10/23/2024 – SQN class

**Activity #1**

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

select \* from gps\_data where month = 10 AND day = 2 AND hour = 5

A screenshot of a computer

Description automatically generated

**Activity #2**

select \* from gps\_data where month = 10 AND day = 3 AND hour = 4

A screenshot of a computer

Description automatically generated

SELECT COUNT(\*) FROM gps\_data;

A screenshot of a computer

Description automatically generated

SELECT COUNT(DISTINCT journey\_id) FROM gps\_data where month = 10 AND day = 3 AND hour = 4;

A screenshot of a computer

Description automatically generated

select \* from gps\_data where month = 10 AND (day = 1 OR day = 3) AND (hour = 3 OR hour = 4 OR hour = 5 OR hour = 6)

A screenshot of a computer

Description automatically generated

SELECT distinct journey\_id FROM gps\_data WHERE journey\_id LIKE '%abc%';

A screenshot of a computer

Description automatically generated

**Activity #3**

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**Activity #4**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**Activity # 5**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**Activity #6**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer program

Description automatically generated**

**All Code**

**CREATE TABLE gps\_data (**

**datapoint\_id varchar(50),**

**journey\_id varchar(50),**

**latitude float,**

**longitude float,**

**month int,**

**day int,**

**hour int,**

**Primary key (datapoint\_id)**

**);**

**CREATE TABLE vehicle\_data (**

**datapoint\_id varchar(50),**

**geohash varchar (50),**

**speed float,**

**make char(50),**

**model char(50),**

**route\_id char(50),**

**segment\_start\_measure float,**

**Primary key (datapoint\_id)**

**);**

**COPY gps\_data(datapoint\_id, journey\_id, latitude, longitude, month, day, hour)**

**FROM 'C:\Users\Public\gps\_data.csv'**

**DELIMITER ','**

**CSV HEADER**

**select \* from gps\_data**

**select \* from gps\_data where month = 10**

**select \* from gps\_data where month = 10 AND day = 2 AND hour = 5**

**select \* from gps\_data where month = 10 AND day = 3 AND hour = 4**

**SELECT COUNT(\*) FROM gps\_data;**

**SELECT COUNT(DISTINCT journey\_id) FROM gps\_data where month = 10 AND day = 3 AND hour = 4;**

**select \* from gps\_data where month = 10 AND (day = 1 OR day = 3) AND (hour = 3 OR hour = 4 OR hour = 5 OR hour = 6)**

**SELECT distinct journey\_id FROM gps\_data WHERE journey\_id LIKE '%abc%';**

**COPY vehicle\_data(datapoint\_id, geohash, speed, make, model, route\_id, segment\_start\_measure)**

**FROM 'C:\Users\Public\vehicle\_data.csv'**

**DELIMITER ','**

**CSV HEADER**

**SELECT MAX(speed) FROM vehicle\_data;**

**SELECT**

**AVG(speed) AS avg\_speed,**

**MIN(speed) AS min\_speed,**

**MAX(speed) AS max\_speed,**

**STDDEV(speed) AS stddev\_speed**

**FROM vehicle\_data**

**WHERE make = 'CHEVROLET';**

**SELECT**

**route\_id,**

**segment\_start\_measure,**

**route\_id || '-' || segment\_start\_measure AS seg\_id**

**FROM vehicle\_data;**

**ALTER TABLE vehicle\_data**

**ADD COLUMN seg\_id TEXT;**

**UPDATE vehicle\_data**

**SET seg\_id = CONCAT(route\_id, '-', segment\_start\_measure);**

**SELECT route\_id, segment\_start\_measure, seg\_id**

**FROM vehicle\_data**

**LIMIT 10;**

**SELECT**

**seg\_id,**

**PERCENTILE\_CONT(0.85) WITHIN GROUP (ORDER BY speed) AS speed\_85th\_percentile**

**FROM vehicle\_data**

**GROUP BY seg\_id**

**ORDER BY seg\_id;**

**SELECT**

**model,**

**PERCENTILE\_CONT(0.95) WITHIN GROUP (ORDER BY speed) AS speed\_95th\_percentile**

**FROM vehicle\_data**

**GROUP BY model**

**ORDER BY model;**

**Select \* from gps\_data gps**

**join vehicle\_data veh**

**on gps.datapoint\_id = veh.datapoint\_id**

**Select gps.\*, veh.speed from gps\_data gps**

**join vehicle\_data veh**

**on gps.datapoint\_id = veh.datapoint\_id**

**Select count (distinct journey\_id) from gps\_data gps**

**join vehicle\_data veh**

**on gps.datapoint\_id = veh.datapoint\_id**

**where speed = 0**

**select \* from gps\_data where datapoint\_id in (select datapoint\_id from vehicle\_data where make = 'GMC')**

**SELECT**

**v.make,**

**v.model,**

**COUNT(DISTINCT g.journey\_id) AS unique\_journey\_count**

**FROM**

**vehicle\_data v**

**JOIN**

**gps\_data g ON v.datapoint\_id = g.datapoint\_id**

**GROUP BY**

**v.make, v.model**

**ORDER BY**

**v.make DESC, v.model DESC;**

**SELECT**

**g.journey\_id,**

**v.speed**

**FROM**

**vehicle\_data v**

**JOIN**

**gps\_data g ON v.datapoint\_id = g.datapoint\_id**

**ORDER BY**

**v.speed DESC**

**LIMIT 1;**

**SELECT \***

**FROM gps\_data**

**WHERE journey\_id = 'a37cf85fe887cb5b54fd828664ace413938a6e5d';**

**CREATE EXTENSION IF NOT EXISTS postgis;**

**SELECT**

**ST\_Distance(**

**ST\_SetSRID(ST\_MakePoint(-93.610065, 41.948637), 4326),**

**ST\_SetSRID(ST\_MakePoint(-93.610229, 41.997339), 4326)**

**) AS distance\_meters;**

**WITH line AS (**

**SELECT ST\_MakeLine(**

**ST\_SetSRID(ST\_MakePoint(-93.610065, 41.948637), 4326),**

**ST\_SetSRID(ST\_MakePoint(-93.610229, 41.997339), 4326)**

**) AS geom**

**),**

**point3 AS (**

**SELECT ST\_SetSRID(ST\_MakePoint(-93.619738, 41.972017), 4326) AS geom**

**)**

**SELECT**

**ST\_Distance(point3.geom, line.geom) AS distance\_meters**

**FROM**

**line, point3;**

**ALTER TABLE gps\_data**

**ADD COLUMN geom GEOMETRY(Point, 4326);**

**UPDATE gps\_data**

**SET geom = ST\_SetSRID(ST\_MakePoint(longitude, latitude), 4326);**

**WITH buffer AS (**

**SELECT ST\_Buffer(**

**ST\_SetSRID(ST\_MakePoint(-93.619738, 41.972017), 4326)::geography,**

**4828.03 -- 3 miles in meters**

**) AS geom**

**)**

**SELECT**

**gps.\***

**FROM**

**gps\_data AS gps,**

**buffer**

**WHERE**

**ST\_DWithin(**

**gps.geom::geography,**

**buffer.geom,**

**4828.03**

**);**