



Escuela Técnica Superior de Ingenierías Informática y de Telecomunicación
Máster Profesional en Ingeniería Informática

Curso 2020/2021

PRÁCTICA 4

Gestión de Información en la Web

Breve descripción

Evaluación de Redes en Twitter

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RESUMEN

Esta práctica consiste en realizar una serie de consultas a una base de datos documental en “*MongoDB*”. Se envía adjunto el código “*Python*” solución.

Los datos de origen son:

https://raw.githubusercontent.com/manuparra/MasterCyberSec_Practice/master/dataset/mongodb/SacramentocrimeJanuary2006.csv

Para realizar la práctica es necesario instalar “*MongoDB*”, cargar el conjunto de datos en “*MongoDB*” y luego realizar las consultas siguientes:

1. **Totalizar el número de delitos por cada tipo**
2. **Franja horaria (o franjas) con más número de delitos**

Se envía adjunto el código “*Python*” solución.



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1 EJERCICIO 1

Para totalizar el número de delitos por cada tipo he realizado he realizado la siguiente operación:

```
def count_different_crimes():
    print("\nTotalizar el número de delitos por cada tipo")
    collection = login()
    result = collection.aggregate(
        [{"group": {"_id": "$crimedescr", "count": {"$sum": 1}}}, {"sort": {"count": 1}}])
    i = 0
    for res in result:
        print(res)
        i += 1
    print("Total de resultados: " + str(i))
```

Ilustración 1 - Código para el segundo ejercicio

Básicamente lo que hago es agrupar los delitos por su tipo con un agregado y contar cuantos hay de cada uno.

1.1 Solución

Hay un total de 316 tipos de delitos distintos. A continuación se muestra el nombre de cada uno de ellos “_id” y el número de veces que se ha repetido “count”.

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{'_id': '12303.3 PC FIRE BOMB INT INJ', 'count': 1}
{'_id': '13.10.200 SCC DUMP PUB PLACES', 'count': 1}
{'_id': 'FILE-UNABLE TO DEFINE - I RPT', 'count': 1}
{'_id': '647(A) PC LEWD CONDUCT', 'count': 1}
{'_id': '836.6(B) PC ESCAPE FROM ARREST', 'count': 1}
{'_id': '278.5(A)DEPRIVE RIGHT OF CUSTO', 'count': 1}
{'_id': 'TRAFFIC ARREST FOR DA-I RPT', 'count': 1}
{'_id': '11358 HS CULTIVATE MARIJUANA', 'count': 1}
{'_id': '5.136.050 NO TAXICAB PERMIT', 'count': 1}
{'_id': '9.44.220 SCC ANIMAL AT LARGE', 'count': 1}
{'_id': '12303.3 PC DEST DVC INTENT INJ', 'count': 1}
{'_id': '602.1(A)TRES OBST BUSIN OPERAT', 'count': 1}
{'_id': '12025(A)2)CONCL GUN ON PER/MSD', 'count': 1}
{'_id': '197 JUSTIFIABLE HOMI-CIVILIAN', 'count': 1}
{'_id': '187(A) HOMICIDE', 'count': 1}
{'_id': '487(D) PC GRAND THEFT AUTO', 'count': 1}
{'_id': '243(C)(1)BATT EMERG PERSON-INJ', 'count': 1}
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{'_id': '664/187(A) ATTEMPTED HOMICIDE', 'count': 1}

{'_id': '602.5 PC ENTRY OF PROPERTY', 'count': 1}

{'_id': '148.4(A)PC TAMPER FIRE PROT EQ', 'count': 1}

{'_id': '506 PC EMBEZZLEMENT/CONTRACTOR', 'count': 1}

{'_id': '290(A)(1)(A) FAIL REG-CHG ADD', 'count': 1}

{'_id': '496(A) PC REC STOLEN AUTO PART', 'count': 1}

{'_id': '9.04.050C POSS OPEN CONTAINER', 'count': 1}

{'_id': '212.5(B) ROB-VICINITY OF ATM', 'count': 1}

{'_id': '11351 HS POSS/SALE OPIATE/NARC', 'count': 1}

{'_id': '290(G)(1) FAIL TO REG SEX OFFE', 'count': 1}

{'_id': '25662(A)BP POSS ALC BY MINOR', 'count': 1}

{'_id': 'INTOX REPORT/ADMIN PER - I RPT', 'count': 1}

{'_id': 'VICE/GAMBLING ACT - I RPT', 'count': 1}

{'_id': 'FORGERY-COUNTERFEITING', 'count': 1}

{'_id': 'ABANDONED VEHICLE - I RPT', 'count': 1}

{'_id': '243(C)2 PC BATT/PO WITH INJURY', 'count': 1}

{'_id': '11366 HS MAINTN PLACE TO SELL', 'count': 1}

{'_id': 'JUVENILE OFFENDER-PROBATION', 'count': 1}

{'_id': '587C PC EVADE PAYMENT RAILFARE', 'count': 1}

{'_id': '498(B)(5) THEFT OF ELECTRICITY', 'count': 1}

{'_id': '9.04.070 URINATE/DEFECATE PUB', 'count': 1}

{'_id': '211 PC ROBBERY-BANK', 'count': 1}

{'_id': '12671 HS SALE/POSS ILLGL FRWRK', 'count': 1}

{'_id': 'HOMICIDE ASSAULT - I RPT', 'count': 1}

{'_id': '374.3(A) PC ILLEGAL DUMPING', 'count': 1}

{'_id': '14601(A) VC LIC SUSP NEGLIGENT', 'count': 1}

{'_id': '626.2 PC UNAUTH ENTRY CAMPUS', 'count': 1}

{'_id': '12025(B)6 UNREG/CONCLED FIREAR', 'count': 1}

{'_id': '23550.5 VC 4+DUI IN 10 YEARS', 'count': 1}

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{'_id': '23110(B) VC THROW AT VEH W/INT', 'count': 1}
{'_id': '245(C) AWDW/NO FIREARM/OFFICER', 'count': 1}
{'_id': '11378 HS POSS CNTRL SUB/SALE', 'count': 1}
{'_id': '25632 BP CONSM ALC AFT CLOSING', 'count': 1}
{'_id': '12420 PC SELL/TRANSP TEAR GAS', 'count': 1}
{'_id': '203 PC MAYHEM', 'count': 1}
{'_id': '32210 EC WILFL DISTURB PUB SCH', 'count': 1}
{'_id': 'BAIT CAR 10851 VC TAKE VEHICLE', 'count': 1}
{'_id': '10.48.150 E FALSIFY PKG PERMIT', 'count': 1}
{'_id': '470 PC FORGERY', 'count': 1}
{'_id': '136.1(C)(1) PC DISSUADE V/W', 'count': 1}
{'_id': '4574(A)WEAPON/TEAR GAS IN JAIL', 'count': 1}
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{'_id': '243(B) PC BATTERY - OFFICER', 'count': 1}
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{'_id': '31 VC FALSE INFO TO OFFICER', 'count': 1}
{'_id': '12022(A)(1)PC ARMED COMM FEL', 'count': 1}
{'_id': '1767.3 WI CYA PAROLE HOLD', 'count': 1}
{'_id': '11352(B)HS TRANS SUBST TO CNTY', 'count': 1}
{'_id': '507', 'count': 1}
{'_id': '485 PC PT OF FOUND PROPERTY', 'count': 1}
{'_id': '12101(B)1)PC MINOR POSS AMMO', 'count': 1}
{'_id': '12403.7(G) PC ILLGL POSS TRGAS', 'count': 1}
{'_id': '11379(A)HS SALE/TRAN CNTRL SUB', 'count': 1}
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{'_id': 'FALSE PERSONATION - I RPT', 'count': 1}
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{'_id': 'LOST PROPERTY-MATRICULA I RPT', 'count': 1}
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 {'_id': 'COLLISION/ACCIDENT BOATS', 'count': 1}
 {'_id': '602(N)TRESP DRIVE ON PRIVATE P', 'count': 1}
 {'_id': '243.3 BATT TRANS PERS/PASS/INJ', 'count': 1}
 {'_id': '241(B) ASSAULT ON POLICE OFFIC', 'count': 1}
 {'_id': '21200.5 VC BICYCLE DUI', 'count': 1}
 {'_id': '538D PC IMPERSON PEACE OFFICER', 'count': 1}
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 {'_id': '415.5(A)(1) PC FIGHT SCHOOL GR', 'count': 1}
 {'_id': '11360(A)HS SALE/TRANSP MARIJ', 'count': 1}
 {'_id': '12.72.060I ADULT LOITER PLYGRD', 'count': 1}
 {'_id': '417.4 PC BRANDISH IMIT FIREARM', 'count': 1}
 {'_id': '647(I) PEEPING TOM-INHAB DWELL', 'count': 1}
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 {'_id': 'FORGERY-PASSING COUNTERFEIT', 'count': 1}
 {'_id': '601(A) WI JUVENILE INCORRIGIBL', 'count': 2}
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 {'_id': 'SHOOT INTO OCCUP DWELL - I RPT', 'count': 2}
 {'_id': '314.1 PC INDECENT EXPOSURE', 'count': 2}
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 {'_id': '12316(B)(1)FELON POSSESS AMMO', 'count': 2}
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{'_id': '415(3) PC DIST PEACE OFF WORDS', 'count': 2}

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{'_id': '484E(A)PC THEFT OF CREDIT CARD', 'count': 2}

{'_id': 'FRAUD-SWINDLE', 'count': 2}

{'_id': '11357(C)HS POSS +28.5GR MARIJ', 'count': 2}

{'_id': 'RPT # CANCELLED- I RPT', 'count': 2}

{'_id': '148.1(A)PC FALSE REPT OF BOMB', 'count': 2}

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{'_id': '12025(A)2)CNCLD GUN ON PER/FEL', 'count': 2}

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{'_id': '1705 US DESTRUCT OF MAIL RECEP', 'count': 2}

{'_id': '603 FORCED ENTRY/PROP DAMAGE', 'count': 2}

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{'_id': '4463(A)(1) VC ALTER REG', 'count': 2}

{'_id': '484E(D)PC FRAUD POSS CARD INFO', 'count': 2}

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{'_id': '647(F) PC PUB INTOX-DETOX ONLY', 'count': 3}

{'_id': '10855 VC LSE/RENT NOT RETURNED', 'count': 3}

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{'_id': 'FRAUDULENT DOCUMENTS- I RPT', 'count': 3}

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{'_id': '1644', 'count': 3}

{'_id': '653K PC POSS/SELL SWITCHBLADE', 'count': 3}

{'_id': '11357(E) MNR POSS MARIJ SCHOOL', 'count': 3}

{'_id': '12022.1 PC COMMIT FEL ON BAIL', 'count': 3}

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{'_id': '537(A)(1) DEFRAUD INKEEP/->$400', 'count': 3}
{'_id': '10852 VC VEHICLE TAMPERING', 'count': 3}
{'_id': '9.40.020(A) JUVENILE CURFEW', 'count': 3}
{'_id': '4462.5 VC FALSE TAB/AVOID REG', 'count': 3}
{'_id': 'TERRORIST THREATS - I RPT', 'count': 3}
{'_id': '368(D) THEFT-ELDER >400', 'count': 3}
{'_id': '487(C) PC  GRAND THEFT-PERSON', 'count': 4}
{'_id': '503 PC  EMBEZZLEMENT', 'count': 4}
{'_id': '532 PC FRAUD OBTAIN MONEY ETC', 'count': 4}
{'_id': 'BUSINESS PERMITS - I RPT', 'count': 4}
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{'_id': 'FOUND EVIDENCE-NON NARC -I RPT', 'count': 4}
{'_id': '11550(A)HS UNDER INFL NARCOTIC', 'count': 4}
{'_id': '626.10(A) PC POSS WPN SCHL ZN', 'count': 4}
{'_id': '243.6 BATTERY SCHOOL EMPLOYEE', 'count': 4}
{'_id': '594.3(A)VANDAL/PLACE OF WORSHI', 'count': 4}
{'_id': '484 PC  PETTY THEFT AUTO PART', 'count': 4}
{'_id': '417(A)2) PC BRANDISH FIREARM', 'count': 5}
{'_id': 'POSSIBLE MENTAL - I RPT', 'count': 5}
{'_id': '247(B) PC SHOOT UNOCC BLDG/VEH', 'count': 5}
{'_id': 'RECOVERED PROPERTY - I RPT', 'count': 5}
{'_id': '1054', 'count': 5}
{'_id': '3056 PC PAROLE VIOLATION', 'count': 5}
{'_id': '530 PC FALSE PERS. REC PROP', 'count': 5}
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{'_id': '2800.2(A) VC EVADING/RECKLESS', 'count': 5}

{'_id': 'TRESPASS OR PROWLER- I RPT', 'count': 6}

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{'_id': '308(B) PC MINOR POSS TOBACCO', 'count': 6}

{'_id': '487(A) PC GRAND THEFT-SHOPLIFT', 'count': 6}

{'_id': '14601.1(A) VC LIC SUSP OTHER', 'count': 6}

{'_id': '484G(A)PC USE FORGED CARD', 'count': 6}

{'_id': '1084', 'count': 6}

{'_id': '466 PC POSS OF BURG TOOLS', 'count': 6}

{'_id': 'SUSPICIOUS VEHICLE - I RPT', 'count': 6}

{'_id': '484 PC THEFT-LIC PLATE TABS', 'count': 6}

{'_id': 'PROB VIOLA/FEL-MISD - I RPT', 'count': 7}

{'_id': '12020(A)(4) PC DIRK/DAGGER', 'count': 7}

{'_id': 'HIT AND RUN /SUSPECTS- I RPT', 'count': 7}

{'_id': 'ELDER ABUSE/PHYS/MENTAL-I RPT', 'count': 7}

{'_id': '12.52.030 SCC UNLAWFUL CAMPING', 'count': 7}

{'_id': '22435.2(A) BP POSS SHOP CART', 'count': 7}

{'_id': '484 PC-PETTY THEFT-COIN MACHIN', 'count': 7}

{'_id': 'JUVENILE DISURBANCE - I RPT', 'count': 7}

{'_id': '417(A)1) PC BRANDISH NON-GUN', 'count': 8}

{'_id': '9.04.050 A DRINKING IN PUBLIC', 'count': 8}

{'_id': '212.5(A)ROBBERY-INHAB DWELLING', 'count': 8}

{'_id': '1064', 'count': 8}

{'_id': '290(A)(1)(D) FAIL TO REG-5 DAY', 'count': 8}

{'_id': '12021(A)(1)PC FELON POSS FRARM', 'count': 8}

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{'_id': '487(A) GRAND THEFT-AUTO PARTS', 'count': 8}
{'_id': '23103(A) RECKLESS ON HIGHWAY', 'count': 8}
{'_id': '290(F)1 W/I 5 DAYS ADD CHANGE', 'count': 8}
{'_id': '415(1) PC DISTURB PEACE/FIGHT', 'count': 9}
{'_id': 'PROTECTIVE CUSTODY-I RPT', 'count': 9}
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{'_id': '11350(B)HS POSSESS QUAALUDES', 'count': 9}
{'_id': '148(A)(1)PC RESIST PEACE OFFCR', 'count': 10}
{'_id': '451(D) PC ARSON OF PROPERTY', 'count': 10}
{'_id': '166(A)(4) WILFUL DISOBEY CT OR', 'count': 10}
{'_id': 'IMPOUNDED VEHICLE', 'count': 10}
{'_id': '12020(A)1) PROHIBITED FIREARM', 'count': 10}
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{'_id': '23222(B)POSSESS MARIJ IN VEH', 'count': 11}
{'_id': '487(A) GRAND THEFT-CLOUT-UNLOC', 'count': 11}
{'_id': '148.9 PC FALSE ID TO OFFICER', 'count': 11}
{'_id': '1203.2 PC VIOLATION OF PROBATI', 'count': 11}
{'_id': '459 PC BURGLARY-UNSPECIFIED', 'count': 12}
{'_id': '653.22(A) LOITER PROSTITUTION', 'count': 12}
{'_id': '653M(B) PC ANNOY/RPT CALL HOME', 'count': 12}
{'_id': 'ROBBERY - I RPT', 'count': 12}
{'_id': '475(A)PC POSS FORGED CHK/NOTE', 'count': 13}
{'_id': 'MISSING PERSON LOCATE O/S ASSI', 'count': 13}
{'_id': '1551(A) FUGITIVE FROM JUSTICE', 'count': 13}
{'_id': 'O/S AGENCY -ASSISTANCE- I RPT', 'count': 13}
{'_id': 'FAMILY DISTURBANCE - I RPT', 'count': 13}
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{'_id': '23153(A) VC DUI CAUSE INJURY', 'count': 15}
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{'_id': 'ASSAULT WITH WEAPON - I RPT', 'count': 16}
{'_id': '4140 BP POSS OF HYPO NEEDLE', 'count': 16}
{'_id': 'PERSON INFORMATION - I RPT', 'count': 16}
{'_id': 'TELEPEST -I RPT', 'count': 17}
{'_id': '653M(A) PC OBSCENE/THREAT CALL', 'count': 17}
{'_id': '246 PC SHOOT OCCUP DWELL/VEH', 'count': 17}
{'_id': '215(A) PC CARJACKING', 'count': 18}
{'_id': '422 PC THREAT/INTENT TO TERROR', 'count': 18}
{'_id': 'FRAUD OR BUNCO - I RPT', 'count': 19}
{'_id': 'TRAFFIC - I RPT', 'count': 19}
{'_id': '484 PETTY THEFT CLOUT UNLOCKED', 'count': 20}
{'_id': '475(C) PASS FORGED NOTE', 'count': 20}
{'_id': '211 PC ROBBERY-PURSE SNATCH', 'count': 20}
{'_id': '1708 US THEFT OF MAIL', 'count': 20}
{'_id': 'ACCIDENTAL FIRES/ARSON -I RPT', 'count': 20}
{'_id': 'BURGLARY - I RPT', 'count': 21}
{'_id': '484J PC PUBLISH CARD INFO', 'count': 21}
{'_id': '476 PC PASS FICTICIOUS CHECK', 'count': 21}
{'_id': '594(B)(2)(A)VANDALISM GRAF-400', 'count': 22}
{'_id': '245(A)(2) AWDW/FIREARM/CIVILIA', 'count': 22}
{'_id': '647(F) PC DIP - DISORDERLY', 'count': 23}
{'_id': '529 PC FALSE PERSONATION', 'count': 23}
{'_id': 'VANDALISM - I RPT', 'count': 24}
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{'_id': 'MISSING PERSON I RPT', 'count': 24}

{'_id': '273.6(A) PC VIO DV COURT ORDER', 'count': 25}

{'_id': '243(D) PC BATT/CIVILIAN W/INJ', 'count': 26}

{'_id': '3056 PAROLE VIO - I RPT', 'count': 27}

{'_id': '20001(A) VC HIT/RUN INJ/DEATH', 'count': 28}

{'_id': '666 PC PETTY THEFT W/PRI CONV', 'count': 30}

{'_id': 'BATTERY - I RPT', 'count': 35}

{'_id': '647(B) PC PROSTITUTION', 'count': 36}

{'_id': 'HARASSMENT - I RPT', 'count': 36}

{'_id': '211 PC ROBBERY- BUSINESS', 'count': 38}

{'_id': 'NARCOTICS SUSP/EVID/ACT- I RPT', 'count': 41}

{'_id': '487(A) GRAND THEFT-INSIDE', 'count': 41}

{'_id': '11350(A)HS POSS CNTRL SUBST', 'count': 43}

{'_id': 'SUSP PERS-NO CRIME - I RPT', 'count': 44}

{'_id': '484 PC PETTY THEFT/ OUTSIDE', 'count': 48}

{'_id': '11357(B)HS POSS -28.5GR MARIJ', 'count': 51}

{'_id': 'LOST PROPERTY - I RPT', 'count': 57}

{'_id': '11377(A)HS POSS AMPHETAMINES', 'count': 58}

{'_id': '530.5 PC USE PERSONAL ID INFO', 'count': 65}

{'_id': 'GANG ACTIVITY - I RPT', 'count': 65}

{'_id': '484G(B) PC ACCESS CARD FRAUD', 'count': 66}

{'_id': 'MISCELLANEOUS I RPT (ZMISC)', 'count': 71}

{'_id': 'THREATS - I RPT', 'count': 71}

{'_id': '245(A)(1)AWDW/NO FIREARM/CIVIL', 'count': 76}

{'_id': '243(E)1 BATTERY NONCOHAB SPOUS', 'count': 81}

{'_id': 'FOUND PROPERTY - I RPT', 'count': 81}

{'_id': '484 PC PETTY THEFT', 'count': 82}

{'_id': '23152(A) VC DUI-ALCOHOL/DRUGS', 'count': 83}

{'_id': '487(A) PC GRAND THEFT', 'count': 84}

{'_id': '484 PETTY THEFT-SHOPLIFT', 'count': 86}

{'_id': 'NON INJ HR/MAIL OUT REPORT', 'count': 88}

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{'_id': '11364 HS POSS DRUG PARAPH', 'count': 95}
{'_id': '484 PC PETTY THEFT/INSIDE', 'count': 99}
{'_id': '211 PC ROBBERY UNSPECIFIED', 'count': 99}
{'_id': '20002(A) HIT/RUN', 'count': 102}
{'_id': '5150 WI DANGER SELF/OTHERS', 'count': 106}
{'_id': 'CASUALTY REPORT', 'count': 116}
{'_id': '594(B)(1)PC VANDALISM +$400', 'count': 117}
{'_id': '484 PETTY THEFT/LICENSE PLATE', 'count': 118}
{'_id': '459 PC BURGLARY BUSINESS', 'count': 135}
{'_id': 'TRAFFIC-ACCIDENT-NON INJURY', 'count': 175}
{'_id': 'TRAFFIC-ACCIDENT INJURY', 'count': 180}
{'_id': '594(B)(2)(A) VANDALISM/ -$400', 'count': 195}
{'_id': '10851 VC AUTO THEFT LOCATE', 'count': 223}
{'_id': 'MISSING PERSON', 'count': 268}
{'_id': '459 PC BURGLARY RESIDENCE', 'count': 356}
{'_id': 'TOWED/STORED VEHICLE', 'count': 429}
{'_id': 'TOWED/STORED VEH-14602.6', 'count': 453}
{'_id': '459 PC BURGLARY VEHICLE', 'count': 461}
{'_id': '10851(A)VC TAKE VEH W/O OWNER', 'count': 652}
```

2 EJERCICIO 2

Para mostrar las franjas horarias con más delitos he hecho lo siguiente:

```
def most_crime_time():
    print("\nFranja horaria (o franjas) con más número de delitos")
    collection = login()
    result = collection.aggregate(
        [{"$group": {"_id": "$datetime", "count": {"$sum": 1}}}, {"$sort": {"count": 1}}])
    for res in result:
        print(res)
```

Ilustración 2 – Código para el primer ejercicio

He almacenado solo la hora por lo que fácilmente podemos repetir el procedimiento de antes utilizando solo el dígito de la hora. Si un delito se realizó entre las 00:00 y las 00:59 se almacenará en base de datos como 0, si se realizó entre las 01:00 y las 01:59 se almacenará como 1, y así hasta las 23:59.

2.1 Solución

La franja horaria donde más delitos se produjeron fue de 00:00 a 00:59.

```
{'_id': '5', 'count': 73}
{'_id': '4', 'count': 91}
{'_id': '6', 'count': 114}
{'_id': '3', 'count': 122}
{'_id': '2', 'count': 171}
{'_id': '1', 'count': 187}
{'_id': '7', 'count': 219}
{'_id': '23', 'count': 304}
{'_id': '10', 'count': 306}
{'_id': '9', 'count': 326}
{'_id': '11', 'count': 338}
{'_id': '13', 'count': 353}
{'_id': '19', 'count': 358}
{'_id': '21', 'count': 358}
{'_id': '20', 'count': 362}
{'_id': '8', 'count': 380}
{'_id': '22', 'count': 384}
{'_id': '14', 'count': 385}
{'_id': '12', 'count': 399}
```


{'_id': '15', 'count': 417}

{'_id': '18', 'count': 430}

{'_id': '17', 'count': 458}

{'_id': '16', 'count': 471}

{'_id': '0', 'count': 578}