab', 'IRIS-T'),

(2019, 'Eurofighter', 'Storm Shadow');

**RepairBase:**

INSERT INTO RepairBase2 (city, country) VALUES

('Vancouver', 'Canada'),

('Seattle', 'USA'),

('London', 'UK'),

('Paris', 'France'),

('Berlin', 'Germany');

INSERT INTO RepairBase3 (coordinateX, coordinateY, city, certification) VALUES

(49.2827, -123.1207, 'Vancouver', 'Aerospace Grade A'),

(47.6062, -122.3321, 'Seattle', 'Aerospace Grade B'),

(51.5074, -0.1278, 'London', 'Aerospace Grade A'),

(48.8566, 2.3522, 'Paris', 'Aerospace Grade C'),

(52.5200, 13.4050, 'Berlin', 'Aerospace Grade A');

INSERT INTO RepairBase4 (certification, specialization) VALUES

('Aerospace Grade A', 'Engines'),

('Aerospace Grade B', 'Avionics'),

('Aerospace Grade C', 'Structures'),

('Aerospace Grade A', 'Hydraulics'),

('Aerospace Grade C', 'Landing Gear');

**HomeBase:**

INSERT INTO HomeBase1 (commissionDate, baseType, region, capacity) VALUES

('2010-06-01', 'Airbase', 'West', 500),

('2011-07-15', 'Naval Base', 'East', 400),

('2009-09-20', 'Airbase', 'South', 600),

('2012-10-30', 'Naval Base', 'North', 300),

('2013-05-25', 'Airbase', 'Central', 450);

INSERT INTO HomeBase3 (commissionDate, baseType) VALUES

('2010-06-01', 'Airbase'),

('2011-07-15', 'Naval Base'),

('2009-09-20', 'Airbase'),

('2012-10-30', 'Naval Base'),

('2013-05-25', 'Airbase');

INSERT INTO HomeBase4 (commissionDate, region, homeBaseID) VALUES

('2010-06-01', 'West', 201),

('2011-07-15', 'East', 202),

('2009-09-20', 'South', 203),

('2012-10-30', 'North', 204),

('2013-05-25', 'Central', 205);

**PilotsAndCrew:**

INSERT INTO PilotsAndCrew2 (name, role) VALUES

('John Connor', 'Pilot'),

('Sarah Lance', 'Co-pilot'),

('Mike Jordan', 'Navigator'),

('Bruce Wayne', 'Pilot'),

('Clark Kent', 'Navigator');

INSERT INTO PilotsAndCrew3 (crewID, name) VALUES

(1, 'John Connor'),

(2, 'Sarah Lance'),

(3, 'Mike Jordan'),

(4, 'Bruce Wayne'),

(5, 'Clark Kent');

INSERT INTO PilotsAndCrew4 (name, rank) VALUES

('John Connor', 'Captain'),

('Sarah Lance', 'Lieutenant'),

('Mike Jordan', 'Major'),

('Bruce Wayne', 'Colonel'),

('Clark Kent', 'Lieutenant');

**Missions:**

INSERT INTO Missions2 (missionLocation, missionDate, weather) VALUES

('Syria', '2024-01-01', 'Clear'),

('Iraq', '2024-02-10', 'Cloudy'),

('Afghanistan', '2024-03-15', 'Stormy'),

('Libya', '2024-04-22', 'Rainy'),

('Somalia', '2024-05-05', 'Clear');

INSERT INTO Missions3 (missionID, missionDate, missionLocation, outcome) VALUES

(1001, '2024-01-01', 'Syria', 'S'),

(1002, '2024-02-10', 'Iraq', 'F'),

(1003, '2024-03-15', 'Afghanistan', 'S'),

(1004, '2024-04-22', 'Libya', 'S'),

(1005, '2024-05-05', 'Somalia', 'F');

INSERT INTO Missions4 (outcome, duration) VALUES

('S', '02:30:00'),

('F', '01:45:00'),

('S', '03:15:00'),

('S', '02:50:00'),

('F', '02:00:00');

**Repair:**

INSERT INTO Repair (maintenanceID, partReplaced) VALUES

(1, 'Engine'),

(2, 'Landing Gear'),

(3, 'Fuel Tank'),

(4, 'Hydraulics'),

(5, 'Wing');

**Upgrade:**

INSERT INTO Upgrade (maintenanceID, newParts) VALUES

(1, 'Advanced Engine'),

(2, 'Upgraded Landing Gear'),

(3, 'Reinforced Fuel Tank'),

(4, 'Improved Hydraulics'),

(5, 'High-Performance Wing');

**AircraftDamage:**

INSERT INTO AircraftDamage (aircraftID, damagePart, date) VALUES

(101, 'Engine', '2024-01-05'),

(102, 'Landing Gear', '2024-02-12'),

(103, 'Fuel Tank', '2024-03-18'),

(104, 'Hydraulics', '2024-04-25'),

(105, 'Wing', '2024-05-07');