SQL practical Assignment

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1. Create the SQL commands that would generate the STRIKE, FIRES, and PICTURES tables.
Ans:

```
INSERT INTO STRIKE (ID, Date, Time, Lat, Lon, Intensity)
VALUES
   (1, '2006-05-05', '02:02:00', 41.34, -122.45, 6235),
   (2, '2006-05-05', '02:09:00', 40.47, -120.47, 16235),
   (3, '2006-05-05', '03:32:00', 42.14, -122.98, 7779),
   (4, '2006-05-05', '04:34:00', 38.32, -122.17, 4645),
   (5, '2006-05-05', '05:02:00', 39.04, -121.22, 8989);
```

```
INSERT INTO STRIKE (ID, Date, Time, Lat, Lon, Intensity)
VALUES
   (1, '2006-05-05', '02:02:00', 41.34, -122.45, 6235),
   (2, '2006-05-05', '02:09:00', 40.47, -120.47, 16235),
   (3, '2006-05-05', '03:32:00', 42.14, -122.98, 7779),
   (4, '2006-05-05', '04:34:00', 38.32, -122.17, 4645),
   (5, '2006-05-05', '05:02:00', 39.04, -121.22, 8989);
```

```
CREATE TABLE FIRES (
   ID INT PRIMARY KEY,
   Date DATE,
   Lat DECIMAL(8, 2),
   Lon DECIMAL(8, 2),
   Area DECIMAL(10, 2)
);
```

```
INSERT INTO FIRES (ID, Date, Lat, Lon, Area)
VALUES
   (1, '2006-05-05', 32.34, -122.45, 123.90),
   (2, '2006-05-05', 37.19, -121.66, 627.09),
   (3, '2006-05-05', 40.47, -120.47, 45.00),
   (4, '2006-05-05', 42.14, -122.98, 1774.9),
   (5, '2006-05-05', 37.21, -120.47, 2034.8),
```

```
    (6, '2006-05-05', 42.04, -126.22, 49.62);

CREATE TABLE PICTURES (
    ID INT PRIMARY KEY,
    Strike_FK INT,
    Date DATE,
    Filename VARCHAR(255)
);

INSERT INTO PICTURES (ID, Strike_FK, Date, Filename)
VALUES
    (1, 1, '2006-05-05', '04938245.png'),
    (2, 1, '2006-05-05', '04983284.png'),
    (3, 2, '2006-05-05', '04773626.png'),
    (4, 2, '2006-05-05', '04789789.png'),
    (5, 4, '2006-05-05', '04323456.png'),
    (6, 5, '2006-05-05', '04325342.png');
```

2. Create an SQL command to generate an appropriate LIGHTNING_FIRES table that would connect the FIRES table to the STRIKE table:

Ans:

```
CREATE TABLE Lightning_Fires (
    ID INT PRIMARY KEY,
    Strike_ID INT,
    Fire_ID INT,
    CONSTRAINT FK_Strike FOREIGN KEY (Strike_ID) REFERENCES STRIKE(ID),
    CONSTRAINT FK_Fire FOREIGN KEY (Fire_ID) REFERENCES FIRES(ID)
);
```

3. Write an SQL command that would report a single number for the average intensity for all records in the STRIKE table:

Ans:

```
SELECT AVG(Intensity)  Average_Intensity
FROM STRIKE;
```

4. Write an SQL command that would list all STRIKE IDs for those lightning STRIKEs that do not have a picture available in the PICTURES table. Show the result set the query would generate:

Ans:

```
SELECT S.ID as StrikeID
FROM STRIKE as S
LEFT JOIN PICTURES  P ON S.ID = P.Strike_FK
WHERE P.Strike_FK IS null;
```

5. Write an SQL command that would list the largest three FIRES in order of the maximum Area burned by the fire.Show the result set the query would generate:

Ans:

```
SELECT ID, Date, Lat, Lon, Area
FROM FIRES
ORDER BY Area DESC
LIMIT 3;
```

6. Write an SQL command to report the total Area burned by these largest three FIRES (report a single number):

Ans:

```
SELECT SUM(Area) AS Total_Area_Burned
FROM (
   SELECT Area
   FROM FIRES
   ORDER BY Area DESC
   LIMIT 3
) abc;
```

7. Create an SQL query that would match lightning STRIKES to FIRES based on these identifying features:

Ans:

```
SELECT
   S.ID StrikeID,
   F.ID FireID,
   S.Date StrikeDate,
   F.Date FireDate
FROM
   STRIKE S
INNER JOIN
   FIRES F
ON
   S.Date = F.Date
   AND S.Lat = F.Lat
   AND S.Lon = F.Lon;
```

9. Create the result set for the following query (with headers for each column returned):

SELECT STRIKE.Lat as LATITUDE, STRIKE.Lon as LONGITUDE, Filename AS PNG FROM STRIKE, PICTURES WHERE Strike.ID=Strike_FK ORDER BY Filename DESC;

Ans:

LATITUDE	LONGITUDE	PNG
42.14	-122.98	04773626.png
42.04	-126.22	04325342.png
40.47	-120.47	04789789.png
40.47	-120.47	04773626.png
37.21	-120.47	04325342.png
37.19	121.66	04983284.png
32.34	-122.45	04983284.png