

## Nicole Donnelly Final Project

**USCrimeApp.java** is a program that takes a CSV file as a command line argument, reads each row in the file as an object, creates an array of the objects, and performs some computations on the data. The program presumes that the first row of the CSV contains header data and that there will be 20 items in each row in the same order as the sample file. The program does not presume the length of the file so data can be added or removed without the need to change the program.

**USCrimeClass.java** is the class that creates each object. There is a no argument constructor that uses default values to create the object. The primary constructor takes a row from the CSV as a string argument and parses the data in that row into fields that correspond to the column names in the CSV. Setter methods are not provided since each object is considered immutable. The data is provided from the CSV and not set by the user. A toString method is provided to print out the object contents.

**USCrimeArray.java** is called by USCrimeApp.java to create the array of objects from the CSV data using the USCrimeArray constructor. The constructor uses a private method to determine the number of rows of data in the CSV so it can instantiate an array of the correct size. This allows data to be added or removed from the CSV without changing the code. This class also contains the methods to perform the computations driven by the user menu. A toString method is provided to print out the array contents.

**USCrimeApp** provides the user with 21 items they can have computed/ displayed from the data. The menu will continue to run, including when invalid input is provided, until the users selects “Q” to quit the program. The user is able to select the following items:

1. What were the percentages in population growth for each consecutive year from 1994 – 2013?
2. What are all the values for each year from 1994 – 2013??
3. What year was the Murder rate the highest?
4. What year was the Murder rate the lowest?
5. What year was the Robbery rate the highest?
6. What year was the Robbery rate the lowest?
7. What year was the Rape rate the highest?
8. What year was the Rape rate the lowest?
9. What year was the Aggravated Assault rate the highest?
10. What year was the Aggravated Assault rate the lowest?
11. What year was the Burglary rate the highest?
12. What year was the Burglary rate the lowest?
13. What year was the Larceny theft rate the highest?
14. What year was the Larceny theft rate the lowest?
15. What year was the Motor Vehicle theft rate the highest?
16. What year was the Motor Vehicle theft rate the lowest?
17. How many total crimes were committed each year from 1994 – 2013 (violent + property)?
18. How many violent crimes were committed each year from 1994 - 2013?
19. What was the change in violent crime rate for each consecutive year from 1994 – 2013?
20. How many property crimes were committed each year from 1994 - 2013?
21. What was the change in property crime rate for each consecutive year from 1994 – 2013?

In reviewing the provided crime data, it was determined that Violent Crime is the total of murder, rape, robbery, and aggravated assault, while Property Crime is the total of burglary, larceny, and motor

vehicle theft. This information was validated for every year data is provided and is used in computing the total annual crimes.

Test cases are provided in the table below, followed by screenshots of the test cases and program compilation.

### Test Cases

Input	Expected Output	Actual Output	Pass?
3	The Murder rate was highest in 1994  Followed by the user menu.	The Murder rate was highest in 1994  Followed by the user menu.	Yes
dsf45	Invalid selection, try again.  Followed by the user menu.	Invalid selection, try again.  Followed by the user menu.	Yes
q	Thank you for trying the US Crimes Statistics Program. Elapsed time in seconds was: (time in seconds)	Thank you for trying the US Crimes Statistics Program. Elapsed time in seconds was: 224.336	Yes

## TestCase “3”:

```
@ Javadoc Declaration Console Git Staging Debug
<terminated> USCrimeApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/Contents/Home/bin/java (Aug 13, 20
Enter your selection:
3
The Murder rate was highest in 1994

Enter the number of the question you want answered. Enter 'Q' to quit the program.

1. What were the percentages in population growth for each consecutive year from 1994 - 2013?
2. What are all the values for each year from 1994 - 2013??
3. What year was the Murder rate the highest?
4. What year was the Murder rate the lowest?
5. What year was the Robbery rate the highest?
6. What year was the Robbery rate the lowest?
7. What year was the Rape rate the highest?
8. What year was the Rape rate the lowest?
9. What year was the Aggravated Assault rate the highest?
10. What year was the Aggravated Assault rate the lowest?
11. What year was the Burglary rate the highest?
12. What year was the Burglary rate the lowest?
13. What year was the Larceny theft rate the highest?
14. What year was the Larceny theft rate the lowest?
15. What year was the Motor Vehicle theft rate the highest?
16. What year was the Motor Vehicle theft rate the lowest?
17. How many total crimes were committed each year from 1994 - 2013 (violent + property)?
18. How many violent crimes were committed each year from 1994 - 2013?
19. What was the change in violent crime rate for each consecutive year from 1994 - 2013?
20. How many property crimes were committed each year from 1994 - 2013?
21. What was the change in property crime rate for each consecutive year from 1994 - 2013?
Q. Quit the program
Enter your selection:
```

## TestCase “dsf45”

```
<terminated> USCrimeApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_91.jdk/Contents/Home/bin/java (Aug 13, 20
Q. Quit the program
Enter your selection:
dsf45
Invalid selection, try again.

Enter the number of the question you want answered. Enter 'Q' to quit the program.

1. What were the percentages in population growth for each consecutive year from 1994 - 2013?
2. What are all the values for each year from 1994 - 2013??
3. What year was the Murder rate the highest?
4. What year was the Murder rate the lowest?
5. What year was the Robbery rate the highest?
6. What year was the Robbery rate the lowest?
7. What year was the Rape rate the highest?
8. What year was the Rape rate the lowest?
9. What year was the Aggravated Assault rate the highest?
10. What year was the Aggravated Assault rate the lowest?
11. What year was the Burglary rate the highest?
12. What year was the Burglary rate the lowest?
13. What year was the Larceny theft rate the highest?
14. What year was the Larceny theft rate the lowest?
15. What year was the Motor Vehicle theft rate the highest?
16. What year was the Motor Vehicle theft rate the lowest?
17. How many total crimes were committed each year from 1994 - 2013 (violent + property)?
18. How many violent crimes were committed each year from 1994 - 2013?
19. What was the change in violent crime rate for each consecutive year from 1994 - 2013?
20. How many property crimes were committed each year from 1994 - 2013?
21. What was the change in property crime rate for each consecutive year from 1994 - 2013?
Q. Quit the program
Enter your selection:
```

## TestCase “q”

@ Javadoc Declaration Console Git Staging Debug

<terminated> USCrimeApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0\_91.jdk/Contents/Home/bin/java (Aug 13, 2016 10:00:00 AM)

18. How many violent crimes were committed each year from 1994 - 2013?

19. What was the change in violent crime rate for each consecutive year from 1994 - 2013?

20. How many property crimes were committed each year from 1994 - 2013?

21. What was the change in property crime rate for each consecutive year from 1994 - 2013?

Q. Quit the program

Enter your selection:

q

Thank you for trying the US Crimes Statistics Program.

Elapsed time in seconds was: 224.336

## Compiling, command line argument not provided

Edit Configuration

### Edit launch configuration properties

Run a Java application

Name: USCrimeApp

Main Arguments JRE Classpath Source Environment Common

Program arguments:

VM arguments:

@ Javadoc Declaration Console Git Staging Debug

<terminated> USCrimeApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0\_91.jdk/Contents/Home/bin/java (Aug 13, 2016 10:00:00 AM)

Application requires 1 command arguments

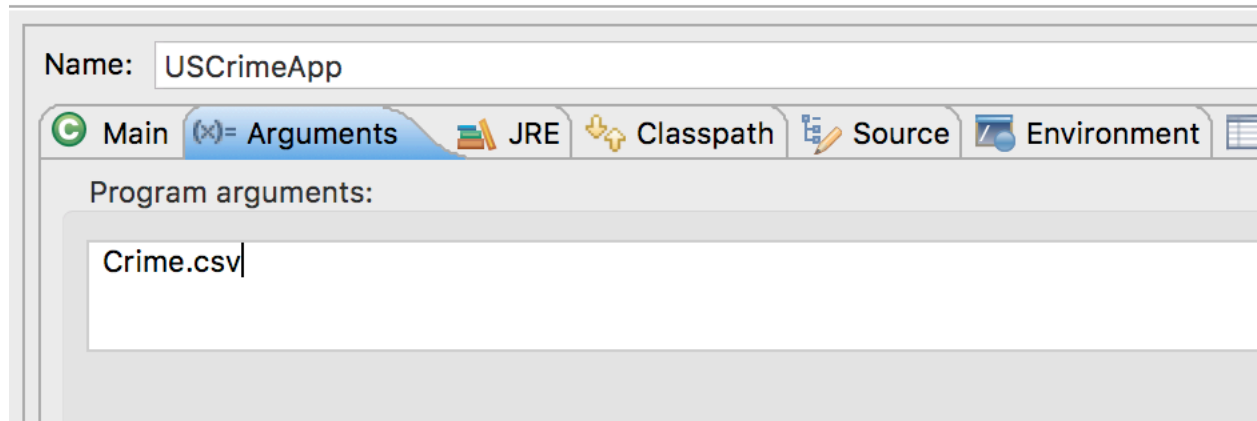
e.g. java USCrime crime.csv

## Compiling, argument provided



### Edit launch configuration properties

Run a Java application



```
// else {  
78     switch (choice) {
```

@ Javadoc Declaration Console Git Staging Debug

USCrimeApp [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0\_91.jdk/Contents/Home/bin/java (Aug 13, 2017, 2:11:22 PM)

9. What year was the Aggravated Assault rate the highest?
10. What year was the Aggravated Assault rate the lowest?
11. What year was the Burglary rate the highest?
12. What year was the Burglary rate the lowest?
13. What year was the Larceny theft rate the highest?
14. What year was the Larceny theft rate the lowest?
15. What year was the Motor Vehicle theft rate the highest?
16. What year was the Motor Vehicle theft rate the lowest?
17. How many total crimes were committed each year from 1994 - 2013 (violent + property)?
18. How many violent crimes were committed each year from 1994 - 2013?
19. What was the change in violent crime rate for each consecutive year from 1994 - 2013?