Group Programming Exercise

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Requirements

The Program will use a command-line interface to prompt the user for input parameters which will be a latitude or longitude of a postcode as well as a radius of the crimes between 1, 2 and 5KM of the centre coordinate, this will then retrieve all reported street level crimes within the radius selected.

It should also respond to general user instructions *(e.g. 'help' should respond with a list of instructions and helpful commands)* If a user inputs a command that would produce many lines of output, the program will prompt the user for a file name and then it will save the output to the file. It must also accept the command to quit or restart at any point during runtime. We will also need to produce a tabular report of street level crimes in a CSV format, suitable for use with spreadsheet programs such as Microsoft Excel, the report should be saved with a user specified file name. The program must only accept 'EX' postcodes and should reject postcodes outside of that area.

Data can also be sorted by:

1. Distance from the postcode centre
2. By Date, most recent first
3. Crime category

Note: That we can only use libraries (modules) from the standard Python 3.8 (3.7/3.6/3.5) distribution.

Breakdown

Ticket Number	Task	Requirements	Assigned To	Status
1	Create Requirements Report	• Outline and breakdown the key requirements for developing the system.	Jack R Gittoes	Completed
2	Develop quit, restart and help commands.	• Quit command that allows a user to quit the application at any point during runtime • Restart command that allows a user to restart the application at any point during runtime • Help command that provides the user with a document of instructions and commands that will help them use the system.	Jack R Gittoes	Completed
3	User Input	• Design and develop the user inputs that will be needed to display crime data.	Artemijs Kurtenoks	Completed
4	Extract and Sort Crime data	• Extract crime data and allow it to be sorted based on the input parameters Allow data to be sorted within: 1. Distance 2. Date (most recent first) 3. Crime category	Emily Peregrine	Completed
5	Tabular Report output	• The report should be outputted into a CSV file that has a user specified file name. • Must be suitable for use with spreadsheet programs (e.g. Microsoft excel)	Jack Plowman	Completed
6	Develop Unit Tests	• Develop unit tests to check that the program works to the requirements.	Jack Plowman, Emily Peregrine, Artemjs Kurtenoks, Jack R Gittoes	Completed
7	Develop UI path	• Develop User path to allow a user to navigate the program efficiently.	Jack Gittoes	Completed
8	Postcode to coordinates conversion	• Develop a method that will allow a postcode to be converted into a coordinate.	Jack Gittoes	Completed

The github repo has a detailed track of issues and pull requests

https://github.com/eperegrine/ECM1421-CA2

Screenshots

Run the app:

```
STREET CRIME IN DEVON
COMMANDS:
 HELP: Outputs An Instructions Document.
 QUIT: Quits The Program.
 RESTART: Restarts The Program.

Please, enter postcode (e.g. EX4 4QJ)
ex44qj
(50.73514518, -3.53506244)
Please, select distance from postcode centre:
 [1] 1km
 [2] 2km
 [3] 5km
1
Please, select sort option (number 1 to 3):
 [1] By disatnce from the postcode centre
 [2] By date (most recent first)
 [3] Crime category
1
869 crimes found
A file path example /Users/emilyperegrine
Please, enter a path to destination folder:
Using relative path: /Users/emilyperegrine/Documents/Uni/ECM1421_SystemsDevelopment1/CA2/
Please enter a file name: ex44qj
File name accepted
File Created: ex44qj.csv
```

Data_output

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Crime ID	Month	Reported by	Falls within	Longitude	Latitude	Location	LSOA code	LSOA name	Crime type	Last outcome category	Context	Distance
2	ce6ec92ab60f777d	2019-03	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Public order	Unable to prosecute suspect		0.048124762
3	253a582728329305	2019-02	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Bicycle theft	Unable to prosecute suspect		0.048124762
4		2019-11	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Anti-social behaviour			0.048124762
5	997ceb24e11c57d0	2019-11	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Violence and sexual offences	Under investigation		0.048124762
6	4ecb32eae2b2fcf15	2019-10	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Other theft	Investigation complete; no suspect identified		0.048124762
7	6dea9db290c369fb	2019-10	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Violence and sexual offences	Unable to prosecute suspect		0.048124762
8	014802d56b20cf09	2019-07	Devon & Cornwall Police	Devon & Cornwall Police	-3.535679	50.734958	On or near The Queen'S Drive	E01033233	Exeter 001F	Violence and sexual offences	Investigation complete; no suspect identified		0.048124762
9	bac2dd3e3c5a3a48	2019-03	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Theft from the person	Investigation complete; no suspect identified		0.098151925
10	03dec41ce801eaad	2019-03	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Violence and sexual offences	Investigation complete; no suspect identified		0.098151925
11	832b83a8a9a52bde	2019-04	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Violence and sexual offences	Unable to prosecute suspect		0.098151925
12	868a5946e72ab462	2019-05	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Other theft	Investigation complete; no suspect identified		0.098151925
13	4699c246bda6cedf	2019-11	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Other crime	Investigation complete; no suspect identified		0.098151925
14	fd108a26ae9cdb75	2019-10	Devon & Cornwall Police	Devon & Cornwall Police	-3.534736	50.734287	On or near Further/Higher Educ	E01033233	Exeter 001F	Violence and sexual offences	Under investigation		0.098151925
15		2019-07	Devon & Cornwall Police	Devon & Cornwall Police	-3.532625	50.733883	On or near Prince Of Wales Roa	E01020021	Exeter 004D	Anti-social behaviour			0.221638192
16	76512296973eadb6	2019-02	Devon & Cornwall Police	Devon & Cornwall Police	-3.538184	50.736149	On or near Mardon Hill	E01033233	Exeter 001F	Criminal damage and arson	Investigation complete; no suspect identified		0.246411438

The end of the file is line 870, and there are 869 crimes found. The extra line is for the header.

	A	B	C	D	E	F	G	H	I	J	K	L	M
867		2019-01	Devon & Cornwall Police	Devon & Cornwall Police	-3.528091	50.72736	On or near Longbrook Terrace	E01020022	Exeter 004E	Anti-social behaviour			0.995058466
868		2019-01	Devon & Cornwall Police	Devon & Cornwall Police	-3.528091	50.72736	On or near Longbrook Terrace	E01020022	Exeter 004E	Anti-social behaviour			0.995058466
869	734580969755984a	2019-06	Devon & Cornwall Police	Devon & Cornwall Police	-3.528091	50.72736	On or near Longbrook Terrace	E01020022	Exeter 004E	Violence and sexual offences	Unable to prosecute suspect		0.995058466
870	94027f6474967fce	2019-06	Devon & Cornwall Police	Devon & Cornwall Police	-3.528091	50.72736	On or near Longbrook Terrace	E01020022	Exeter 004E	Violence and sexual offences	Unable to prosecute suspect		0.995058466