

SKYVIEW

GITHUB LINK : <https://github.com/CaptainAditya/real-time-flight-tracker.git>

Problem Statement:

A flight tracking app that shows various details about all the airplanes currently active in the sky with their exact geographical location and all sorts of information.

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Link to GitHub Repo:

<https://github.com/CaptainAditya/real-time-flight-tracker.git>

Features:

- Search a flight by:
 - o Flight #
 - o Source and Destination
 - o Airports
- Use of APIs to retrieve real time data

Functional Requirements:

- mysql 8.0 or above
- A web browser with JS enabled
- XAMPP

TABLES:

1. AIRLINES:

S. No.	ATTRIBUTE	DATA TYPE
01	AgeFleet	Decimal
02	CallSign	varchar(255)
03	CodeHub	Varchar(255)
04	CodeIataAirline	Varchar(255)
05	codeIcaoAirline	Varchar(255)
06	Founding	Varchar(255)
07	NameAirline	Varchar(255)
08	NameCountry	Varchar(255)
09	sizeAirline	Varchar(255)

2. FLIGHT:

S. No.	ATTRIBUTE	DATA TYPE
01	aircraftRegNumber	varchar(255)
02	airlineIcaoCode	varchar(255)
03	flightIcaoNumber	Varchar(255)
04	status	Varchar(255)

3. ARRIVALS:

S. No.	ATTRIBUTE	DATA TYPE
01	flightICAO	varchar(255)
02	arrivalIcaoCode	varchar(255)
03	arrivalIataCode	Varchar(255)

4. DEPARTURES:

S. No.	ATTRIBUTE	DATA TYPE
01	flightICAO	varchar(255)
02	depIcaoCode	varchar(255)
03	depIataCode	Varchar(255)

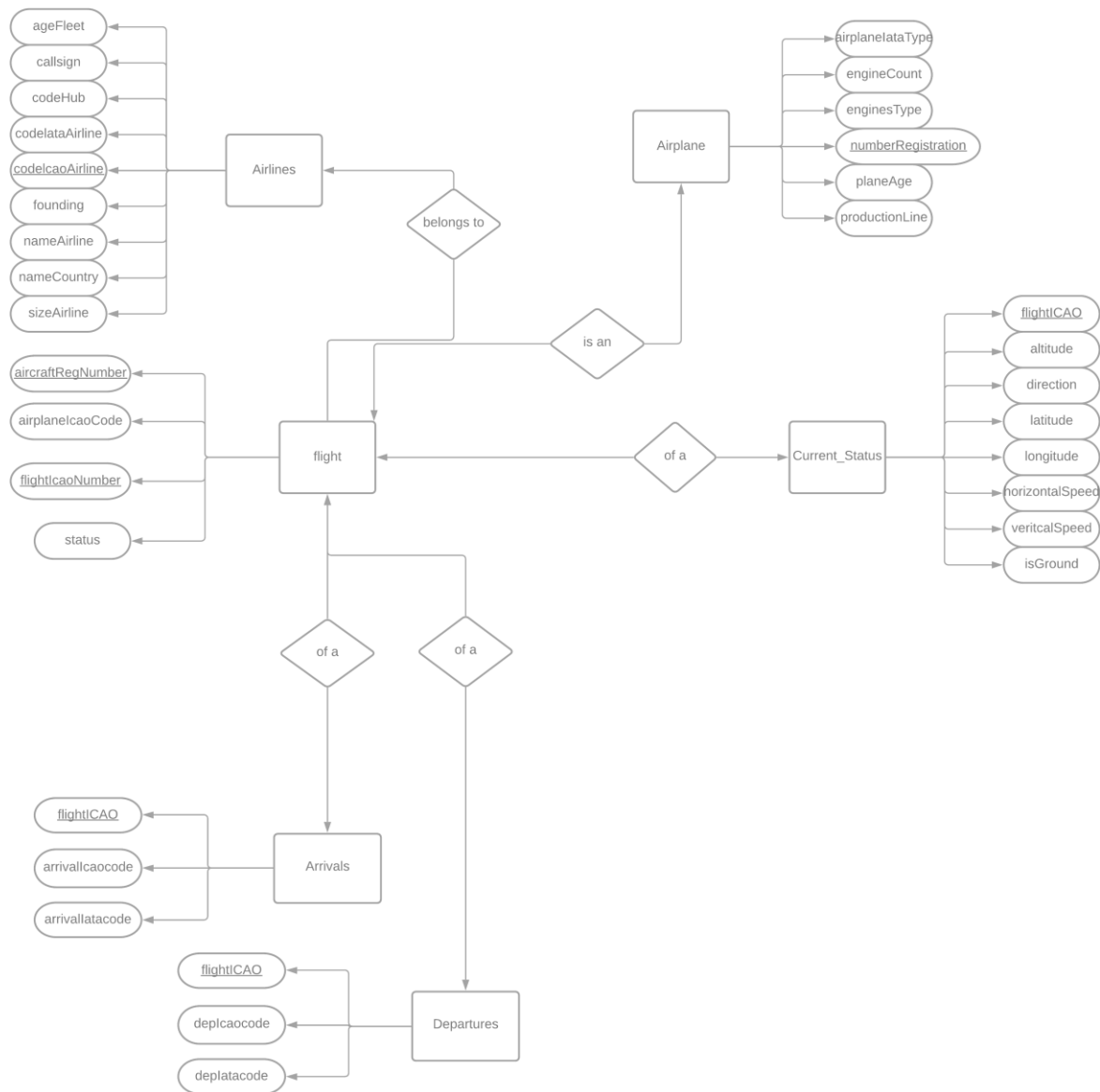
5. AIRPLANE:

S. No.	ATTRIBUTE	DATA TYPE
01	airplaneIataType	String
02	engineCount	integer
03	enginesType	string
04	numberRegistration	String
05	planeAge	integer
06	productionLine	string

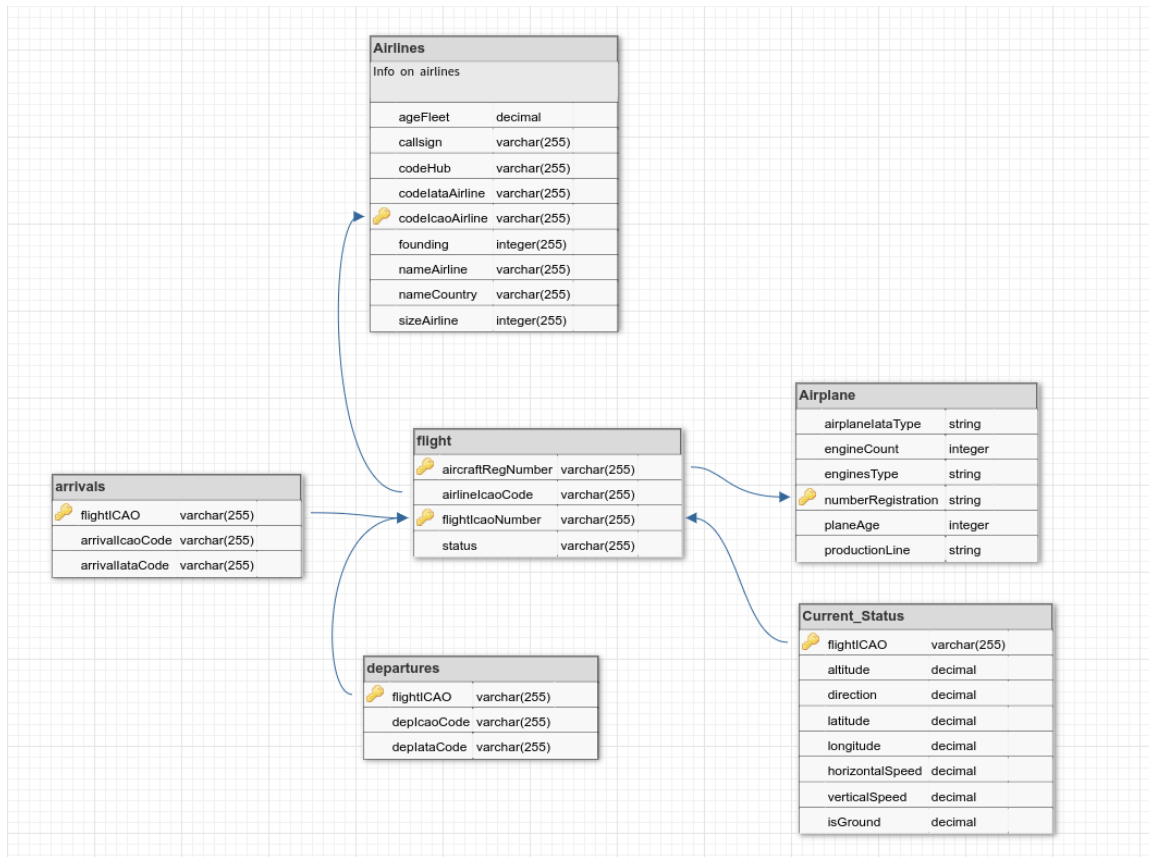
6. CURRENT_STATUS:

S. No.	ATTRIBUTE	DATA TYPE
01	flightICAO	varchar(255)
02	Altitude	decimal
03	direction	decimal
04	latitude	decimal
05	longitude	decimal
06	horizontalSpeed	decimal
07	verticalSpeed	decimal
08	isGround	decimal

ER diagram:



Relational Schema:



Functional Dependencies:

1. Airlines
 - (codeIcaoAirline)+ = { ageFleet, callsign, codeHub, codeIataAirline, founding, nameAirline, nameCountry, sizeAirline }
2. Airplane
 - (numberRegistration)+ = { airplaneIataType, engineCount, enginesType, planeAge, productionLine }
3. flight
 - (flightIcaoNumber, aircraftRegNumber)+ = { airlineIcaoCode, status }
4. arrivals
 - (flightICAO)+ = { arrivalIcaoCode, arrivalIataCode }
5. departures
 - (flightICAO)+ = { depIcaoCode, depIataCode }
6. Current_Status
 - (flightICAO)+ = { altitude, direction, latitude, longitude, horizontalSpeed, verticalSpeed, isGround }

NORMALIZATION:

- Airlines:

Primary key: codeIcaoAirline

Prime attributes: codeIcaoAirline

Non-Prime attributes: ageFleet, callsign, codeHub, codeIataAirline, founding, nameAirline, nameCountry, sizeAirline.

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

- Airplane:

Primary key: numberRegistration

Prime attributes: numberRegistration

Non-Prime attributes: airplaneIataType, engineCount, enginesType, planeAge, productionLine.

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

- Flight:
Primary key: flightIcaoNumber

Prime attributes: flightIcaoNumber

Non-Prime attributes: aircraftRegNumber, airlineIcaoCode, status

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

- Arrivals:
Primary key: flightICAO

Prime attributes: flightICAO

Non-Prime attributes: arrivalIcaoCode, arrivalIataCode

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

- departures:
Primary key: flightICAO

Prime attributes: flightICAO

Non-Prime attributes: deplIcaoCode, deplIataCode

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

- Current_Status: Primary
key: flightICAO

Prime attributes: flightICAO

Non-Prime attributes: altitude, direction, latitude, longitude,
horizontalSpeed, verticalSpeed, isGround

There is no partial dependency. Therefore the table is in 2NF.

There is no transitive dependency. Therefore the table is in 3NF.

All dependencies are from candidate key. Therefore the table is BCNF.

SQL OPERATIONS:

```
CREATE TABLE `Airlines` (  
    `ageFleet` DECIMAL,  
    `callsign` varchar(255),  
    `codeHub` varchar(255),  
    `codeIataAirline` varchar(255),  
    `codeIcaoAirline` varchar(255),  
    `founding` INT(255),  
    `nameAirline` varchar(255),  
    `nameCountry` varchar(255),  
    `sizeAirline` INT(255),  
    PRIMARY KEY (`codeIcaoAirline`)  
);
```

```
CREATE TABLE `Airports` (  
    `codeIataAirport` varchar(255),  
    `codeIcaoAirport` varchar(255),  
    `latitudeAirport` DECIMAL(65),  
    `longitudeAirport` DECIMAL(65),  
    `nameAirport` varchar(255),  
    `nameCountry` varchar(255),  
    `time_zone` varchar(255),  
    PRIMARY KEY (`codeIcaoAirport`)  
);
```

```
CREATE TABLE `Airplane` (  
    `airplaneIataType` VARCHAR(255) ,  
    `engineCount` INT ,  
    `enginesType` VARCHAR(255) ,  
    `numberRegistration` VARCHAR(255) ,  
    `planeAge` INT,  
    `productionLine` VARCHAR(255) ,  
    PRIMARY KEY (`numberRegistration`)  
);
```

```
CREATE TABLE `departures` (  
    `flightICAO` varchar(255) UNIQUE,  
    `depIcaoCode` varchar(255),  
    `depIataCode` varchar(255)  
);
```

```
CREATE TABLE `arrivals` (  
    `flightICAO` varchar(255) UNIQUE,  
    `arrivalIcaoCode` varchar(255) ,  
    `arrivalIataCode` varchar(255)  
);
```

```
CREATE TABLE `flight` (  
    `aircraftRegNumber` varchar(255) UNIQUE,  
    `airlineIcaoCode` varchar(255) UNIQUE,  
    `flightIcaoNumber` varchar(255) UNIQUE,  
    `status` varchar(255) ,  
    PRIMARY KEY  
    (`aircraftRegNumber`, `flightIcaoNumber`)  
);
```



```
CREATE TABLE `Current_Status` (  
    `flightICAO` varchar(255) UNIQUE,  
    `altitude` DECIMAL ,  
    `direction` DECIMAL ,  
    `latitude` DECIMAL ,  
    `longitude` DECIMAL ,  
    `horizontalSpeed` DECIMAL ,  
    `verticalSpeed` DECIMAL ,  
    `isGround` DECIMAL ,  
    PRIMARY KEY (`flightICAO`)  
);
```

```
ALTER TABLE `departures` ADD CONSTRAINT `departures_fk0` FOREIGN  
KEY (`flightICAO`) REFERENCES `flight`(`flightIcaoNumber`);
```

```
ALTER TABLE `arrivals` ADD CONSTRAINT `arrivals_fk0` FOREIGN KEY  
(`flightICAO`) REFERENCES `flight`(`flightIcaoNumber`);
```

```
ALTER TABLE `flight` ADD CONSTRAINT `flight_fk0` FOREIGN KEY  
(`aircraftRegNumber`) REFERENCES `Airplane`(`numberRegistration`);
```

```
ALTER TABLE `flight` ADD CONSTRAINT `flight_fk1` FOREIGN KEY  
(`airlineIcaoCode`) REFERENCES `Airlines`(`codeIcaoAirline`);
```

```
ALTER TABLE `Current_Status` ADD CONSTRAINT `Current_Status_fk0`  
FOREIGN KEY (`flightICAO`) REFERENCES  
`flight`(`flightIcaoNumber`);
```