

CS 101

Fall 2015

Program Assignment # 7 Crime Data

Algorithm Due : Sunday, Nov 22nd 2015

Program Due : Wednesday, Dec 2nd 2015

## KCPD Crime Data

Frequently, a programmer's job will be to aggregate large amounts of information in order to analyze information easier. Many times this involves getting data from multiple files. The Kansas City Missouri government provides open access to a lot of their data.

<https://data.kcmo.org/> We're going to look at crime data for Kansas City Police Department.

### Files

1. **incidents.csv** - Each row contains information about a reported crime. It provides a Report Number, Reported Date, Reported Time, Offense Number, and the Zip Code the offense occurred in. The Report Number ( Report\_No ) field is unique in this file.
2. **Details.csv** - Each row contains information about people involved in the offense. Either Victims or Suspects. The fields in this file are Report Number, Involvement, Race, Sex, Age, and Firearm Used. You will be mostly using 2 fields from this file. You'll need the Report Number and the Involvement. If the Involvement field is VIC then the record is for victim information. There can be multiple records with the same Report No in this file.
3. **offenses.docx** - This is a csv file of the offense codes that are used in the incidents file. There are 2 columns; Offense and Description. The offense is the offense number from incidents.

### Requirements

- Display a menu to the user with 3 choices; Summary by Zip Code, Victim Count by Offense Type, and Quit. If the user does not choose one of the items in the menu then they will be warned and required to re-enter a value.
- Summary by zip code will display a the summary of incident counts by each zip code. ( How many offenses occurred in each zip code )
  - If a zip code is blank or 0 then it will be considered part of zip code 99999 which is for unknown or unreported zip codes.
  - The output summary will be ordered by zip code
- Victim Count by offense type will displays the number of victims for each type of offense.
  - The output will be ordered by Victim Count in descending order (the offense type with the highest number of victims, then the next highest, etc.)
  - If you try to read through the details file for every offense, then you'll find your program will be quite slow. You may want to read the files into dictionaries or

some other data type to speed up operations. ( Remember looking up by the key in a dictionary is much quicker than finding a record in a list or tuple )

- All of the fields have a header as the top line.
- You may assume these files are in the program directory and are named properly.
  - You may not assume that the files will open without errors. If there is an error opening one, you should warn the user and quit the program.

## Useful Modules

CSV module is great for reading comma separated value files. These are text files where the column are separated by single commas. You don't have to use the csv module, but it can make things simpler. <https://docs.python.org/2/library/csv.html>

**Example Output ( Some of the rows have been removed from the summary by zip code to make the document shorter. You should include all the data in your output )**

```
>>> ===== RESTART =====
>>>
```

```
KCPD Crime Statistics
```

```
1. Summary by Zip Code
2. Victim count by offense Type
Q. Quit
```

```
==> e
```

```
You must choose one of the selections 1,2,Q
```

```
KCPD Crime Statistics
```

```
1. Summary by Zip Code
2. Victim count by offense Type
Q. Quit
```

```
==> 1
```

```
Zip Code      Crimes
=====
64126         809
64127         3983
64128         1749
64129         1037
64130         4718
64131         2080
64132         2060
64133         2005
64134         2928
```

64135	15
64136	116
64137	655
64138	1011
64139	59
99999	1537

# KCPD Crime Statistics

1. Summary by Zip Code
  2. Victim count by offense Type
- Q. Quit

==> 2

Offense	Victims
Stealing	18381
Non Agg Assault	8968
Burglary	8102
Property Damage	4364
Misc Violation	4352
Assault	4227
Auto Theft	3861
Possession/Sale/Dist	2893
Robbery	2672
Fraud	1844
Forgery	712
Family Offense	661
Rape	597
Weapons Law Violation	595
Disorderly Conduct	570
Casualty/Suicide	463
DUI	393
Sex Offense Other	387
Arson	317
Homicide	189
Embezzlement	184
Prostitution	175
Stolen Property	147
Liquor Law Violation	85
Missing/Runaway	3
Loitering	3

# KCPD Crime Statistics

1. Summary by Zip Code
  2. Victim count by offense Type
- Q. Quit

==> q

>>>

## Small Dataset Example Output

We've included a small dataset to help you with your testing. Many times it is easier working with a small amount of data to ensure you are getting the correct values. You may find it helpful to create other datasets to test different things that can happen in your program. This data is under the directory `smalldata`.

KCPD Crime Statistics

1. Summary by Zip Code
2. Victim count by offense Type
- Q. Quit

==> 1

Zip Code	Crimes
64108	1
64130	3
99999	1

KCPD Crime Statistics

1. Summary by Zip Code
2. Victim count by offense Type
- Q. Quit

==> 2

Offense	Victims
Possession/Sale/Dist	3
Sex Offense Other	2
Stolen Property	1

KCPD Crime Statistics

1. Summary by Zip Code
2. Victim count by offense Type
- Q. Quit

==>

## Extra Credit ( 5 Points )

Add some extra options when the user chooses to get a report of the victim count by offense type.

- User can choose all offenses for a specific zip code
- User can get a count by victims or by suspects
- User can choose to sort by Offense Type or by total value.
- When an invalid choice is made by the user it will re-prompt until they choose valid input.

## Example Output

```
>>> ===== RESTART
=====
>>>
```

### KCPD Crime Statistics

1. Summary by Zip Code
2. Victim count by offense Type
- Q. Quit

```
==> 2
```

### Offense Summary

1. Summary for all Zip Codes
2. Choose a Zip code

```
==> 1
```

### Detail Records to Count

1. Count by Victims VIC
2. Count by Suspects SUS

```
==> 2
```

### Sort Records by

1. Offense Description
2. Detail Count

```
==> 1
```

Offense	Suspects
Arson	288

Assault	2821
Auto Theft	3507
Burglary	7555
Casualty/Suicide	78
DUI	36
Disorderly Conduct	21
Embezzlement	108
Family Offense	372
Forgery	599
Fraud	1757
Homicide	138
Liquor Law Violation	13
Loitering	0
Misc Violation	2876
Missing/Runaway	2
Non Agg Assault	5208
Possession/Sale/Dist	177
Property Damage	4030
Prostitution	18
Rape	601
Robbery	3127
Sex Offense Other	252
Stealing	15710
Stolen Property	25
Weapons Law Violation	37

#### KCPD Crime Statistics

1. Summary by Zip Code
2. Victim count by offense Type
- Q. Quit

==> 2

#### Offense Summary

1. Summary for all Zip Codes
2. Choose a Zip code

==> 2

Enter the zip code to search by ==> 64030

#### Detail Records to Count

1. Count by Victims VIC

2. Count by Suspects SUS

=> 1

Sort Records by

1. Offense Description
2. Detail Count

=> 2

Offense	Victims
=====	
Stealing	4
Possession/Sale/Dist	2
Weapons Law Violation	1
Non Agg Assault	1
Misc Violation	1
DUI	1
Burglary	1

KCPD Crime Statistics

1. Summary by Zip Code
  2. Victim count by offense Type
- Q. Quit

=> q

>>>

## References

1. <https://data.kcmo.org/Crime/KCPD-Crime-Data-2011-Final/nt2f-uxvx>