

bite-sized.sql

SQL Server: Calculate geographic distances

Sample data of trips between 2 stations in NYC

The location data are stored as latitude and longitude in separate columns

```
SELECT TOP 5 *  
FROM #trips;
```



	start_station_name	start_lat	start_lng	
1	Audobon Ave & W 179 St	40.8472251892...	-73.933380126...	W
2	Wards Meadow Comfort Station	40.7829399108...	-73.930770874...	
3	Pulaski St & Marcus Garvey Blvd	40.6934242248...	-73.939849853...	Br
4	6 Ave & W 33 St	40.7490119934...	-73.988487243...	
5	W 64 St & Thelonious Monk Circle	40.7752189636...	-73.988700866...	

	end_station_name	end_lat	end_lng
0126...	W 160 St & St. Nicholas Ave	40.8344688415...	-73.939865112...
0874...	E 106 St & Madison Ave	40.7934341430...	-73.949447631...
49853...	Broadway & Madison St	40.6882209777...	-73.919662475...
87243...	35 St & Broadway	40.7603378295...	-73.922241210...
98700866...	W 70 St & Amsterdam Ave	40.7774810791...	-73.982887268...

Calculate shortest LineString between two geography points

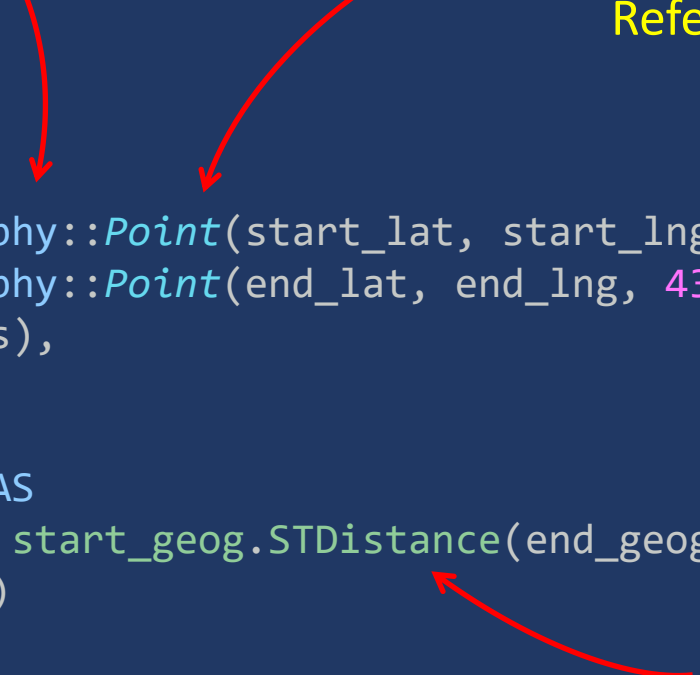
geography:: indicates we are using the .NET Common-language runtime (CLR) geography data type

Point() creates a geography representing a Point instance from the given lat/long. 4326 is the **Spatial Reference ID (SRID)**

```
WITH
trips AS
(SELECT *,
    geography::Point(start_lat, start_lng, 4326) AS start_geog,
    geography::Point(end_lat, end_lng, 4326) AS end_geog
FROM #trips),

distances AS
(SELECT *, start_geog.STDistance(end_geog) AS distance
FROM trips)

SELECT MIN(distance) AS min_distance,
    AVG(distance) AS avg_distance,
    MAX(distance) AS max_distance
FROM distances;
```



The **.STDistance** function calculates the distance of the shortest line between the two geographies.

The distance is returned in metres

	min_distance	avg_distance	max_distance
1	0	2792.3624344996...	24905.405721206218

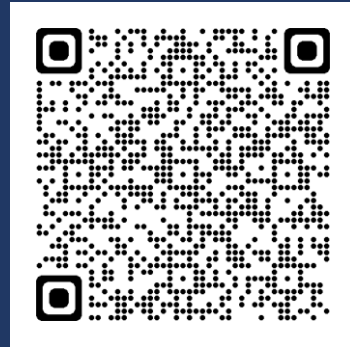
There are many other spatial functions

STArea
STAsBinary
STAsText
STBuffer
STContains
STConvexHull
STCurveN
STCurveToLine
STDifference
STDimension
STDisjoint
STDistance
STEndpoint
STEquals
STGeometryN
STGeometryType
STIntersection
STIntersects
STIsClosed
STIsEmpty
STIsValid
STLength
STNumCurves
STNumGeometries

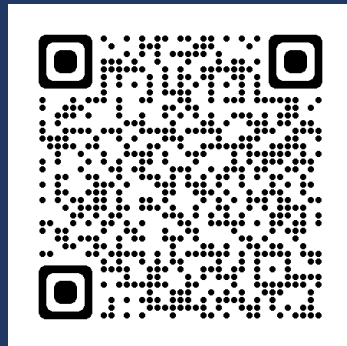
SQL Server:



MySQL:



PostgreSQL
(PostGIS extension)



Oracle
(SDO_Geom package)

