

Coursework - Software Development I (4COSC006C - Programming)

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Date : 23/12/2024

TEST PLAN FOR PART A,B,C

1. Part A : Input Validation

1.1. Validating Day Input

Test Case ID	Input	Expected Output	Actual output	Remarks
01	Input = * (Special Characters) Input = (Empty input) Input = (Space) Input = True (Boolean) Input = ONE (Strings - Uppercase) Input = one (Strings - Lowercase) Input = 0.5 (Floats)	Integer required	Integer required	Pass
02	Input >= 32 Input = 0	Out of range - Days must be in the range 1 to 31	Out of range - Days must be in the range 1 to 31	Pass
03	1 <= Input <= 31	Accept input and move to next validation step	Accept input and moved	Pass
04	Input (Day) = 29 for February in Leap years	Accept input and move to next validation step	Accept input and moved	Pass

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: *
Integer required
Please enter the day of the survey in the format DD:
Integer required
Please enter the day of the survey in the format DD:
Integer required
Please enter the day of the survey in the format DD: True
Integer required
Please enter the day of the survey in the format DD: ONE
Integer required
Please enter the day of the survey in the format DD: one
Integer required
Please enter the day of the survey in the format DD: 0.5
Integer required
Please enter the day of the survey in the format DD: |
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 0
Out of range - Days must be in the range 1 to 31.
Please enter the day of the survey in the format DD: 32
Out of range - Days must be in the range 1 to 31.
Please enter the day of the survey in the format DD:
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 15
Please enter the month of the survey in the format MM:
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 29
Please enter the month of the survey in the format MM: 2
Please enter the year of the survey in the format YYYY: 2000
File traffic_data29022000.csv not found. Please try again.
Do you want to select another data file for a different date? Y/N:
```

1.2. Validating Month Input

Test Case ID	Input	Expected Output	Actual output	Remarks
05	Input = * (Special Characters) Input = (Empty input) Input = (Space) Input = True (Boolean) Input = MARCH (Strings - Uppercase) Input = march (Strings - Lowercase) Input = 0.5 (Floats)	Integer required	Integer required	Pass
06	Input >= 13 Input = 0	Out of range - Months must be in the range 1 to 12	Out of range - Months must be in the range 1 to 12	Pass
07	1 <= Input <= 12	Accept input and move to next validation step	Accept input and moved	Pass

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 15
Please enter the month of the survey in the format MM: *
Integer required
Please enter the month of the survey in the format MM:
Integer required
Please enter the month of the survey in the format MM:
Integer required
Please enter the month of the survey in the format MM: MARCH
Integer required
Please enter the month of the survey in the format MM: march
Integer required
Please enter the month of the survey in the format MM: True
Integer required
Please enter the month of the survey in the format MM: 0.5
Integer required
Please enter the month of the survey in the format MM: 0
Out of range - Months must be in the range 1 to 12.
Please enter the month of the survey in the format MM: 13
Out of range - Months must be in the range 1 to 12.
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY:
```

1.3. Validating Year Input

Test Case ID	Input	Expected Output	Actual output	Remarks
08	Input = * (Special Characters) Input = (Empty input) Input = (Space) Input = True (Boolean) Input = A (Strings - Uppercase) Input = a (Strings - Lowercase) Input = 0.5 (Floats)	Integer required	Integer required	Pass
09	Input >= 2025 Input <= 1999	Out of range - values must range from 2000 and 2024.	Out of range - values must range from 2000 and 2024.	Pass
10	2000 <= Input <= 2024	Accept input and move to next validation step	Accept input and moved	Pass

```

*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 15
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY: *
Integer required
Please enter the year of the survey in the format YYYY:
Integer required
Please enter the year of the survey in the format YYYY:
Integer required
Please enter the year of the survey in the format YYYY: A
Integer required
Please enter the year of the survey in the format YYYY: a
Integer required
Please enter the year of the survey in the format YYYY: True
Integer required
Please enter the year of the survey in the format YYYY: 0.5
Integer required
Please enter the year of the survey in the format YYYY: 1995
Out of range - values must range from 2000 and 2024.
Please enter the year of the survey in the format YYYY: 2025
Out of range - values must range from 2000 and 2024.
Please enter the year of the survey in the format YYYY: 2020
File traffic_data15062020.csv not found. Please try again.
Do you want to select another data file for a different date? Y/N: |

```

1.4. Edge Case Handling

Test Case ID	Input	Expected Output	Actual output	Remarks
11	Input (Day) = 29 for February in Non Leap years	February can have 29 days only in a leap year - Check the entered year again	February can have 29 days only in a leap year - Check the entered year again	Pass
12	Input (Day) = 31 in month February, April, June, September and November Input (Day) = 30 in month February	Entered month can not have {day} days	Entered month can not have {day} days	Pass
13	Input = (Empty Input)	Integer required	Integer required	Pass

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 29
Please enter the month of the survey in the format MM: 2
Please enter the year of the survey in the format YYYY: 2001
February can have 29 days only in a leap year - Check the entered year again.
Please enter the year of the survey in the format YYYY: |
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 31
Please enter the month of the survey in the format MM: 2
Entered month can not have 31 days
Please enter the month of the survey in the format MM: 4
Entered month can not have 31 days
Please enter the month of the survey in the format MM: 6
Entered month can not have 31 days
Please enter the month of the survey in the format MM: 8
Please enter the year of the survey in the format YYYY: |
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 30
Please enter the month of the survey in the format MM: 2
Entered month can not have 30 days
Please enter the month of the survey in the format MM:
```

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD:
Integer required
Please enter the day of the survey in the format DD: 10
Please enter the month of the survey in the format MM:
Integer required
Please enter the month of the survey in the format MM: 10
Please enter the year of the survey in the format YYYY:
Integer required
Please enter the year of the survey in the format YYYY: 2005
File traffic_data10102005.csv not found. Please try again.
Do you want to select another data file for a different date? Y/N: |
```

2. Part B : Processed Outcomes

2.1. Correctness of Results

Test Case ID	Input	Expected Output	Actual output	Remarks
14	Input = traffic_data15062024.csv	***** data file selected is traffic_data15062024.csv ***** The total number of vehicles recorded for this date is 1037 The total number of trucks recorded for this date is 109 The total number of electric vehicles for this date is 368 The total number of two-wheeled vehicles for this date is 401 The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 15 The total number of Vehicles through both junctions not turning left or right is 363 The percentage of total vehicles recorded that are trucks for this date is 11% The average number of Bikes per hour for this date is 7 The total number of Vehicles recorded as over the speed limit for this date is 205 The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 494 The total number of vehicles recorded through Hanley Highway/Westway junction is 543 10% of vehicles recorded through Elm Avenue/Rabbit Road are scooters. The highest number of vehicles in an hour on Hanley Highway/Westway is 39 The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00 The number of hours of rain for this date is 0	Same	Pass

15	Input = traffic_data16 062024.csv	<p>*****</p> <p>data file selected is traffic_data16062024.csv</p> <p>*****</p> <p>The total number of vehicles recorded for this date is 101</p> <p>The total number of trucks recorded for this date is 11</p> <p>The total number of electric vehicles for this date is 29</p> <p>The total number of two-wheeled vehicles for this date is 29</p> <p>The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 0</p> <p>The total number of Vehicles through both junctions not turning left or right is 38</p> <p>The percentage of total vehicles recorded that are trucks for this date is 11%</p> <p>The average number of Bikes per hour for this date is 0</p> <p>The total number of Vehicles recorded as over the speed limit for this date is 20</p> <p>The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 52</p> <p>The total number of vehicles recorded through Hanley Highway/Westway junction is 49</p> <p>5% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.</p> <p>The highest number of vehicles in an hour on Hanley Highway/Westway is 5</p> <p>The most vehicles through Hanley Highway/Westway were recorded between 01:00 and 2:00</p> <p>The number of hours of rain for this date is 3</p>	Same	Pass
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16	Input = traffic_data21 062024.csv	<p>*****</p> <p>data file selected is traffic_data21062024.csv</p> <p>*****</p> <p>The total number of vehicles recorded for this date is 1334</p> <p>The total number of trucks recorded for this date is 138</p> <p>The total number of electric vehicles for this date is 442</p> <p>The total number of two-wheeled vehicles for this date is 503</p> <p>The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 19</p> <p>The total number of Vehicles through both junctions not turning left or right is 494</p> <p>The percentage of total vehicles recorded that are trucks for this date is 10%</p> <p>The average number of Bikes per hour for this date is 10</p> <p>The total number of Vehicles recorded as over the speed limit for this date is 250</p> <p>The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 651</p> <p>The total number of vehicles recorded through Hanley Highway/Westway junction is 683</p> <p>9% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.</p> <p>The highest number of vehicles in an hour on Hanley Highway/Westway is 71</p> <p>The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00</p> <p>The number of hours of rain for this date is 6</p>	Same	Pass
----	-----------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------	------

IDLE Shell 3.12.6

File Edit Shell Debug Options Window Help

Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

>>>

```
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 15
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY: 2024
*****
data file selected is traffic_data15062024.csv
*****
The total number of vehicles recorded for this date is 1037
The total number of trucks recorded for this date is 109
The total number of electric vehicles for this date is 368
The total number of two-wheeled vehicles for this date is 401
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 15
The total number of Vehicles through both junctions not turning left or right is 363
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 7
The total number of Vehicles recorded as over the speed limit for this date is 205
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 494
The total number of vehicles recorded through Hanley Highway/Westway junction is 543
10% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 39
The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00
The number of hours of rain for this date is 0
```

Results have been saved to results.txt.

Do you want to select another data file for a different date? Y/N: y

```
Please enter the day of the survey in the format DD: 16
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY: 2024
```

data file selected is traffic_data16062024.csv

```
The total number of vehicles recorded for this date is 101
The total number of trucks recorded for this date is 11
The total number of electric vehicles for this date is 29
The total number of two-wheeled vehicles for this date is 29
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 0
The total number of Vehicles through both junctions not turning left or right is 38
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 0
The total number of Vehicles recorded as over the speed limit for this date is 20
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 52
The total number of vehicles recorded through Hanley Highway/Westway junction is 49
5% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
```

The highest number of vehicles in an hour on Hanley Highway/Westway is 5
The most vehicles through Hanley Highway/Westway were recorded between 01:00 and 2:00
The number of hours of rain for this date is 3

Results have been saved to results.txt.

Do you want to select another data file for a different date? Y/N: Y

Please enter the day of the survey in the format DD: 21

Please enter the month of the survey in the format MM: 6

Please enter the year of the survey in the format YYYY: 2024

data file selected is traffic_data21062024.csv

The total number of vehicles recorded for this date is 1334

The total number of trucks recorded for this date is 138

The total number of electric vehicles for this date is 442

The total number of two-wheeled vehicles for this date is 503

The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 19

The total number of Vehicles through both junctions not turning left or right is 494

The percentage of total vehicles recorded that are trucks for this date is 10%

The average number of Bikes per hour for this date is 10

The total number of Vehicles recorded as over the speed limit for this date is 250

The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 651

The total number of vehicles recorded through Hanley Highway/Westway junction is 683

9% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.

The highest number of vehicles in an hour on Hanley Highway/Westway is 71

The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00

The number of hours of rain for this date is 6

Results have been saved to results.txt.

Do you want to select another data file for a different date? Y/N: n

End of run

>>>

2.3. Edge Case Testing and Test for Large Datasets

Test Case ID	Input	Expected Output	Actual output	Remarks
17	Empty file or Invalid file path	File {file_name} not found. Please try again	File {file_name} not found. Please try again	Pass
18	Large Dataset (eg: 1000 rows)	Results processed without crashing	Same	Pass

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep 6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 8
Please enter the month of the survey in the format MM: 10
Please enter the year of the survey in the format YYYY: 2012
File traffic_data08102012.csv not found. Please try again.
Do you want to select another data file for a different date? Y/N:
```

3. Part C : Saving to Text File

3.1. File Saving

Test Case ID	Input	Expected Output	Actual output	Remarks
19	Processed Outcomes	Results have been saved to results.txt	Results have been saved to results.txt	Pass

```
*IDLE Shell 3.12.6*
File Edit Shell Debug Options Window Help
Python 3.12.6 (tags/v3.12.6:a4a2d2b, Sep  6 2024, 20:11:23) [MSC v.1940 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
| RESTART: C:\Users\Acer\OneDrive\Desktop\w2121364\cw_w2121364.py
Please enter the day of the survey in the format DD: 15
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY: 2024
*****
data file selected is traffic_data15062024.csv
*****
The total number of vehicles recorded for this date is 1037
The total number of trucks recorded for this date is 109
The total number of electric vehicles for this date is 368
The total number of two-wheeled vehicles for this date is 401
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 15
The total number of Vehicles through both junctions not turning left or right is 363
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 7
The total number of Vehicles recorded as over the speed limit for this date is 205
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 494
The total number of vehicles recorded through Hanley Highway/Westway junction is 543
10% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 39
The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00
The number of hours of rain for this date is 0

Results have been saved to results.txt.

Do you want to select another data file for a different date? Y/N:
```

3.2. Append Functionality

Test Case ID	Input	Expected Output	Actual output	Remarks
20	Processed Outcomes	Results appended without overwriting	Same	Pass

results.txt

File Edit View

```
data file selected is traffic_data15062024.csv
The total number of vehicles recorded for this date is 1037
The total number of trucks recorded for this date is 109
The total number of electric vehicles for this date is 368
The total number of two-wheeled vehicles for this date is 401
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 15
The total number of Vehicles through both junctions not turning left or right is 363
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 7
The total number of Vehicles recorded as over the speed limit for this date is 205
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 494
The total number of vehicles recorded through Hanley Highway/Westway junction is 543
10% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 39
The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00
The number of hours of rain for this date is 0

*****

data file selected is traffic_data16062024.csv
The total number of vehicles recorded for this date is 101
The total number of trucks recorded for this date is 11
The total number of electric vehicles for this date is 29
The total number of two-wheeled vehicles for this date is 29
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 0
The total number of Vehicles through both junctions not turning left or right is 38
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 0
The total number of Vehicles recorded as over the speed limit for this date is 20
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 52
The total number of vehicles recorded through Hanley Highway/Westway junction is 49
5% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 5
The most vehicles through Hanley Highway/Westway were recorded between 01:00 and 2:00
The number of hours of rain for this date is 3

*****

data file selected is traffic_data21062024.csv
The total number of vehicles recorded for this date is 1334
The total number of trucks recorded for this date is 138
The total number of electric vehicles for this date is 442

Ln 1, Col 1 | 3,453 characters

The total number of two-wheeled vehicles for this date is 503
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 19
The total number of Vehicles through both junctions not turning left or right is 494
The percentage of total vehicles recorded that are trucks for this date is 10%
The average number of Bikes per hour for this date is 10
The total number of Vehicles recorded as over the speed limit for this date is 250
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 651
The total number of vehicles recorded through Hanley Highway/Westway junction is 683
9% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 71
The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00
The number of hours of rain for this date is 6

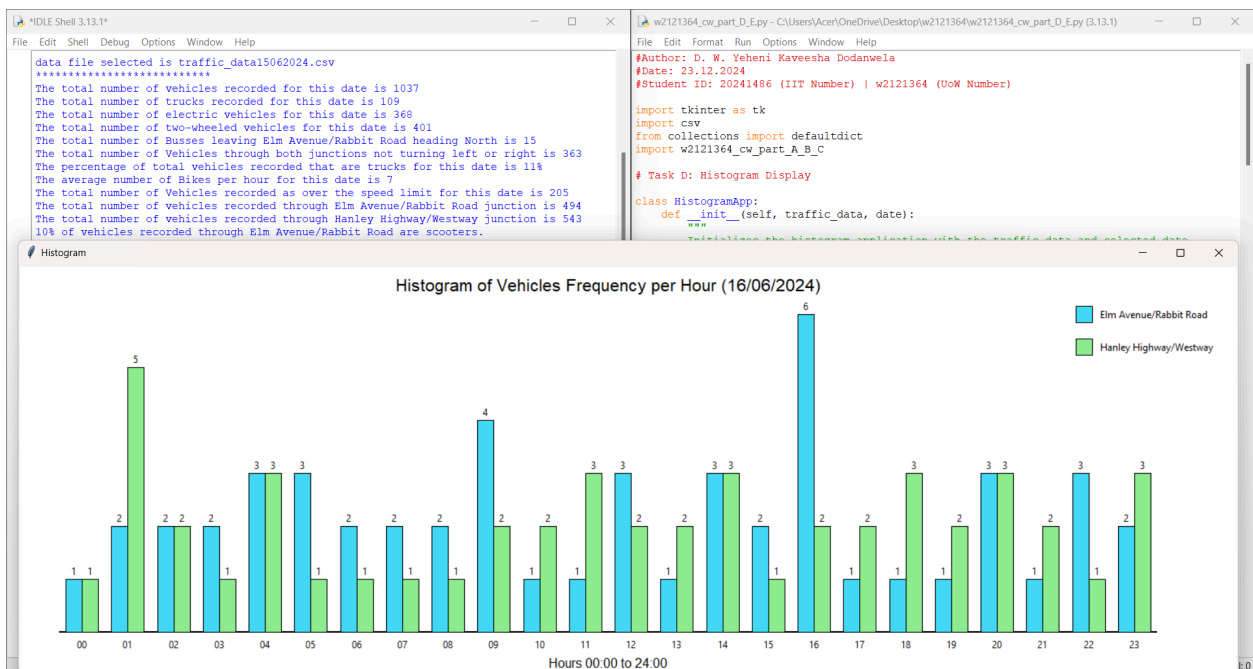
*****

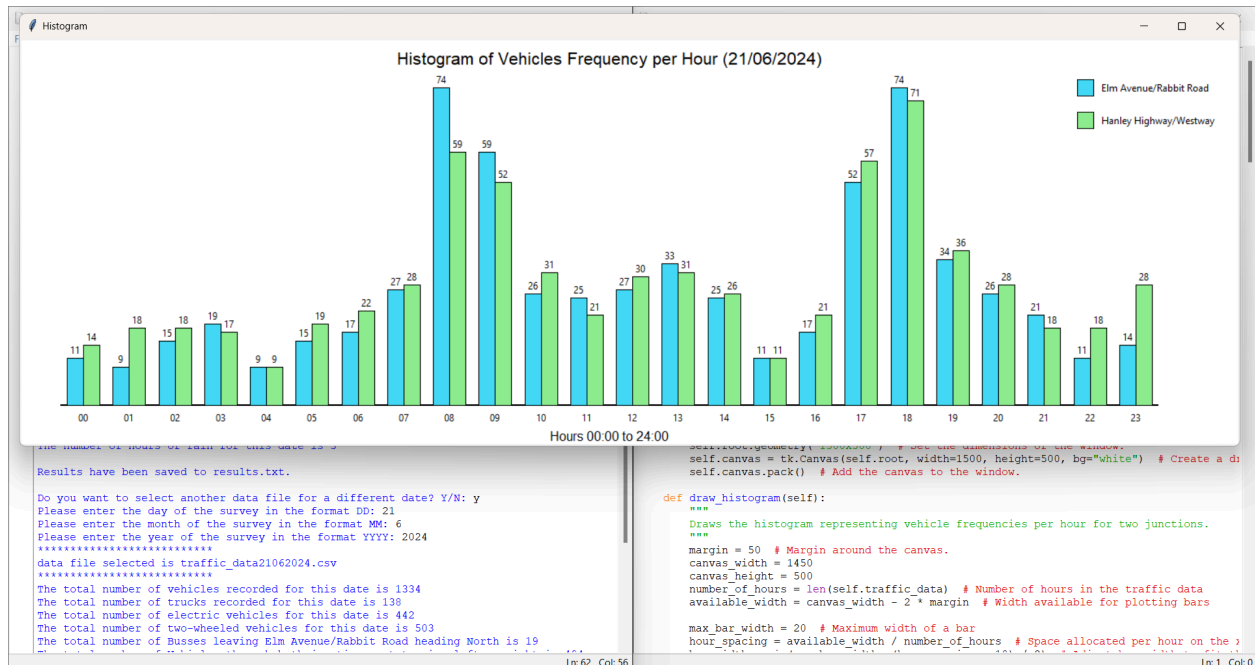
Ln 1, Col 1 | 3,453 characters
```

TEST PLAN FOR PART D,E

4. Part D : Histogram Display

Test Case ID	Input	Expected Output	Actual output	Remarks
21	Valid CSV file and date (eg: traffic_data15062024.csv, 15/06/2024)	Histogram displays correctly	Histogram displayed with correct scaling and labeling	Pass
22	CSV file with missing data for certain hours	Handles missing data and shows gaps or zero for those hours	Missing hours displayed with 0 vehicle count	Pass
23	Extremely large dataset	Scales histogram properly	Histogram scaled without overlapping labels	Pass
24	Invalid CSV file or incorrect date format	Prompts for valid inputs	Prompted error message "Invalid file/date"	Pass





5. Part E : Handling Multiple CSV Files

Test Case ID	Input	Expected Output	Actual output	Remarks
25	Multiple CSV files loaded sequentially	Clears previous histogram and updates with new data	Successfully updated histogram after clearing old data	Pass
26	User inputs “y” for loading another file	Loads and displays histogram for next file	Successfully displayed next histogram	Pass
27	User inputs “n” to exit	Terminates program gracefully	Program terminated as expected	Pass
28	User inputs invalid choice	Prompts user again for valid input (“y” or “n”)	Error message and re prompted for valid input	Pass

```
IDLE Shell 3.13.1
File Edit Shell Debug Options Window Help
The total number of vehicles recorded through Hanley Highway/Westway junction is 543
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 101
10% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 39
The most vehicles through Hanley Highway/Westway were recorded between 18:00 and 19:00
The number of hours of rain for this date is 0

Results have been saved to results.txt.

Histogram for 15/06/2024 will be created
Please close histogram window to continue
Histogram closed successfully
Do you want to select another data file for a different date? Y/N: x
Invalid input. Please enter 'Y' or 'N'
Do you want to select another data file for a different date? Y/N: 8
Invalid input. Please enter 'Y' or 'N'
Do you want to select another data file for a different date? Y/N: y
Please enter the day of the survey in the format DD: 16
Please enter the month of the survey in the format MM: 6
Please enter the year of the survey in the format YYYY: 2024
*****
data file selected is traffic_data16062024.csv
*****
The total number of vehicles recorded for this date is 101
The total number of trucks recorded for this date is 11
The total number of electric vehicles for this date is 29
The total number of two-wheeled vehicles for this date is 29
The total number of Busses leaving Elm Avenue/Rabbit Road heading North is 0
The total number of Vehicles through both junctions not turning left or right is 38
The percentage of total vehicles recorded that are trucks for this date is 11%
The average number of Bikes per hour for this date is 0
The total number of Vehicles recorded as over the speed limit for this date is 20
The total number of vehicles recorded through Elm Avenue/Rabbit Road junction is 52
The total number of vehicles recorded through Hanley Highway/Westway junction is 49
5% of vehicles recorded through Elm Avenue/Rabbit Road are scooters.
The highest number of vehicles in an hour on Hanley Highway/Westway is 5
The most vehicles through Hanley Highway/Westway were recorded between 01:00 and 2:00
The number of hours of rain for this date is 3

Results have been saved to results.txt.

Histogram for 16/06/2024 will be created
Please close histogram window to continue
Histogram closed successfully
Do you want to select another data file for a different date? Y/N: n
End of run
>>>
```