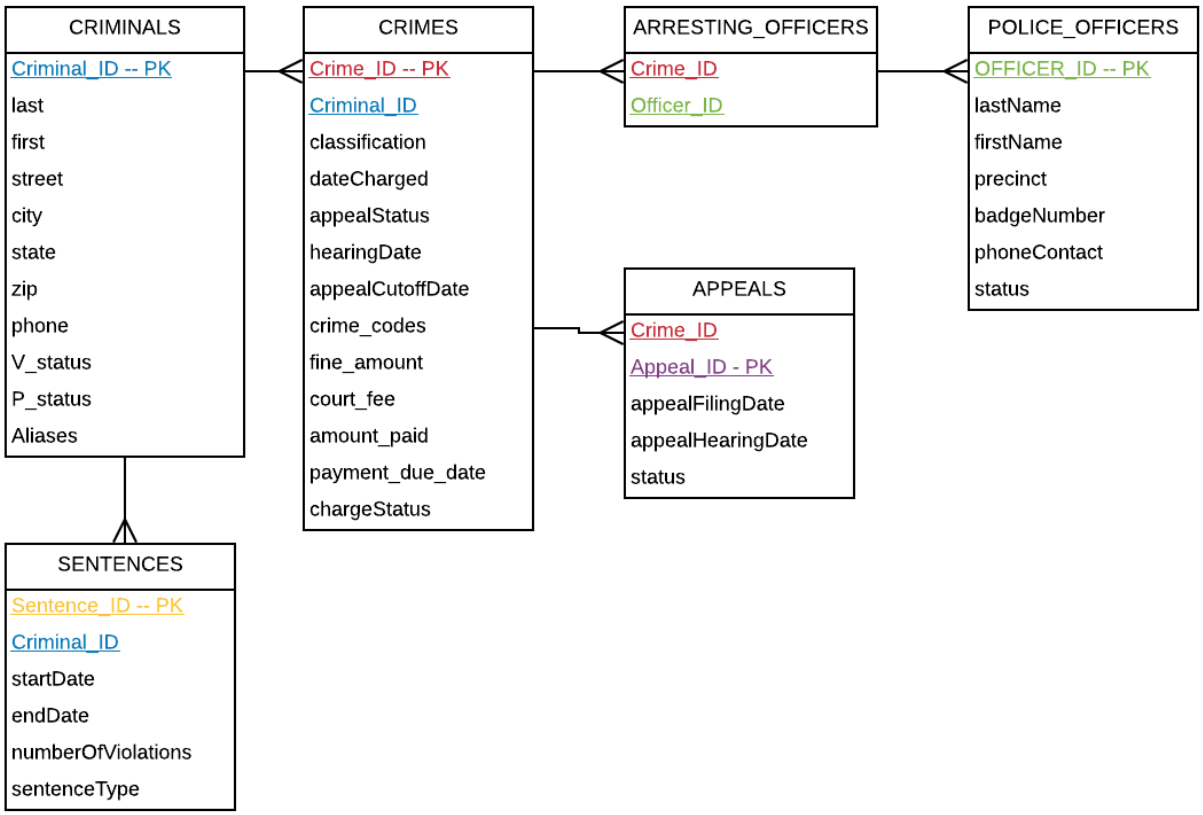
FINAL PROJECT:

PART 1:

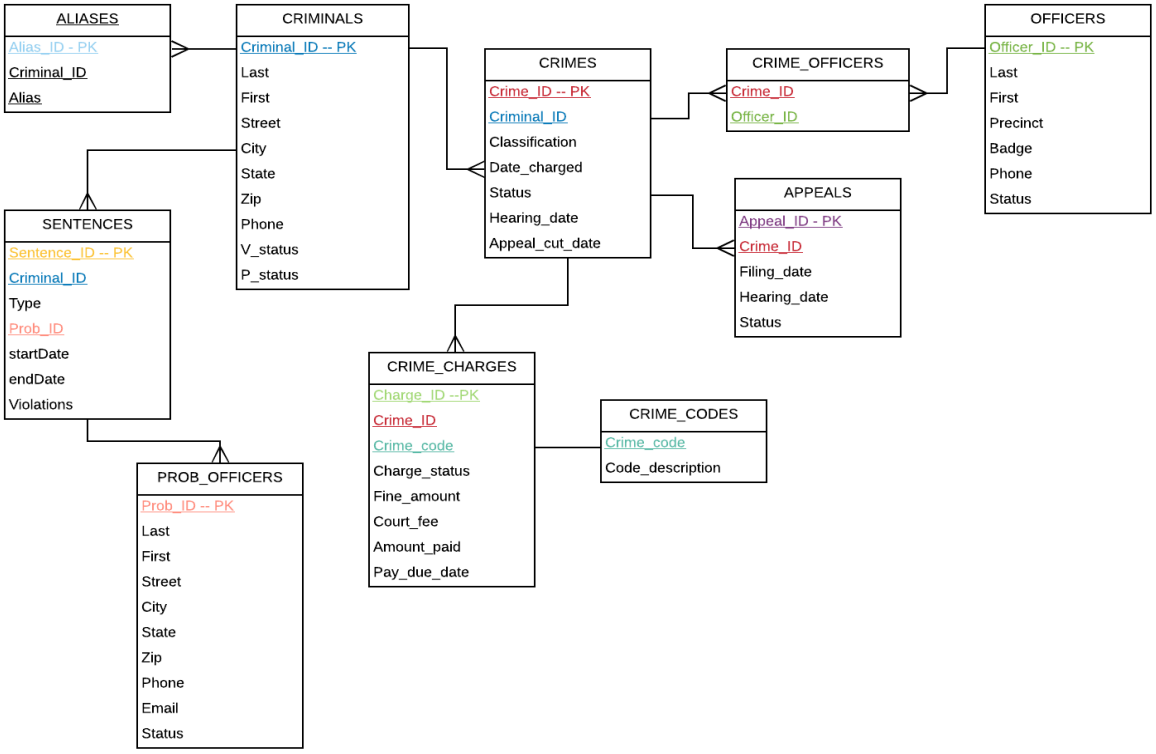
E-R Model for city Jail using only entities identified in the memo. Primary Keys are indicated with PK.

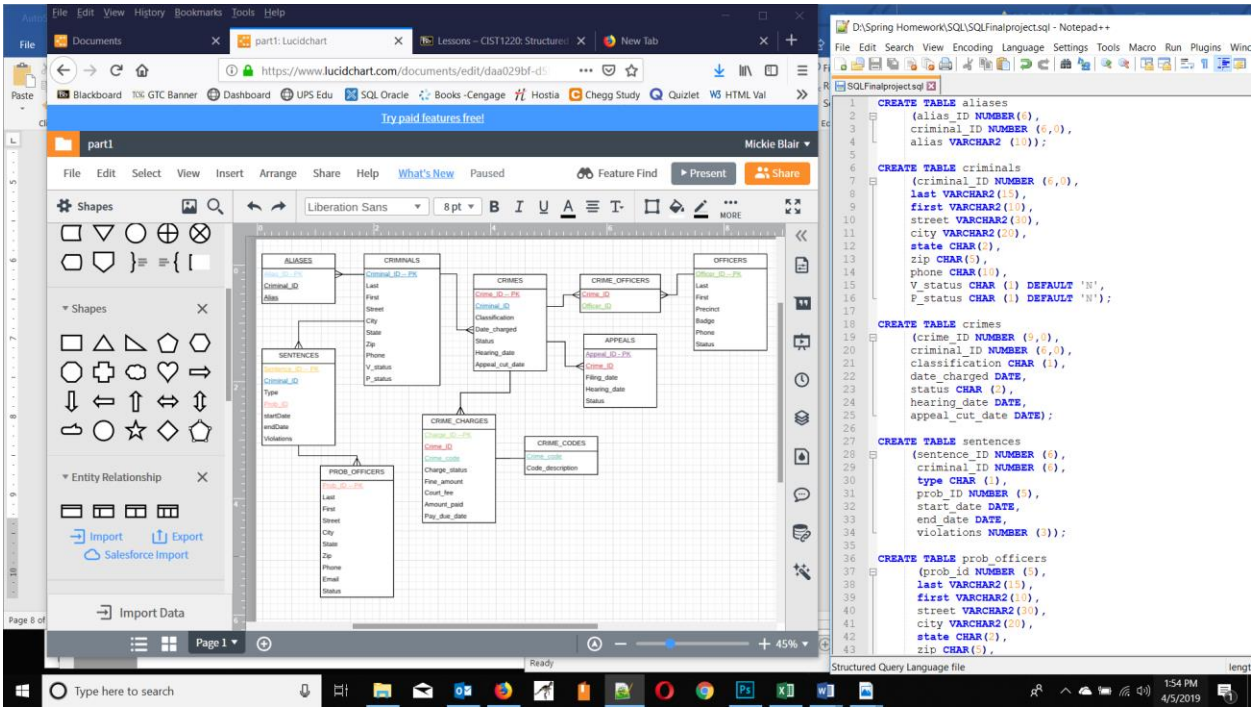


LIST of additional Entities/Attributes that might be applicable to crime-tracking.

1. Table for Aliases linked to the Criminals Table using Criminal_ID
2. Separate table to deal with fines and payment amounts
3. Separate table for Charges and crime codes linked to Crime ID
4. Probation officers table
5. Table for different types of sentences

ER – Model after adding additional entities and attributes.





Screenshot of LucidCharts and NotePad**

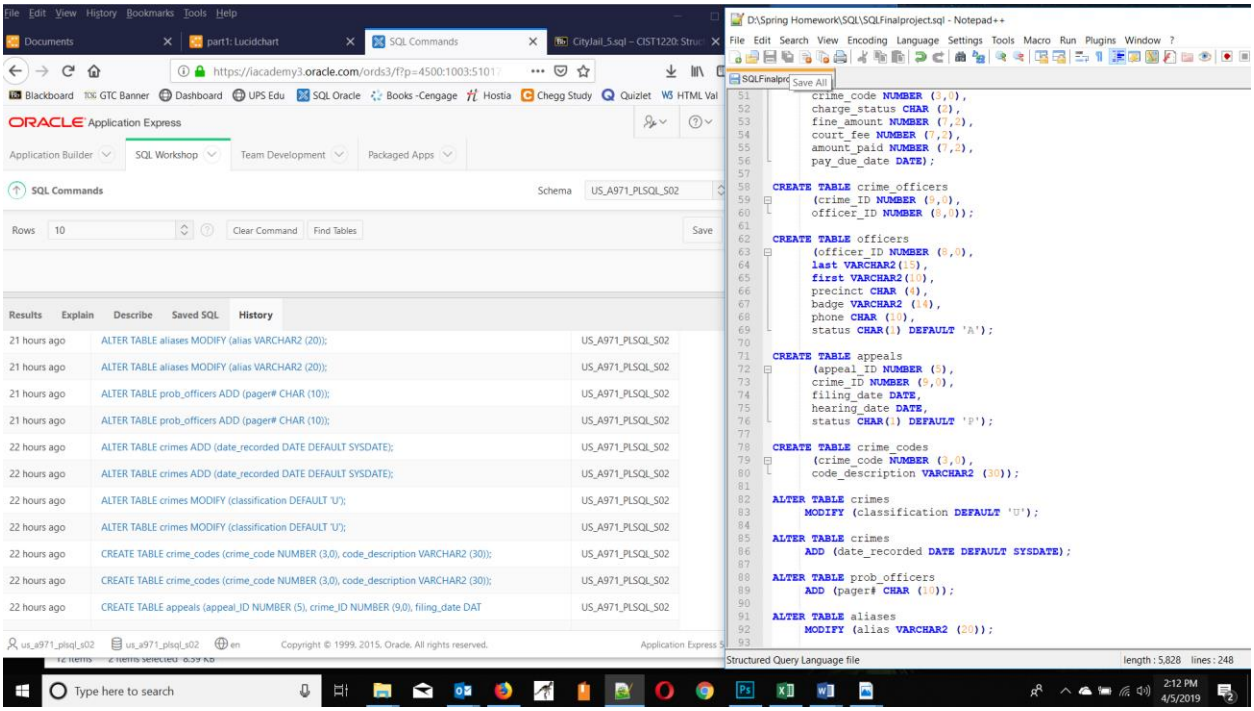
PART 2:

SQL Statements

```
CREATE TABLE aliases
    (alias_ID NUMBER(6),
    criminal_ID NUMBER (6,0),
    alias VARCHAR2 (10));

CREATE TABLE criminals
    (criminal_ID NUMBER (6,0),
    last VARCHAR2(15),
    first VARCHAR2(10),
    street VARCHAR2(30),
    city VARCHAR2(20),
    state CHAR(2),
    zip CHAR(5),
    phone CHAR(10),
    V_status CHAR (1) DEFAULT 'N',
    P_status CHAR (1) DEFAULT 'N');

CREATE TABLE crimes
    (crime_ID NUMBER (9,0),
    criminal_ID NUMBER (6,0),
    classification CHAR (1),
    date_charged DATE,
    status CHAR (2),
    hearing_date DATE,
    appeal_cut_date DATE);

CREATE TABLE sentences
    (sentence_ID NUMBER (6),
     criminal_ID NUMBER (6),
     type CHAR (1),
     prob_ID NUMBER (5),
     start_date DATE,
     end_date DATE,
     violations NUMBER (3));
```

```
CREATE TABLE prob_officers
    (prob_id NUMBER (5),
    last VARCHAR2(15),
    first VARCHAR2(10),
    street VARCHAR2(30),
    city VARCHAR2(20),
    state CHAR(2),
    zip CHAR(5),
    phone CHAR(10),
    email VARCHAR(30),
    status CHAR(1) DEFAULT 'A');

CREATE TABLE crimecharges
    (charge_id NUMBER (10,0),
    crime_ID NUMBER (9,0),
    crime_code NUMBER (3,0),
    charge_status CHAR (2),
    fine_amount NUMBER (7,2),
    court_fee NUMBER (7,2),
    amount_paid NUMBER (7,2),
    pay_due_date DATE);

CREATE TABLE crime_officers
    (crime_ID NUMBER (9,0),
    officer_ID NUMBER (8,0));

CREATE TABLE officers
    (officer_ID NUMBER (8,0),
    last VARCHAR2(15),
    first VARCHAR2(10),
    precinct CHAR (4),
    badge VARCHAR2 (14),
    phone CHAR (10),
    status CHAR(1) DEFAULT 'A');

CREATE TABLE appeals
    (appeal_ID NUMBER (5),
    crime_ID NUMBER (9,0),
    filing_date DATE,
    hearing_date DATE,
    status CHAR(1) DEFAULT 'P');
```

```
CREATE TABLE crime_codes
     (crime_code NUMBER (3,0),
     code_description VARCHAR2 (30));

ALTER TABLE crimes
    MODIFY (classification DEFAULT 'U');

ALTER TABLE crimes
    ADD (date_recorded DATE DEFAULT SYSDATE);

ALTER TABLE prob_officers
    ADD (pager# CHAR (10));

ALTER TABLE aliases
    MODIFY (alias VARCHAR2 (20));
```



Screenshot of SQL Statement History and Part 2 SQL Statement in Notepad++

PART 2:

Constraint Chart

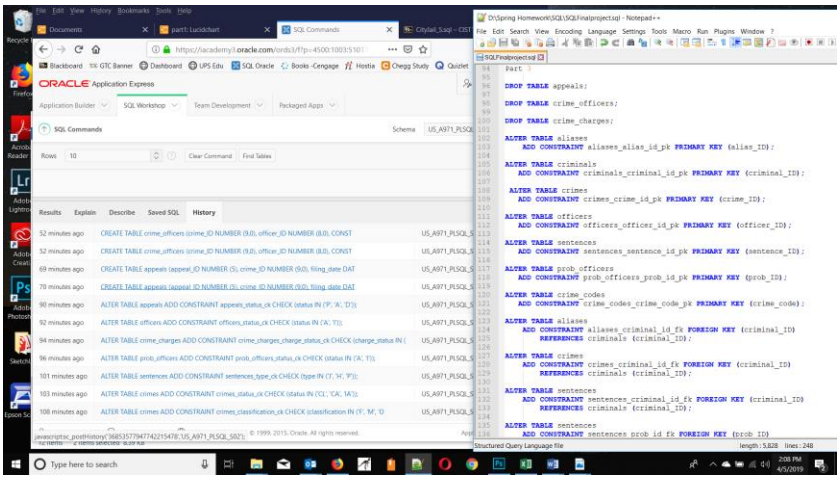
Table Name	Column(s)	Constraint Type	Condition
Aliases	alias_ID	Primary Key	unique and not null
Criminals	criminal_ID	Primary Key	unique and not null
Crimes	crime_ID	Primary Key	unique and not null
Officers	officer_ID	Primary Key	unique and not null
Sentences	sentence_ID	Primary Key	unique and not null
Prob_officers	prob_ID	Primary Key	unique and not null
Crime_codes	crime_code	Primary Key	unique and not null
Aliases	criminal_ID	Foreign Key	criminal_ID must be present in criminals table
Crimes	criminal_ID	Foreign Key	criminal_ID must be present in criminals table
Sentences	criminal_ID	Foreign Key	criminal_ID must be present in criminals table
Sentences	Prob_ID	Foreign Key	prob_ID must be present in Prob_officers table
Criminals	V_status	CHECK	IN ('Y', 'N')
Criminals	P_status	CHECK	IN ('Y', 'N')
Crimes	classification	CHECK	IN ('F', 'M', 'O', 'U')
Crimes	status	CHECK	IN ('CL', 'CA', 'IA')
Sentences	type	CHECK	IN ('J', 'H', 'P')
Prob_officers	status	CHECK	IN ('A', 'I')
Officers	status	CHECK	IN ('A', 'I')
Appeals	appeal_ID	Primary Key	unique and not null
Appeals	crime_ID	Foreign Key	crime_ID must be present in crimes table
Appeals	status	CHECK	IN ('P', 'A', 'D')
Crime_officers	crime_ID	Foreign Key	crime_ID must be present in crimes table
Crime_officers	officer_ID	Foreign Key	officer_ID must be present in officers table
Crime_charges	charge_ID	Primary Key	unique and not null
Crime_charges	crime_ID	Foreign Key	crime_ID must be present in crimes table
Crime_charges	crime_code	Foreign Key	crime_code must be present in crime_codes table
Crime_charges	charge_status	CHECK	IN ('PD', 'GL', 'NG')

SQL Statements for Part 3

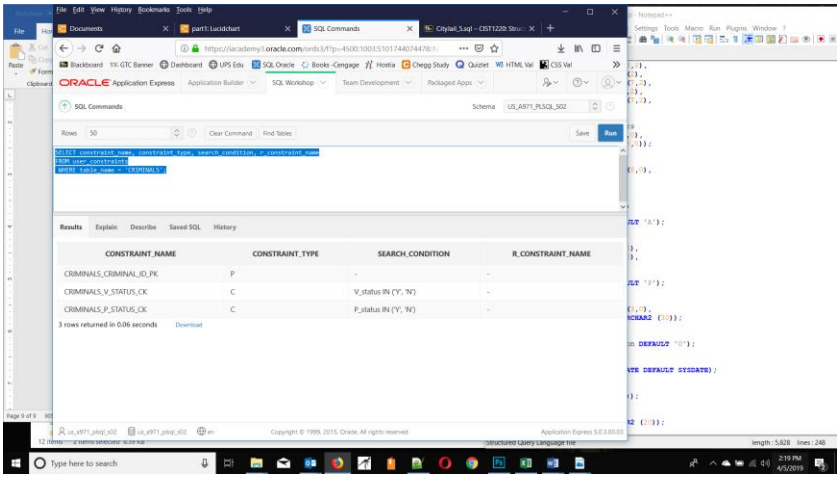
```
DROP TABLE appeals;

DROP TABLE crime_officers;

DROP TABLE crime_charges;

ALTER TABLE aliases
        ADD CONSTRAINT aliases_alias_id_pk PRIMARY KEY (alias_ID);
```

```
ALTER TABLE criminals
  ADD CONSTRAINT criminals_criminal_id_pk PRIMARY KEY (criminal_ID);

 ALTER TABLE crimes
  ADD CONSTRAINT crimes_crime_id_pk PRIMARY KEY (crime_ID);

ALTER TABLE officers
  ADD CONSTRAINT officers_officer_id_pk PRIMARY KEY (officer_ID);

ALTER TABLE sentences
  ADD CONSTRAINT sentences_sentence_id_pk PRIMARY KEY (sentence_ID);

ALTER TABLE prob_officers
  ADD CONSTRAINT prob_officers_prob_id_pk PRIMARY KEY (prob_ID);

ALTER TABLE crime_codes
  ADD CONSTRAINT crime_codes_crime_code_pk PRIMARY KEY (crime_code);

ALTER TABLE aliases
          ADD CONSTRAINT aliases_criminal_id_fk FOREIGN KEY (criminal_ID)
      REFERENCES criminals (criminal_ID);

ALTER TABLE crimes
          ADD CONSTRAINT crimes_criminal_id_fk FOREIGN KEY (criminal_ID)
      REFERENCES criminals (criminal_ID);

ALTER TABLE sentences
          ADD CONSTRAINT sentences_criminal_id_fk FOREIGN KEY (criminal_ID)
      REFERENCES criminals (criminal_ID);

ALTER TABLE sentences
          ADD CONSTRAINT sentences_prob_id_fk FOREIGN KEY (prob_ID)
      REFERENCES prob_officers (prob_ID);

ALTER TABLE criminals
  ADD CONSTRAINT criminals_V_status_ck CHECK (V_status IN ('Y', 'N'));

ALTER TABLE criminals
  ADD CONSTRAINT criminals_P_status_ck CHECK (P_status IN ('Y', 'N'));

ALTER TABLE crimes
  ADD CONSTRAINT crimes_classification_ck CHECK (classification IN ('F', 'M', 'O', 'U'));

ALTER TABLE crimes
  ADD CONSTRAINT crimes_status_ck CHECK (status IN ('CL', 'CA', 'IA'));
```

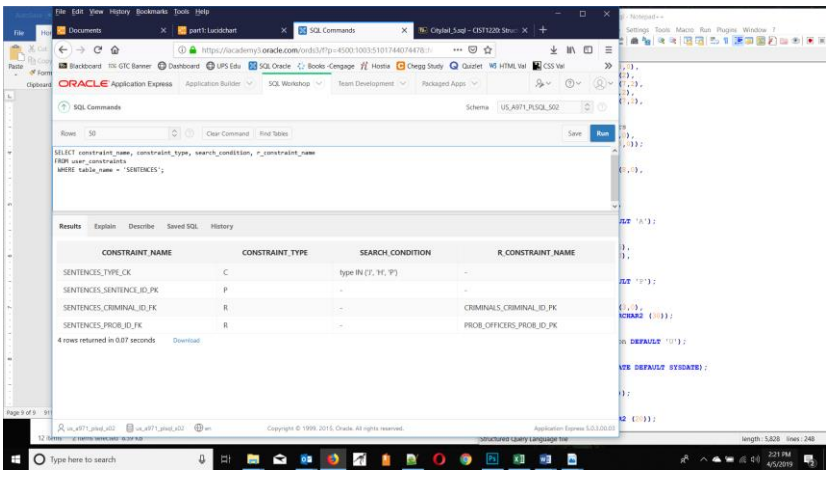
```
ALTER TABLE sentences
  ADD CONSTRAINT sentences_type_ck CHECK (type IN ('J', 'H', 'P'));

ALTER TABLE prob_officers
  ADD CONSTRAINT prob_officers_status_ck CHECK (status IN ('A', 'I'));

ALTER TABLE officers
  ADD CONSTRAINT officers_status_ck CHECK (status IN ('A', 'I'));

CREATE TABLE appeals
    (appeal_ID NUMBER (5),
    crime_ID NUMBER (9,0),
    filing_date DATE,
    hearing_date DATE,
    status CHAR(1) DEFAULT 'P',
    CONSTRAINT appeals_appeals_ID_pk PRIMARY KEY (appeal_ID),
    CONSTRAINT appeals_crime_ID_fk FOREIGN KEY (crime_ID)
     REFERENCES crimes (crime_ID),
    CONSTRAINT appeals_status CHECK (status IN ('P', 'A', 'D')));

CREATE TABLE crime_officers
    (crime_ID NUMBER (9,0),
    officer_ID NUMBER (8,0),
    CONSTRAINT crime_officers_crime_ID_fk FOREIGN KEY (crime_ID)
      REFERENCES crimes (crime_ID),
    CONSTRAINT crime_officers_officer_ID_fk FOREIGN KEY (officer_ID)
      REFERENCES officers (officer_ID));

CREATE TABLE crime_charges
    (charge_id NUMBER (10,0),
    crime_ID NUMBER (9,0),
    crime_code NUMBER (3,0),
    charge_status CHAR (2),
    fine_amount NUMBER (7,2),
    court_fee NUMBER (7,2),
    amount_paid NUMBER (7,2),
    pay_due_date DATE,
    CONSTRAINT crime_charges_charge_ID_pk PRIMARY KEY (charge_ID),
    CONSTRAINT crime_charges_crime_ID_fk FOREIGN KEY (crime_ID)
       REFERENCES crimes (crime_ID),
    CONSTRAINT crime_charges_crime_code_fk FOREIGN KEY (crime_code)
       REFERENCES crime_codes (crime_code),
    CONSTRAINT crime_codes_charge_status_ck CHECK (charge_status IN ('PD', 'GL', 'NG')));
```



Screenshot of SQL Statement History and Part 3 SQL Statement in Notepad++

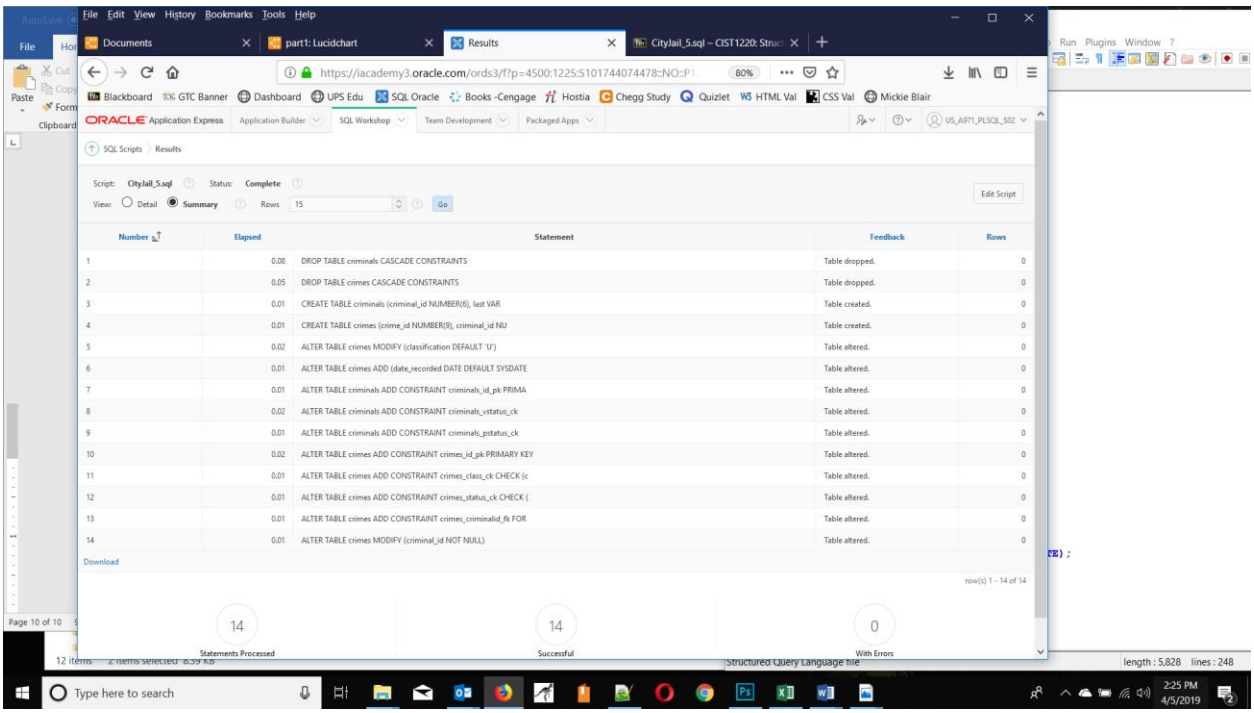


Screenshot of constraints for Criminals table



Screenshot of constraints for Sentences table

PART 4:



Screenshot after running the CityJail_5.sql Script.

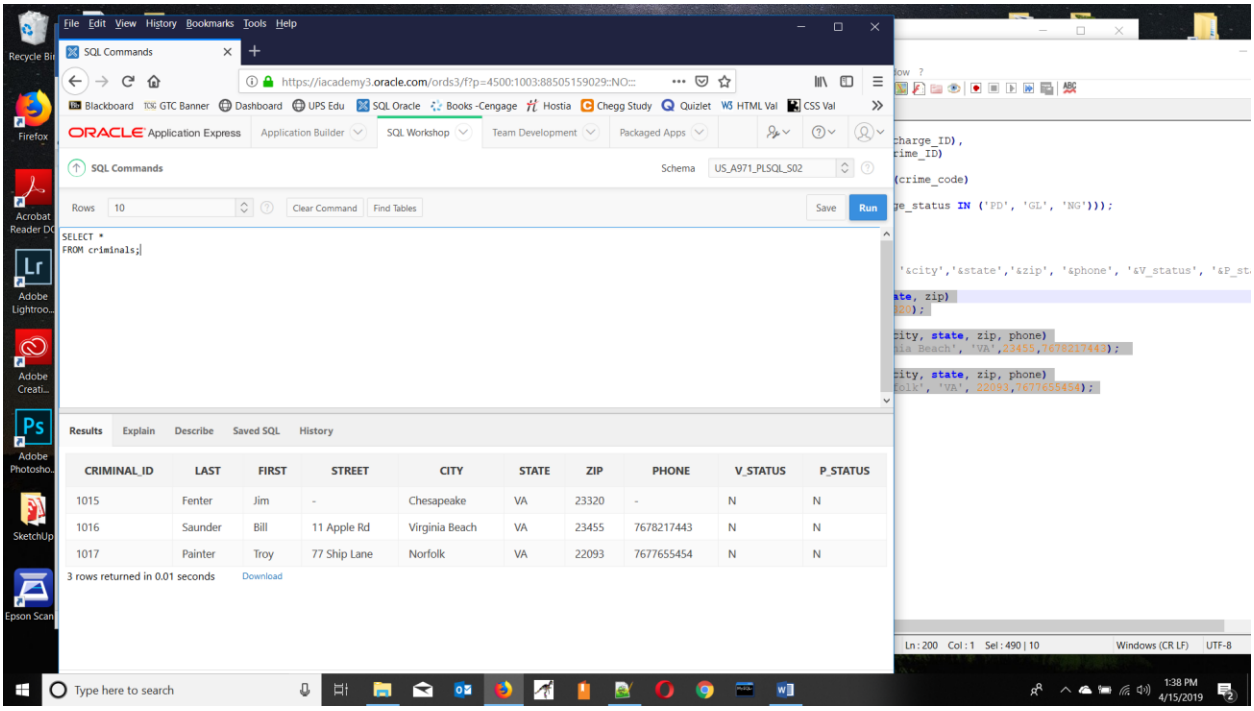
1. Create and execute statements to perform the following DML activities. Save the changes permanently to the database.

a. Create a script to allow a user to add new criminals (providing prompts to the user) to the CRIMINALS table.

```
INSERT INTO criminals
        VALUES ('&criminal_ID', '&last', '&first', '&street', '&city','&state','&zip', '&phone',
        '&V_status', '&P_status');
```

b. Add the following criminals, using the script created in the previous step. No value needs to be entered at the prompt if it should be set to the DEFAULT column value. Query the CRIMINALS table to confirm that new rows have been added.

```
INSERT INTO criminals (criminal_ID, last, first, city, state, zip)
    VALUES (1015,'Fenter', 'Jim', 'Chesapeake', 'VA', 23320);

INSERT INTO criminals (criminal_ID, last, first, street, city, state, zip, phone)
    VALUES (1016,'Saunder', 'Bill', '11 Apple Rd', 'Virginia Beach',
    'VA',23455,7678217443);

INSERT INTO criminals (criminal_ID, last, first, street, city, state, zip, phone)
    VALUES (1017,'Painter', 'Troy', '77 Ship Lane', 'Norfolk', 'VA', 22093,7677655454);
```



Screenshot after all criminals added.

c. Add a column named Mail_flag to the CRIMINALS table. The column should be assigned a datatype of CHAR(1).

```
ALTER TABLE criminals
        ADD (mail_flag CHAR(1));
```

d. Set the Mail_flag column to a value of 'Y' for all criminals.

```
UPDATE criminals
        SET mail_flag='Y';
```

e. Set the Mail_flag column to 'N' for all criminals who don't have a street address recorded in the database.

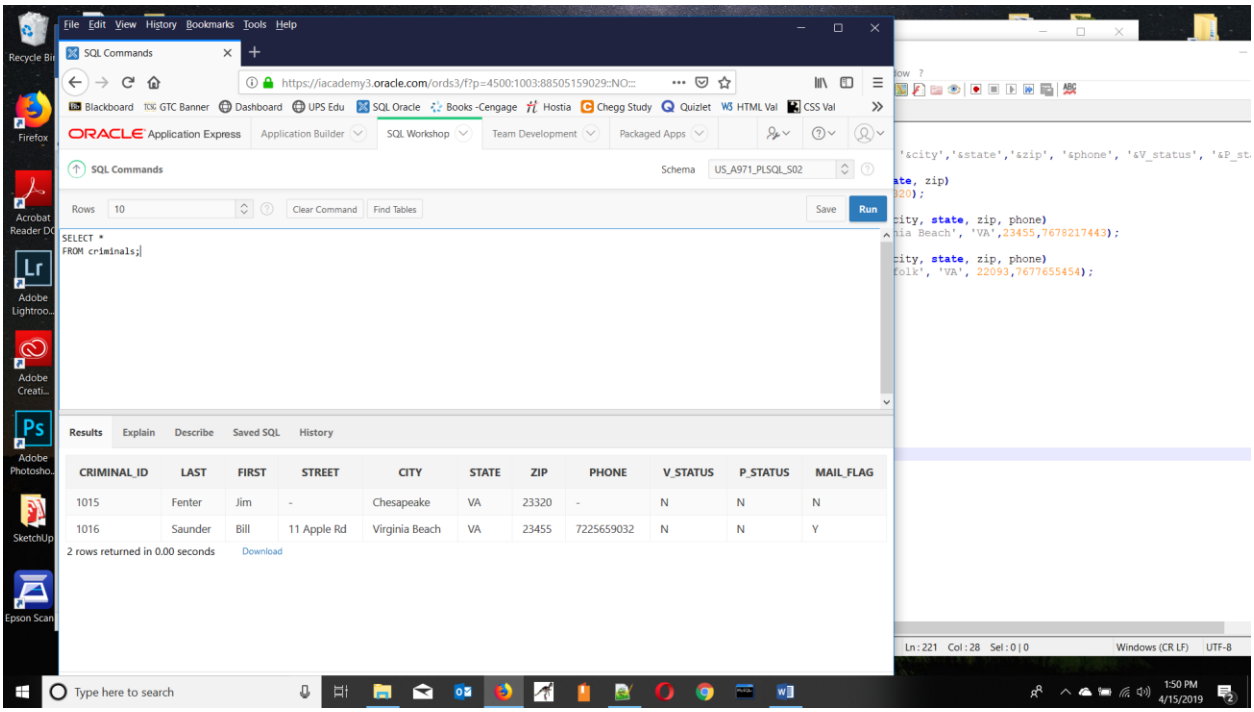
```
UPDATE criminals
        SET mail_flag='N'
        WHERE street IS NULL;
```

f. Change the phone number for criminal 1016 to 7225659032.

```
UPDATE criminals
        SET phone='7225659032'
        WHERE criminal_ID=1016;
```

g. Remove criminal 1017 from the database.

```
DELETE FROM criminals
        WHERE criminal_ID=1017;
```



Screenshot for completed work after Part 4 question 1.

2. Execute a DML statement to accomplish each of the following actions. Each statement produces a constraint error. Document the error number and message, and briefly explain the cause of the error. If your DML statement generates a syntax error rather than a constraint violation error, revise your statement to correct any syntax errors. You can review the CityJail_5.sql file to identify table constraints.

a) Add a crime record using the following data: Crime_ID = 100, Criminal_ID = 1010, Classification = M, Date_charged = July 15, 2009, Status = PD.

```
INSERT INTO crimes (crime_id, criminal_id, classification, date_charged, status)
    VALUES (100, 1010, 'M', '15-JUL-2009', 'PD');
```

It would violate two constraints.

```
ORA-02291: integrity constraint
(US_A971_PLSQL_S02.CRIMES_CRIMINALID_FK) violated - parent key not
found
```

```
The criminal_ID '1010' is not present in the criminals tables
```

CityJail_5.sql lines 38-40

```
ALTER TABLE crimes
  ADD CONSTRAINT crimes_criminalid_fk FOREIGN KEY (criminal_id)
        REFERENCES criminals(criminal_id);
```

```
ORA-02290: check constraint (US_A971_PLSQL_S02.CRIMES_STATUS_CK)
violated
```

The status must be CL, CA, or IA

CityJail_5.sql lines 36-37

```
ALTER TABLE crimes
 ADD CONSTRAINT crimes_status_ck CHECK (status IN('CL','CA','IA'));
```

b) Add a crime record using the following data: Crime_ID = 130, Criminal_ID = 1016, Classification = M, Date_charged = July 15, 2009, Status = PD.

```
INSERT INTO crimes (crime_id, criminal_id, classification, date_charged, status)
   VALUES (130, 1016, 'M', '15-JUL-2009', 'PD');
```

```
ORA-02290: check constraint (US_A971_PLSQL_S02.CRIMES_STATUS_CK)
violated
```

The status must be CL, CA, or IA

CityJail_5.sql lines 36-37

```
ALTER TABLE crimes
 ADD CONSTRAINT crimes_status_ck CHECK (status IN('CL','CA','IA'));
```

c) Add a crime record using the following data: Crime_ID = 130, Criminal_ID = 1016, Classification = P, Date_charged = July 15, 2009, Status = CL.

```
INSERT INTO crimes (crime_id, criminal_id, classification, date_charged, status)
   VALUES (130, 1016, 'P', '15-JUL-2009', 'CL');
```

```
ORA-02290: check constraint (US_A971_PLSQL_S02.CRIMES_CLASS_CK)
violated
```

The classification must be F, M, O,or U

CityJail_5.sql lines 34-35

```
ALTER TABLE crimes
  ADD CONSTRAINT crimes_class_ck CHECK (classification
IN('F','M','O','U'));
```