Assignment 2
Analysis of Parking and Camera Violations

Important Dates

- Due Date: November 15, 2021
- Cutoff Date: November 17, 2021
- Assignments are submitted on or before the due date
- No assignments will be accepted after the cutoff date

Objective

- Install Oracle on your computer
- Practice getting started with Oracle by using the SQL Create Table and Select operations.
- Analyze parking and camera violations available on NYC Open Data
- Create searches and output using SQL

Database Requirements

1. Create 1 database table. Import data using the file posted to Blackboard.
2. Create a table of violations. The available fields are described here: https://data.cityofnewyork.us/City-Government/Open-Parking-and-Camera-Violations/nc67-uf89

Files

Two files will be available for download

- Short file – 10 violations. This data file will include 10 violations and can be used to practice importing data. You can use the file to test if your table is created with appropriate column types. Once you have successfully performed an import, then proceed to the larger complete file.
- Complete file – All violations. This data file includes 500,000 violations in Queens for 2021.

Questions

- Create SQL to answer the following queries.
- Search real violation data to ensure all questions generate output.
- Format all output. For instance, all numbers will display with commas, dollar values will display with a $ prefix and create descriptive labels for all columns.
- Replace underlined terms with values of your own choosing.

1. Identify the number of violations for a 6 month period. Display 1 row with the number of violations.
2. Identify the violations by county. Display 3 columns: county, number of violations, total fine amount. The county with the largest number of violations is displayed first. Display 1 row for each distinct county.
3. Identify the violations by license plate. Display 4 columns: License plate, license state, number of violations and total cost. The license plate with the most violatios is displayed first. Display 1 row for each distinct license plate.
4. Identify the violations by license type. Display 3 columns: license type, number of violations and total fine amount. The license type with the most violations is displayed first. Display 1 row for each distinct licnese type.
5. Identify violations by license plate state. Display 3 columns: state, number of violations and total fine amount. The state with the most violations is displayed first. Display 1 row for each distinct state.
6. Identify double parking violations by month. Display 2 columns: month and number of violations. Order by month.
7. Identify violations for the last 6 months. Dipslay 3 columns: violation, number of violations and total cost. The most violations will be dipslayed first. Display 1 row for each distinct violation.
8. Identify total fines for double parking. Display the total fines.
9. Perform an analysis of your own choosing.
10. Display the structure of ALL tables using SQL Describe.
11. Display the version of Oracle. Enter:

```
SELECT *
FROM v$version;
```

Additional Design Requirements

- Include all SQL commands to create your database and answer the questions including create tables, select, update, insert data, alter column names and alter column types.
- Create your database using Oracle version 18c. Projects created with other databases will be rejected and not graded. Utilizing other databases requires prior instructor approval.
- Output for all questions must include at least one row displayed.
- Identify and create primary keys for your table.
- Include the question, SQL command to answer the question and output from the SQL command.
- Create descriptive column labels for all output. For instance, don't display a column label named *count(*)*

Formatting

- The column output should be displayed in a non-proportional font such as courier. This will display the columns vertically straight.
- All columns in your search must display on one line. Don't wrap columns to two lines.
- Your project must be typed.
- All pages of your output must include the following in the header: name, class, date and assignment number.
- The first page of your assignment must include your name, the last four digits of your student id, class, submission date and the assignment number.

Submission

- Review the grading rubric on Blackboard to identify how the assignment will be evaluated and graded.
- Projects are due on the due date. No assignment will be accepted after the cutoff date. Five points will be deducted for each calendar day, including weekends an assignment is submitted after the due date.
- An electronic copy of your assignment will be submitted to Blackboard on or before the due date. The file name uploaded to Blackboard will be in the format: [last name] [first name] Assignment 2.docx. For example, *Smith Sally Assignment 2.docx.*
- Submit one MS Word. For instance, don't submit separate files for create tables and output.
- No assignments will be accepted if sent to my email, left in my office mailbox or delivered to any other member of the department.
- If you submit multiple versions of the assignment, the last submitted assignment will be graded. Unless you receive prior approval, an assignment submitted before the due date and re-submitted after the due date is late.
- Unless you receive prior approval, assignments submitted after the due date is late.

- Assignments not in compliance with the submission requirements will be rejected and not graded.

ACADEMIC INTEGRITY

Projects and examinations must represent your own work. Group exams and projects are not permitted. You should neither copy another student's project or exam nor permit another student to see your work. You can be asked to perform specific procedures and operations in the presence of the instructor. Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, and expulsion as provided at https://www.cuny.edu/about/administration/offices/legal-affairs/policies-procedures/academic-integrity-policy/.

DATA – TABLES

1. Create a table to track violations Review the data in Microsoft Excel to identify the appropriate length for the text fields. The fields are:

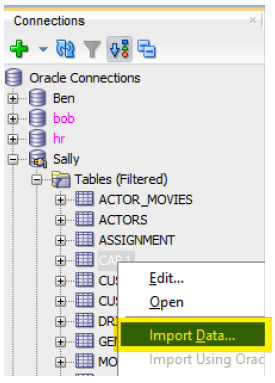
   - PLATE - Text
   - STATE - Text
   - LICENSE_TYPE - Text
   - SUMMONS_NUMBER - Text
   - ISSUE_DATE - Date
   - VIOLATION_TIME - Date
   - VIOLATION - Text
   - FINE_AMOUNT – Number/Decimal
   - PENALTY_AMOUNT - Number/Decimal
   - INTEREST_AMOUNT - Number/Decimal
   - REDUCTION_AMOUNT - Number/Decimal
   - PAYMENT_AMOUNT - Number/Decimal
   - AMOUNT_DUE - Number/Decimal
   - PRECINCT - Text
   - COUNTY - Text
   - ISSUING_AGENCY - Text
   - VIOLATION_STATUS - Text
   - SUMMONS_IMAGE - Text

   Note: Assign text columns to the appropriate length. Don't assign all text columns to the maximum length of 4000.

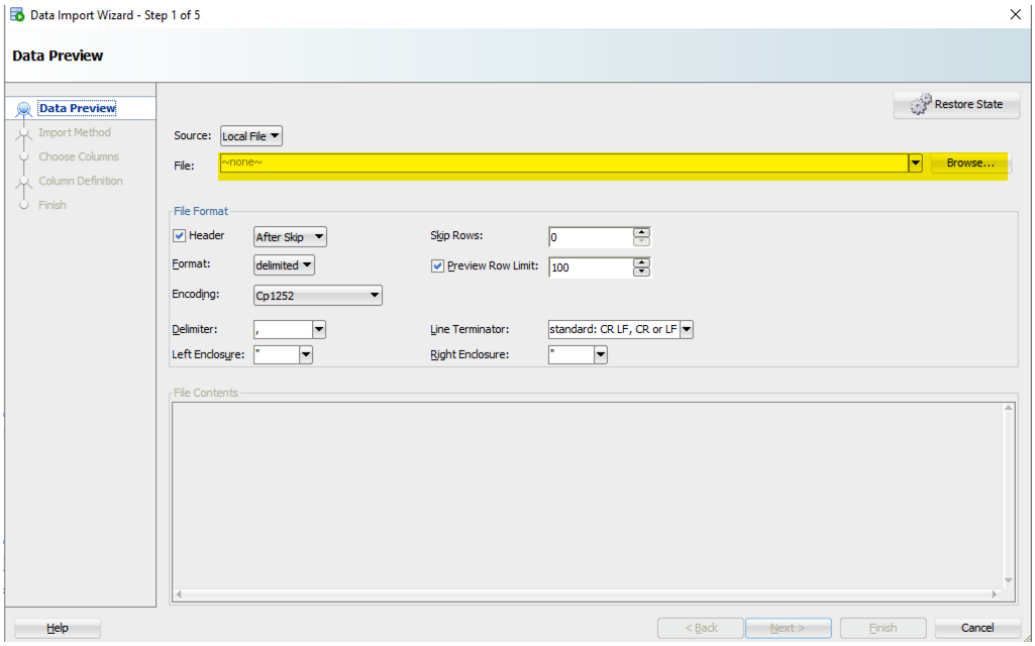
How to import data using Oracle SQL Developer

1. Create the table with the violations fields.

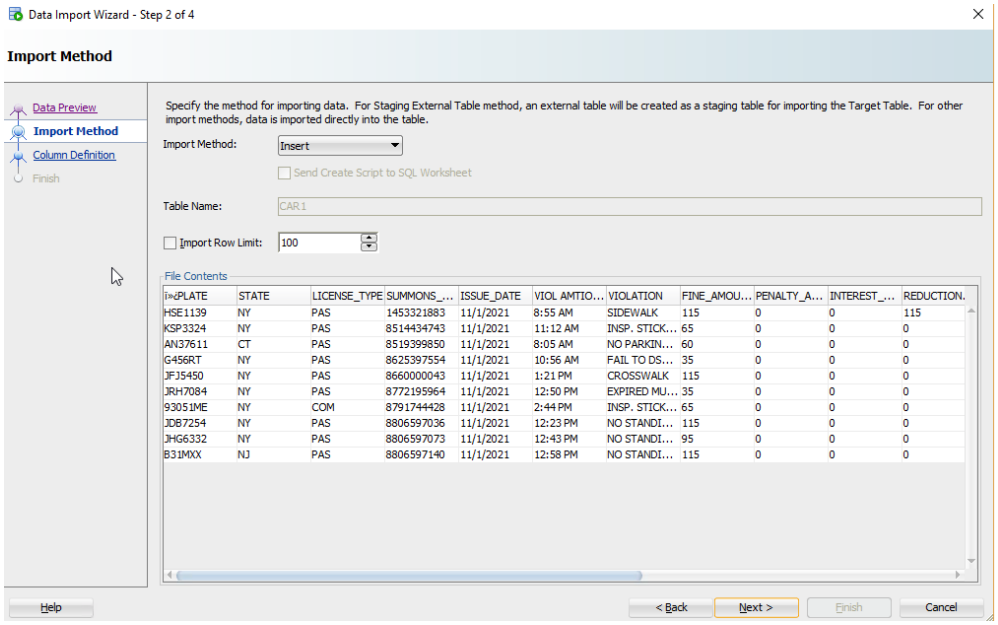
2. From the left side of the Oracle SQL Developer window, select the table, right-click and select Import.



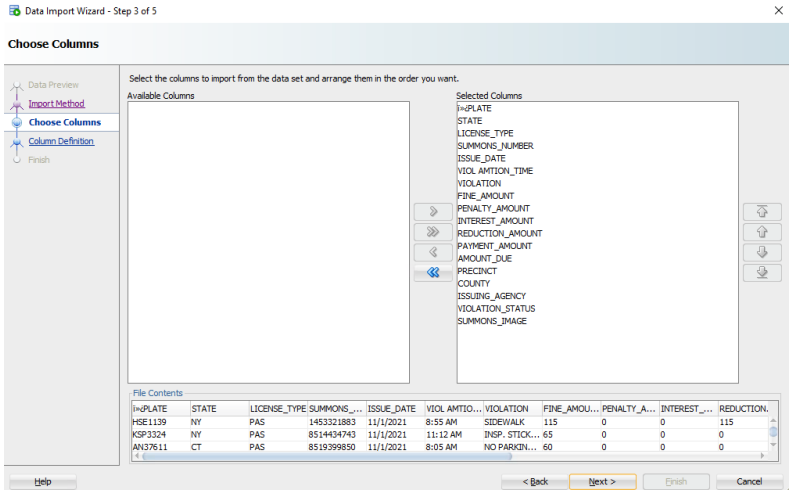
3. Select the CSV file with the data to import. Import using the small file first. Accept all the other default settings.



4. From the Import Method window, accept all the default settings and select Next.

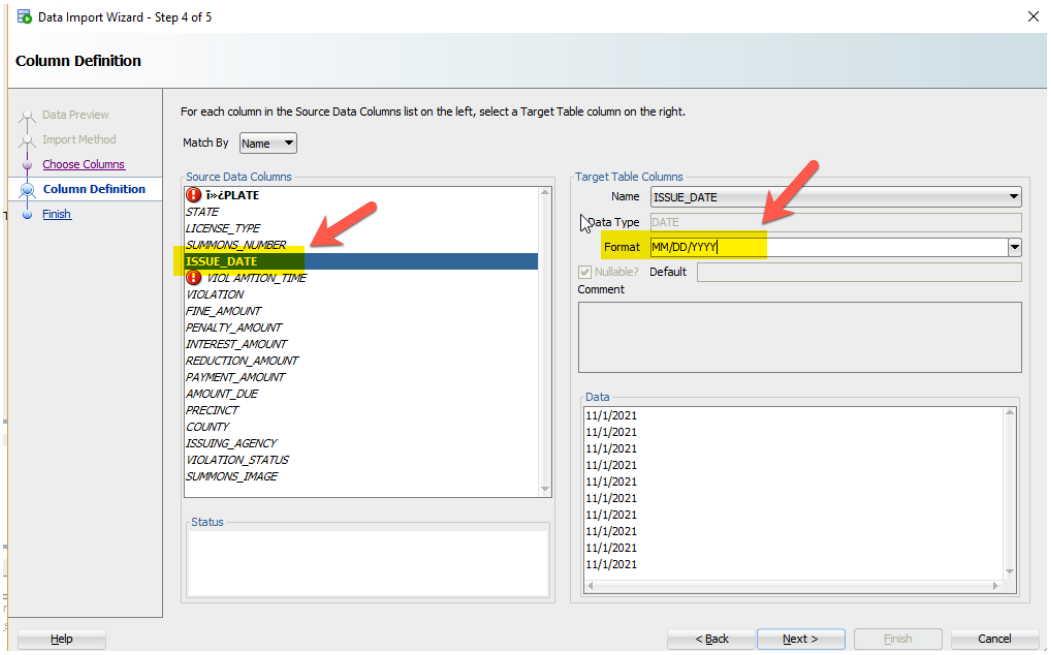


5. From the Choose Columns window, select all the default settings and select Next.



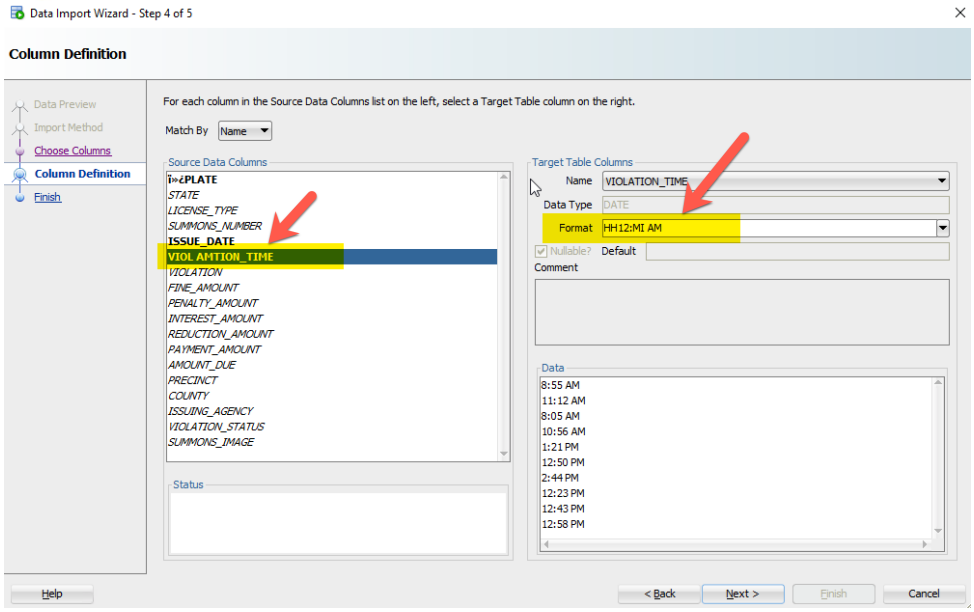
6. From the Column Definition window, review any serious errors. Errors here are typically a) attempting to import text values into number column types or b) the data includes a decimal point (100.25), but your column type is an integer or c) attempting to import text of length 25 into a column of length 20.

   Modify the date format of the field `ISSUE_DATE`. Go to Target Table Columns from the right and select the entry Format. Replace `YY-MON-DD` with "*`MM/DD/YYYY`*". This will allow Oracle to recognize the date format in the violation source file as `MM/DD/YYYY` rather than `YY-MON-DD`.



Modify the date format of the field `VIOLATION_TIME.` Go to Target Table Columns from the right and select the entry Format. Replace `YY-MON-DD` with `HH12:MI AM`

Select Next.



7. Select Finish
8. The import process will start.
9. Attempt to fix errors during import. For instance, the column length or type might need to be adjusted. Make the correction to the table and import again. If there are a few non-standard values in source file preventing the import, then skip these errors and import the remaining files.
10. When complete, go to the table in SQL and confirm the records have been imported.

    - By default, the issue_date and violation_time columns will display as `YY-MON-DD.` To display output in a different format use the to_char function. Reference the Oracle FAQ on MS Teams for additional details. For example:

      ```
      select to_char(issue_date,'mm/dd/yyyy'),
      to_char(violation_time,'hh12:mi am')
      from car1;
      ```

11. After you successfully import the small violation data file, import the full data file. To prevent duplicate data, consider deleting the 10 rows in the table before importing the full data.