**// Unique constraints**

CREATE CONSTRAINT FOR (v: Violation) REQUIRE v.row\_number IS UNIQUE;

CREATE CONSTRAINT FOR (veh: VehicleType) REQUIRE veh.vehicle\_type IS UNIQUE;

CREATE CONSTRAINT FOR (vy: Year) REQUIRE vy.year IS UNIQUE;

CREATE CONSTRAINT FOR (cv: CommercialVehicle) REQUIRE cv.commercial\_vehicle IS UNIQUE;

CREATE CONSTRAINT FOR (g: Gender) REQUIRE g.gender IS UNIQUE;

CREATE CONSTRAINT FOR (cl: CommercialLicense) REQUIRE cl.commercial\_license IS UNIQUE;

CREATE CONSTRAINT FOR (ac: Accident) REQUIRE ac.accident IS UNIQUE;

CREATE CONSTRAINT FOR (b: Belts) REQUIRE b.belts IS UNIQUE;

CREATE CONSTRAINT FOR (ag: Agency) REQUIRE ag.agency IS UNIQUE;

CREATE CONSTRAINT FOR (sag: SubAgency) REQUIRE sag.sub\_agency IS UNIQUE;

CREATE CONSTRAINT FOR (f: Fatal) REQUIRE f.fatal IS UNIQUE;

CREATE CONSTRAINT FOR (h: Hazmat) REQUIRE h.hazmat IS UNIQUE;

CREATE CONSTRAINT FOR (sc:SearchConducted) REQUIRE sc.search\_conducted IS UNIQUE;

CREATE CONSTRAINT FOR (st:SearchType) REQUIRE st.search\_type IS UNIQUE;

CREATE CONSTRAINT FOR (sr:SearchReason) REQUIRE sr.search\_reason IS UNIQUE;

CREATE CONSTRAINT FOR (so:SearchOutcome) REQUIRE so.search\_outcome IS UNIQUE;

CREATE CONSTRAINT FOR (sd:SearchDisposition) REQUIRE sd.search\_disposition IS UNIQUE;

CREATE CONSTRAINT FOR (sar:SearchArrestReason) REQUIRE sar.search\_arrest\_reason IS UNIQUE;

CREATE CONSTRAINT FOR (wz:WorkZone) REQUIRE wz.work\_zone IS UNIQUE;

CREATE CONSTRAINT FOR (al:Alcohol) REQUIRE al.alcohol IS UNIQUE;

CREATE CONSTRAINT FOR (pi:PersonalInjury) REQUIRE pi.personal\_injury IS UNIQUE;

CREATE CONSTRAINT FOR (pd:PropertyDamage) REQUIRE pd.personal\_damage IS UNIQUE;

**//Creating Violation Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (v: Violation {row\_number: row.`Row Number`,

seq\_id:row.SeqID,

date\_of\_stop:row.`Date Of Stop`,

time\_of\_stop:row.`Time Of Stop`,

geolocation:row.Geolocation,

violation\_type:row.`Violation Type`,

article:row.Article,

arrest\_type:row.`Arrest Type`

})

**// Loading Violation Node**

:auto LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Row Number` is not null

Call {

With row

MERGE

(v:Violation{row\_number: row.`Row Number`})

ON CREATE SET v.seq\_id=row.SeqID,

v.date\_of\_stop=row.`Date Of Stop`,

v.time\_of\_stop=row.`Time Of Stop`,

v.geolocation=row.Geolocation,

v.violation\_type=row.`Violation Type`,

v.article=row.Article,

v.arrest\_type=row.`Arrest Type`

} IN TRANSACTIONS OF 500 ROWS;

**//Creating Vehicle Type Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (veh: VehicleType {vehicle\_type: row.VehicleType

})

**// Loading Data into the Vehicle Type Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.VehicleType is not null

CALL {

WITH row

MERGE (veh: VehicleType {vehicle\_type: row.VehicleType})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Year Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (vy: Year {year: row.Year

})

**// Loading Data into the Year Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Year is not null

CALL {

WITH row

MERGE (vy: Year {year: row.Year})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Commercial Vehicle Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (cv: CommercialVehicle {commercial\_vehicle: row.`Commercial Vehicle`

})

**// Loading Data into the Commercial Vehicle Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Commercial Vehicle` is not null

CALL {

WITH row

MERGE (cv: CommercialVehicle {commercial\_vehicle: row.`Commercial Vehicle`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Gender Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (g: Gender {gender: row.Gender

})

**// Loading Data into the Gender Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Gender is not null

CALL {

WITH row

MERGE (g: Gender {gender: row.Gender})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Commercial License Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (cl: CommercialLicense {commercial\_license: row.`Commercial License`

})

**// Loading Data into the Commercial License Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Commercial License` is not null

CALL {

WITH row

MERGE (cl: CommercialLicense {gender: row.`Commercial License`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Accident Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (ac: Accident {accident: row.Accident

})

**// Loading Data into the Accident Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Accident is not null

CALL {

WITH row

MERGE (ac: Accident {accident: row.Accident})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Belts Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (b: Belts {belts: row.Belts

})

**// Loading Data into the Belts Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Belts is not null

CALL {

WITH row

MERGE (b: Belts {belts: row.Belts})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Agency Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (ag: Agency {agency: row.Agency

})

**// Loading Data into the Agency Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Agency is not null

CALL {

WITH row

MERGE (ag: Agency {agency: row.Agency})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating SubAgency Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (sag: SubAgency {subagency: row.SubAgency

})

**// Loading Data into the SubAgency Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.SubAgency is not null

CALL {

WITH row

MERGE (sag: SubAgency {subagency: row.SubAgency})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Fatal Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (f: Fatal {fatal: row.Fatal

})

**// Loading Data into the Fatal Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.Fatal is not null

CALL {

WITH row

MERGE (f: Fatal {fatal: row.Fatal})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating HAZMAT Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (h: Hazmat {hazmat: row.`HAZMAT`

})

**// Loading Data into the HAZMAT Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`HAZMAT` is not null

CALL {

WITH row

MERGE (h: Hazmat {hazmat: row.`HAZMAT`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Search Conducted Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (sc: SearchConducted {search\_conducted: row.`Search Conducted`

})

**// Loading Data into the Search Conducted Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Search Conducted` is not null

CALL {

WITH row

MERGE (sc: SearchConducted {search\_conducted: row.`Search Conducted`})

} IN TRANSACTIONS OF 500 ROWS;

**//Creating SearchType Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (st: SearchType {search\_type: row.`Search Type`})

**//Loading SearchType Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Search Type` is not null

CALL {

WITH row

MERGE (st: SearchType {search\_type: row.`Search Type`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating SearchDisposition Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (sd: SearchDisposition {

search\_disposition: row.`Search Disposition`

})

**//Loading SearchDisposition Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Search Disposition` is not null

CALL {

WITH row

MERGE (sd: SearchDisposition {search\_disposition: row.`Search Disposition`})

} IN TRANSACTIONS OF 500 ROWS;

**//Creating SearchArrestReason Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (sar: SearchArrestReason { search\_arrest\_reason: row.`Search Arrest Reason`

})

**//Loading SearchArrestReason Node**

:auto LOAD CSV WITH HEADERS FROM 'file:///ViolationDataset.csv' AS row with row where row.`Search Arrest Reason` is not null

CALL {

WITH row

MERGE (sar: SearchArrestReason { search\_arrest\_reason: row.`Search Arrest Reason`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating SearchReason Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (sr: SearchReason {

search\_reason: row.`Search Reason`

})

**//Loading the SearchReason Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.`Search Reason` is not null

CALL{

WITH row

MERGE (sr:SearchReason{

search\_reason: row.`Search Reason`})

} IN TRANSACTIONS OF 500 ROWS;

**//Creating SearchOutcome Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (so: SearchOutcome {

search\_outcome: row.`Search Outcome`

})

**//Loading the Search Outcome Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.`Search Outcome` is not null

CALL{

WITH row

MERGE (so: SearchOutcome {

search\_outcome: row.`Search Outcome`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Work Zone node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv' AS row

With row limit 1

CREATE (wz: WorkZone {

work\_zone: row.`Work Zone`

})

**//Load WorkZone Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.`Work Zone` is not null

CALL{

WITH row

MERGE (wz: WorkZone {

work\_zone: row.`Work Zone`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Alcohol Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv’ AS row

With row limit 1

CREATE (al: Alcohol {

alcohol: row.Alcohol

})

**//Loading Alcohol Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.Alcohol is not null

CALL{

WITH row

MERGE (al: Alcohol {

alcohol: row.Alcohol})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Personal Injury Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv’ AS row

With row limit 1

CREATE (pi: PersonalInjury {

personal\_injury: row.`Personal Injury`

})

**//Loading PersonalInjury Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.`Personal Injury` is not null

CALL{

WITH row

MERGE (pi: PersonalInjury {

personal\_injury: row.`Personal Injury`})

} IN TRANSACTIONS OF 500 ROWS;

**// Creating Property Damage Node**

LOAD CSV WITH HEADERS FROM ‘file:///ViolationDataset.csv’ AS row

With row limit 1

CREATE (pd: PropertyDamage {

property\_damage: row.`Property Damage`

})

**//Loading PropertyDamage Node**

:auto LOAD CSV With HEADERS FROM ‘file:///ViolationDataset.csv' AS row with row where row.`Property Damage` is not null

CALL{

WITH row

MERGE (pd: PropertyDamage {

property\_damage: row.`Property Damage`})

} IN TRANSACTIONS OF 500 ROWS;

**// RELATIONSHIP between VIOLATION & SEARCH CONDUCTED**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (sc:SearchConducted)

WHERE v.row\_number = row.`Row Number` AND sc.search\_conducted = row.`Search Conducted`

CREATE (v)-[:Vio\_search]->(sc)

**// RELATIONSHIP between VIOLATION & SEARCH OUTCOME**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (so:SearchOutcome)

WHERE v.row\_number = row.`Row Number` AND so.search\_outcome = row.`Search Outcome`

CREATE (v)-[:Vio\_search\_outcome]->(so)

**// RELATIONSHIP between VIOLATION & WORK ZONE**

  LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (wz:WorkZone)

WHERE v.row\_number = row.`Row Number` AND wz.work\_zone = row.`Work Zone`

CREATE (v)-[:V\_involves\_W]->(wz)

**// RELATIONSHIP between VIOLATION & ALCOHOL**

 LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (al:Alcohol)

WHERE v.row\_number = row.`Row Number` AND al.alcohol = row.Alcohol

CREATE (v)-[:V\_involves\_Al]->(al)

**// RELATIONSHIP between VIOLATION & PERSONAL INJURY**

  LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (pi:PersonalInjury)

WHERE v.row\_number = row.`Row Number` AND pi.personal\_injury = row.`Personal Injury`

CREATE (v)-[:V\_involves\_PI]->(pi)

**// RELATIONSHIP between VIOLATION & PROPERTY DAMAGE**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (pd:PropertyDamage)

WHERE v.row\_number = row.`Row Number` AND pd.property\_damage = row.`Property Damage`

CREATE (v)-[:V\_involves\_PD]->(pd)

**// RELATIONSHIP between VIOLATION & FATAL**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (f:Fatal)

WHERE v.row\_number = row.`Row Number` AND f.fatal = row.`Fatal`

CREATE (v)-[:V\_involves\_F]->(f)

**// RELATIONSHIP between VIOLATION & HAZMAT**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (h:Hazmat)

WHERE v.row\_number = row.`Row Number` AND h.hazmat = row.`Hazmat`

CREATE (v)-[:V\_involves\_H]->(h)

**// RELATIONSHIP between VIOLATION & SEARCH DISPOSITION**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (sd:SearchDisposition)

WHERE v.row\_number = row.`Row Number` AND sd.search\_disposition = row.`Search Disposition`

CREATE (v)-[:Vio\_search\_dispo]->(sd)

**// RELATIONSHIP between VIOLATION & SEARCH REASON**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (sr:SearchReason)

WHERE v.row\_number = row.`Row Number` AND sr.search\_reason = row.`Search Reason`

CREATE (v)-[:Vio\_search\_reason]->(sr)

**// RELATIONSHIP between VIOLATION & SEARCH TYPE**

 LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (st:SearchType)

WHERE v.row\_number = row.`Row Number` AND st.search\_type = row.`Search Type`

CREATE (v)-[:Vio\_search\_type]->(st)

**// RELATIONSHIP between VIOLATION & SEARCH ARREST REASON**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (sag:SearchArrestReason)

WHERE v.row\_number = row.`Row Number` AND sag.search\_arrest\_reason = row.`Search Arrest Reason`

CREATE (v)-[:Vio\_searc\_arrest\_reason]->(sag)

**// RELATIONSHIP between VIOLATION & Gender**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (g:Gender)

WHERE v.row\_number = row.`Row Number` AND g.gender = row.`Gender`

CREATE (v)-[:Committed\_By]->(g)

**// RELATIONSHIP between VIOLATION & ACCIDENT**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (ac:Accident)

WHERE v.row\_number = row.`Row Number` AND ac.accident = row.`Accident`

CREATE (v)-[:V\_involves\_Ac]->(ac)

**// RELATIONSHIP between VIOLATION & AGENCY**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (v:Violation), (ag:Agency)

WHERE v.row\_number = row.`Row Number` AND ag.agency = row.`Agency`

CREATE (v)-[:Issued\_By]->(ag)

**// RELATIONSHIP between VEHICLE TYPE & VIOLATION**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (veh:VehicleType), (v:Violation)

WHERE veh.vehicle\_type = row.`VehicleType` AND v.row\_number = row.`Row Number`

CREATE (veh)-[:Involved\_In]->(v)

**// RELATIONSHIP between VEHICLE TYPE & YEAR**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (veh:VehicleType), (vy:Year)

WHERE veh.vehicle\_type = row.VehicleType AND vy.year = row.Year

CREATE (veh)-[:Veh\_year]->(vy)

**// RELATIONSHIP between VEHICLE TYPE & COMMERCIAL LICENSE**

 LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (veh:VehicleType), (cl:CommercialLicense)

WHERE veh.vehicle\_type = row.`VehicleType` AND cl.commercial\_license = row.`Commercial License`

CREATE (veh)-[:Veh\_is\_Com]->(cl)

**// RELATIONSHIP between GENDER & COMMERCIAL LICENSE**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (g:Gender), (cl:CommercialLicense)

WHERE g.gender = row.`Gender` AND cl.commercial\_license = row.`Commercial License`

CREATE (g)-[:D\_has\_Cl]->(cl)

**// RELATIONSHIP between ACCIDENT & BELTS**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (ac:Accident), (b:Belts)

WHERE ac.accident = row.`Accident` AND b.belts = row.`Belts`

CREATE (ac)-[:Ac\_involves\_B]->(b)

**// RELATIONSHIP between AGENCY & SUBAGENCY**

LOAD CSV With HEADERS FROM 'file:///ViolationDataset.csv' AS row

MATCH (ag:Agency), (sag:SubAgency)

WHERE ag.agency = row.`Agency` AND sag.subagency = row.`SubAgency`

CREATE (ag)-[:Ag\_has\_SAg]->(sag)