Syntax errors

In effect, syntax errors represent *grammar errors* in the use of the programming language. Common examples are:

- Misspelled variable and function names
- Missing semicolons
- Improperly matches parentheses, square brackets, and curly braces
- Incorrect format in selection and loop statements

Runtime errors

Runtime errors occur when a program with no syntax errors asks the computer to do something that the computer is unable to reliably do. Common examples are:

- Trying to divide by a variable that contains a value of zero
- Trying to open a file that doesn't exist

There is no way for the compiler to know about these kinds of errors when the program is compiled.

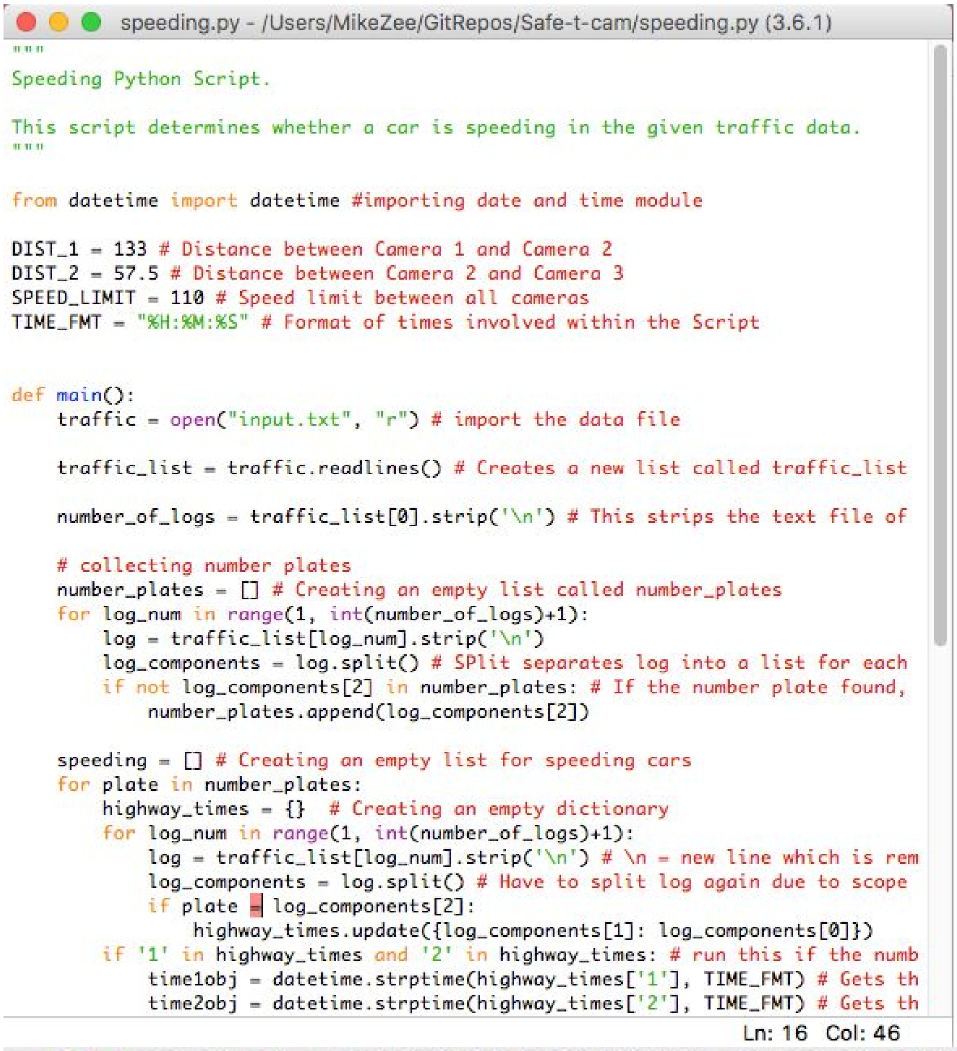
Logic errors

Logic errors occur when there is a design flaw in your program. Common examples are:

- Multiplying when you should be dividing
- Adding when you should be subtracting
- Opening and using data from the wrong file
- Displaying the wrong message

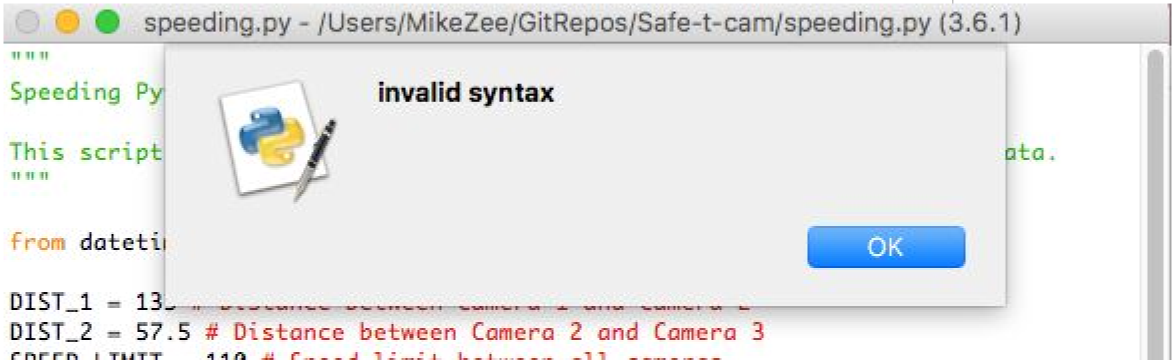
Syntax Error:

- “IF plate = logcomponmenets 2, instead of doing if plate == log component 2



speeding.py - /Users/MikeZee/GitRepos/Safe-t-cam/speeding.py (3.6.1)
Ln: 16   Col: 46

```python
"""
Speeding Python Script.

This script determines whether a car is speeding in the given traffic data.
"""

from datetime import datetime #importing date and time module

DIST_1 = 133 # Distance between Camera 1 and Camera 2
DIST_2 = 57.5 # Distance between Camera 2 and Camera 3
SPEED_LIMIT = 110 # Speed limit between all cameras
TIME_FMT = "%H:%M:%S" # Format of times involved within the Script


def main():
    traffic = open("input.txt", "r") # import the data file

    traffic_list = traffic.readlines() # Creates a new list called traffic_list

    number_of_logs = traffic_list[0].strip('\n') # This strips the text file of

    # collecting number plates
    number_plates = [] # Creating an empty list called number_plates
    for log_num in range(1, int(number_of_logs)+1):
        log = traffic_list[log_num].strip('\n')
        log_components = log.split() # SPlit separates log into a list for each
        if not log_components[2] in number_plates: # If the number plate found,
            number_plates.append(log_components[2])

    speeding = [] # Creating an empty list for speeding cars
    for plate in number_plates:
        highway_times = {}  # Creating an empty dictionary
        for log_num in range(1, int(number_of_logs)+1):
            log = traffic_list[log_num].strip('\n') # \n = new line which is rem
            log_components = log.split() # Have to split log again due to scope
            if plate = log_components[2]:
                highway_times.update({log_components[1]: log_components[0]})
        if '1' in highway_times and '2' in highway_times: # run this if the numb
            time1obj = datetime.strptime(highway_times['1'], TIME_FMT) # Gets th
            time2obj = datetime.strptime(highway_times['2'], TIME_FMT) # Gets th
```



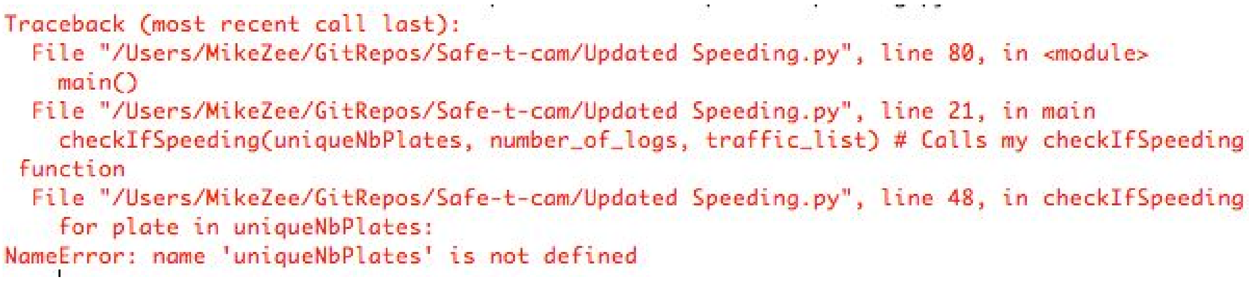
speeding.py - /Users/MikeZee/GitRepos/Safe-t-cam/speeding.py (3.6.1)
OK

invalid syntax

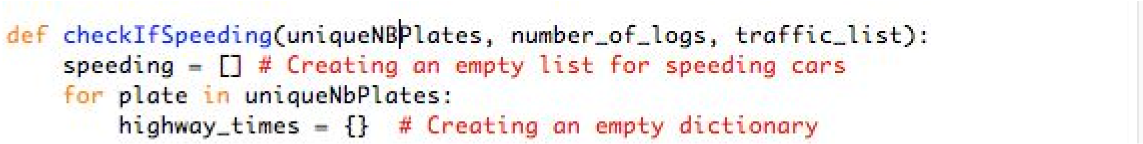
```python
"""
Speeding Py
                                                                   ata.
This script
"""

from dateti

DIST_1 = 13
DIST_2 = 57.5 # Distance between Camera 2 and Camera 3
```

Syntax Error #2:

- When the function checkIfSpeeding is receiving the parameter uniqueNbPlates (camelcase) There is a spelling mistake in the brackets.
- It is spelt “uniqueNBPlates” which is an unknown parameter, which is the reason the error received is uniqueNbPlates is not defined



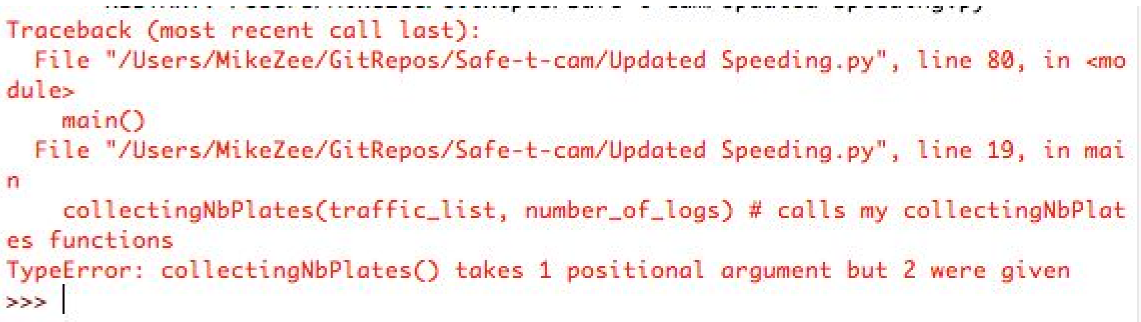
```
Traceback (most recent call last):
  File "/Users/MikeZee/GitRepos/Safe-t-cam/Updated Speeding.py", line 80, in <module>
    main()
  File "/Users/MikeZee/GitRepos/Safe-t-cam/Updated Speeding.py", line 21, in main
    checkIfSpeeding(uniqueNbPlates, number_of_logs, traffic_list) # Calls my checkIfSpeeding
 function
  File "/Users/MikeZee/GitRepos/Safe-t-cam/Updated Speeding.py", line 48, in checkIfSpeeding
    for plate in uniqueNbPlates:
NameError: name 'uniqueNbPlates' is not defined
```



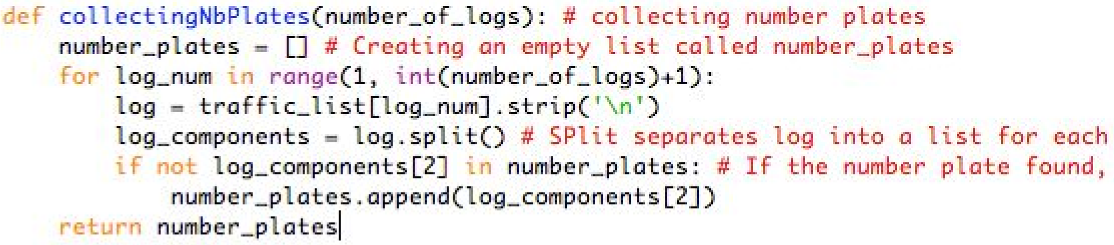
```
def checkIfSpeeding(uniqueNBPlates, number_of_logs, traffic_list):
    speeding = [] # Creating an empty list for speeding cars
    for plate in uniqueNbPlates:
        highway_times = {}  # Creating an empty dictionary
```

Runtime Error:

- When attempting to run the collectingNbPlates function, my code displays an error. This error occured during my attempts to make my code more “modular” by separating my main() function into multiple smaller subroutines to be called by main(). In this instance, I did not pass collectingNbPlates the correct parameters. I did not include the traffic_list which is required to run the for loop within this subroutine, causing my code to fail with a runtime error or (TypeError)



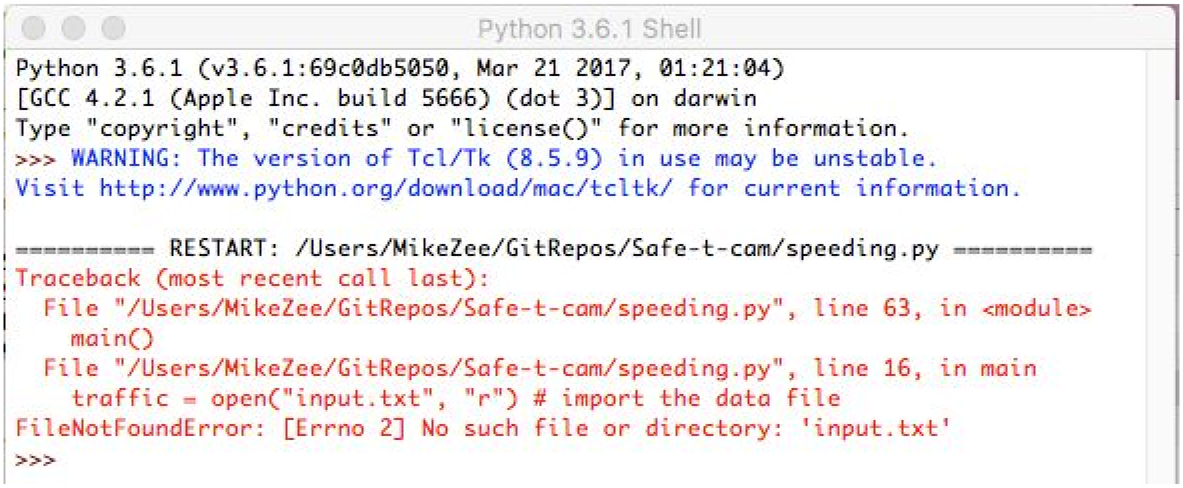
```
Traceback (most recent call last):
  File "/Users/MikeZee/GitRepos/Safe-t-cam/Updated Speeding.py", line 80, in <mo
dule>
    main()
  File "/Users/MikeZee/GitRepos/Safe-t-cam/Updated Speeding.py", line 19, in mai
n
    collectingNbPlates(traffic_list, number_of_logs) # calls my collectingNbPlat
es functions
TypeError: collectingNbPlates() takes 1 positional argument but 2 were given
>>> |
```



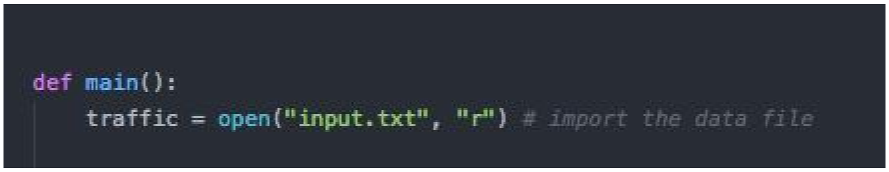
```
def collectingNbPlates(number_of_logs): # collecting number plates
    number_plates = [] # Creating an empty list called number_plates
    for log_num in range(1, int(number_of_logs)+1):
        log = traffic_list[log_num].strip('\n')
        log_components = log.split() # SPlit separates log into a list for each
        if not log_components[2] in number_plates: # If the number plate found,
            number_plates.append(log_components[2])
    return number_plates
```

Runtime Error #2:

- Try to open up the file but it isn’t in the right folder input.txt causing a runtime error
- There are no problems with syntax that cause this error.



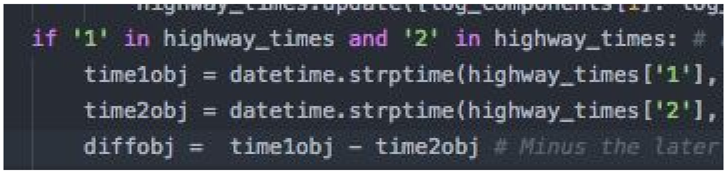
```
Python 3.6.1 (v3.6.1:69c0db5050, Mar 21 2017, 01:21:04)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
Type "copyright", "credits" or "license()" for more information.
>>> WARNING: The version of Tcl/Tk (8.5.9) in use may be unstable.
Visit http://www.python.org/download/mac/tcltk/ for current information.

========== RESTART: /Users/MikeZee/GitRepos/Safe-t-cam/speeding.py ==========
Traceback (most recent call last):
  File "/Users/MikeZee/GitRepos/Safe-t-cam/speeding.py", line 63, in <module>
    main()
  File "/Users/MikeZee/GitRepos/Safe-t-cam/speeding.py", line 16, in main
    traffic = open("input.txt", "r") # import the data file
FileNotFoundError: [Errno 2] No such file or directory: 'input.txt'
>>>
```



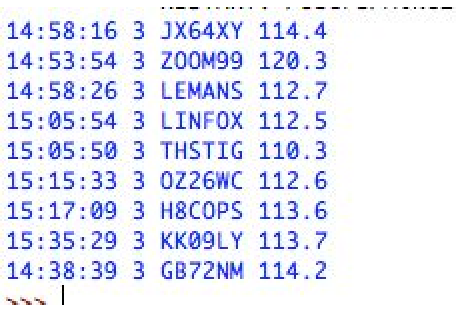
```
def main():
    traffic = open("input.txt", "r") # import the data file
```

Logic Error:

- To get the difference in time I do the first time - the second time on the highway times giving me a negative number and causing the output of my code to be incorrect and only showing people speeding through checkpoint 3



```
        highway_times.update({log_components[1]: log
if '1' in highway_times and '2' in highway_times: #
    time1obj = datetime.strptime(highway_times['1'],
    time2obj = datetime.strptime(highway_times['2'],
    diffobj =  time1obj - time2obj # Minus the later
```



```
14:58:16 3 JX64XY 114.4
14:53:54 3 ZOOM99 120.3
14:58:26 3 LEMANS 112.7
15:05:54 3 LINFOX 112.5
15:05:50 3 THSTIG 110.3
15:15:33 3 OZ26WC 112.6
15:17:09 3 H8COPS 113.6
15:35:29 3 KK09LY 113.7
14:38:39 3 GB72NM 114.2
>>>
```