CSP 586: Assignment 3

Atharva Kadam | A20467229

1. List of all use cases and actors:
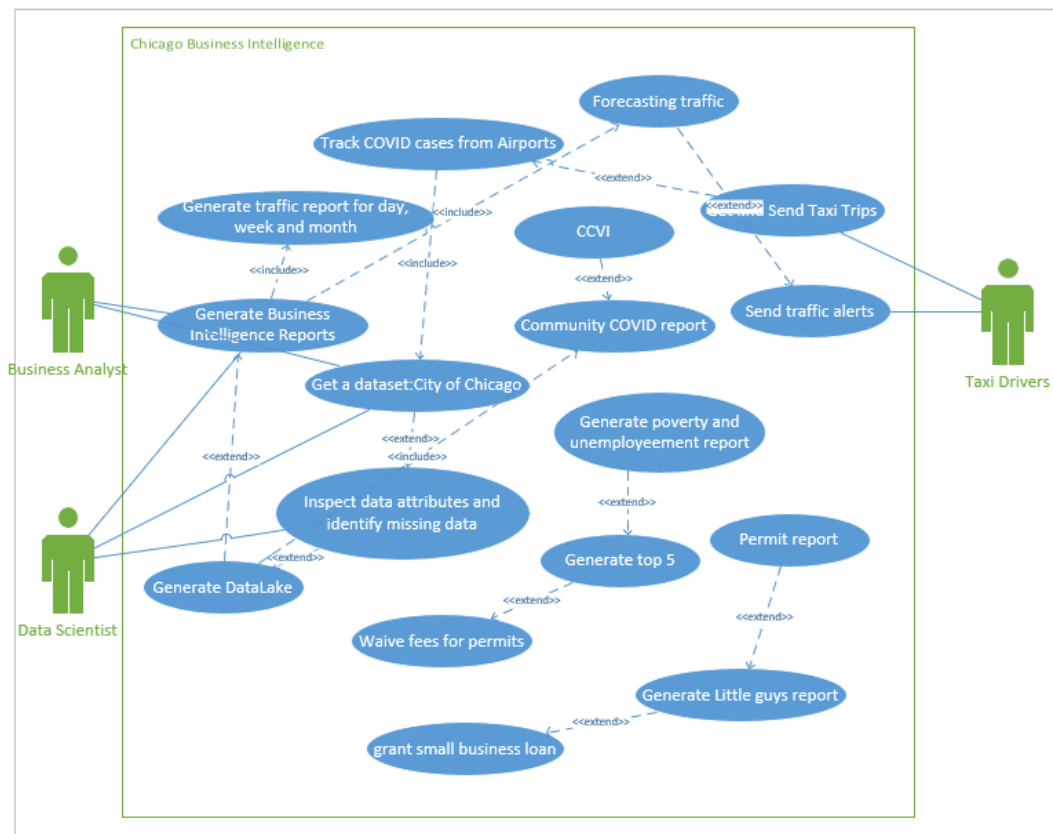   Use Cases:
    - Forecasting traffic
    - Get and send Taxi Trips
    - Send traffic alerts
    - Track COVID cases from Airports
    - Generate traffic report for the day, week and month
    - CCVI
    - Generate Business Intelligence Reports
    - Get datasets from City of Chicago
    - Inspect data attributes and identify missing data
    - Generate data lake
    - Generate poverty and unemployment report
    - Generate top 5
    - Waive fees for permit
    - Permit report
    - Generate Little Guys report
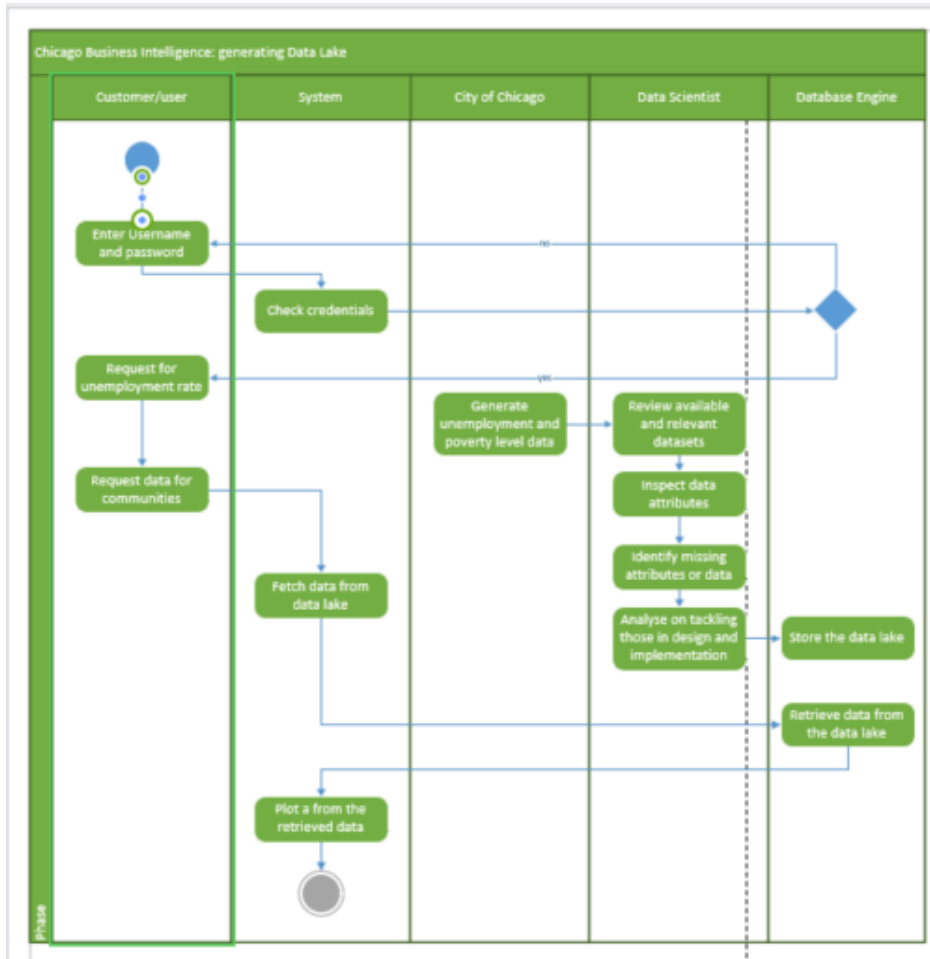   - Grant small Business loan

    Actors
    - Taxi Drivers
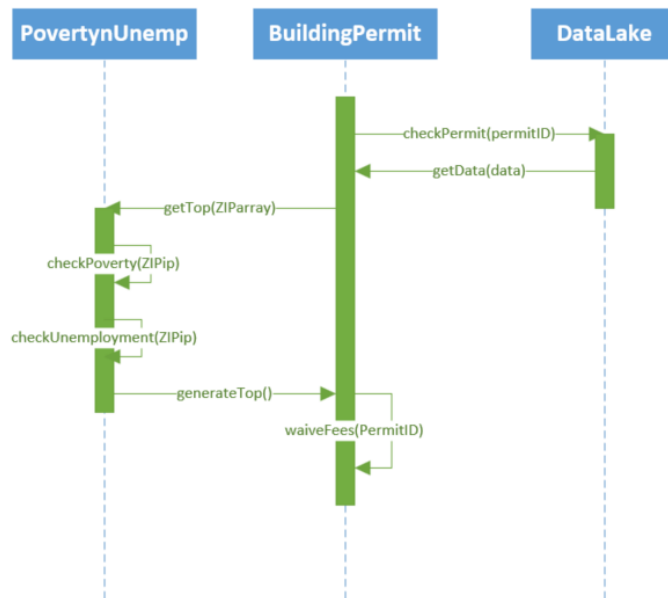   - Business Analysts
    - Data Scientists
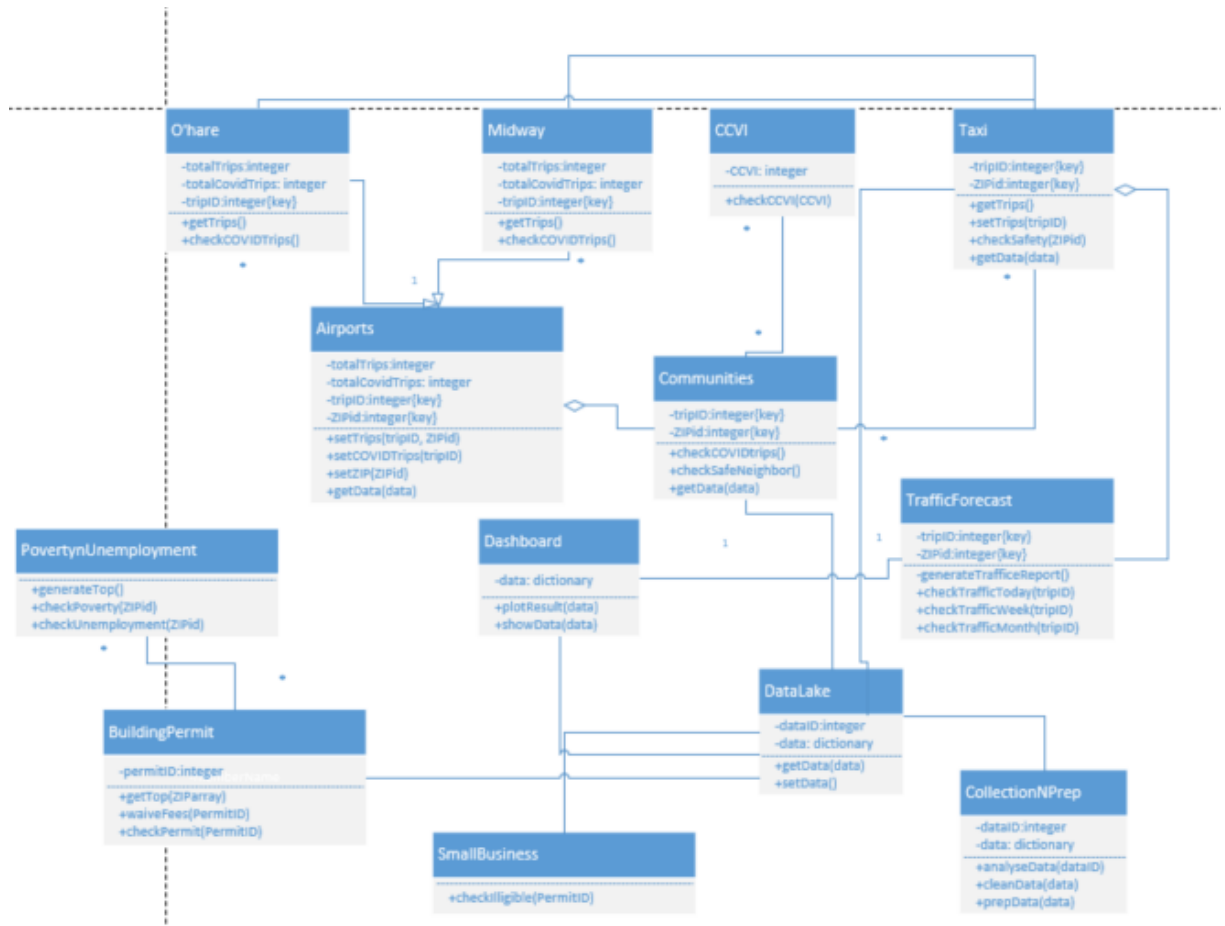
2. Use case diagram:

3. Activity Diagram:

4. Sequence Interaction Diagram:

5. List of classes :
    a. Airports
    b. O'hare
    c. Midway
    d. Communities
    e. CCVI
    f. Taxi
    g. Dashboard
    h. TrafficForecast
    i. PovertynUnemployeement
    j. BuildingPermit
    k. SmallBusiness
    l. DataLake
    m. CollectionNprep

6. Class Diagram:

O'hare
- -totalTrips:integer
- -totalCovidTrips: integer
- -tripID:integer{key}

+getTrips()
+checkCOVIDTrips()

Midway
- -totalTrips:integer
- -totalCovidTrips: integer
- -tripID:integer{key}

+getTrips()
+checkCOVIDTrips()

CCVI
- -CCVI: integer

+checkCCVI(CCVI)

Taxi
- -tripID:integer{key}
- -ZIPid:integer{key}

+getTrips()
+setTrips(tripID)
+checkSafety(ZIPid)
+getData(data)

Airports
- -totalTrips:integer
- -totalCovidTrips: integer
- -tripID:integer{key}
- -ZIPid:integer{key}

+setTrips(tripID, ZIPid)
+setCOVIDTrips(tripID)
+setZIP(ZIPid)
+getData(data)

Communities
- -tripID:integer{key}
- -ZIPid:integer{key}

+checkCOVIDtrips()
+checkSafeNeighbor()
+getData(data)

TrafficForecast
- -tripID:integer{key}
- -ZIPid:integer{key}

+generateTrafficeReport()
+checkTrafficToday(tripID)
+checkTrafficWeek(tripID)
+checkTrafficMonth(tripID)

PovertynUnemployment

+generateTop()
+checkPoverty(ZIPid)
+checkUnemployment(ZIPid)

Dashboard
- -data: dictionary

+plotResult(data)
+showData(data)

DataLake
- -dataID:integer
- -data: dictionary

+getData(data)
+setData()

BuildingPermit
- -permitID:integer

+getTop(ZIParray)
+waiveFees(PermitID)
+checkPermit(PermitID)

CollectionNPrep
- -dataID:integer
- -data: dictionary

+analyseData(dataID)
+cleanData(data)
+prepData(data)

SmallBusiness

+checkIlligible(PermitID)

Data Sources:
Collect all the required data from the city of chicago website and the given links. Now, the collection part is done and preparation of the data brings. Inspect the data attributes in the different datasets that will be utilized in this project for the construction of the data lake and identify missing attribute(s) or messy data in these datasets. Then store this prepared data to form a data lake using Postgres or MySql.

Matrix Map:
Use cases

Requirement 1	Tracking COVID cases from Airports, Forecast Traffic, Get and send taxi trips, send traffic alerts, community COVID report.
Requirement 2	Tracking COVID cases from Airports, Forecast Traffic, Get and send taxi trips, community COVID report.
Requirement 3	CCVI, community COVID report
Requirement 4	Get and send taxi trips, generate traffic reports for day, week and month.
Requirement 5	Generate poverty and unemployment report, generate top 5, waive fees for permit.
Requirement 6	Permit report, generate little guys report, grant small business loans
Requirement 7	Get datasets from city of chicago, generate Data Lake

Classes:

Requirement 1	Communities, Taxi , TrafficForecast
Requirement 2	O'hare, Midway, Airports, communities and Taxi
Requirement 3	CCVI, communities
Requirement 4	TrafficForecast
Requirement 5	PovertyNunemployment, BuildingPermit
Requirement 6	Permit report, generate little guys report, grant small business loans
Requirement 7	Get datasets from city of chicago, generate Data Lake

Screenshots: