



Computer Science I  
HW3 15 pts (2 for style)

### Mass. Pike Speeding Tickets

Bill Griffith PhD

**Due Thursday, September 19, 2019, 11:59 PM**

On the Massachusetts Turnpike:

Any individual convicted of a violation of the maximum speed limit in is subject to punishment by a fine of \$50.00. Where such conviction is for operating a motor vehicle at a rate of speed exceeding ten miles per hour over the speed limit, an additional fine of \$10.00 for each mile per hour in excess of the ten miles per hour is assessed, to a maximum fine of \$500.00. There is also a flat \$50 fine for each ticket that goes to the state's Head Injury Treatment Services Trust Fund.

#### Maximum Speed Limit

Unless otherwise prohibited by federal law, the maximum speed for motor vehicles traveling on interstate highway route 90, the Massachusetts Turnpike, between the New York state border and Interchange 14 in Weston, eastbound, and from Interchange 15 in Newton to the New York State Border, westbound, shall be sixty-five miles per hour. All other portions, fifty-five mile per hour. Other speed limits under the maximums apply if posted.

Also:

All fines are doubled in a posted "Construction Zone".

All fines are tripled if the stop occurred in a posted "Construction Zone" between late night (starting sometime after 10:00 PM) and early morning (sometime before 4:00 AM).

In addition to **any** fine, a \$50.00 assessment is added which goes to the Head Injury Fund established by the state.

Also:

"Aircraft are prohibited from landing on a way except in an emergency. No aircraft may take-off in flight from any portion of a way except with the written approval of the Chief Engineer. Removal of an aircraft from a way by means other than take-off in flight requires the approval of the Massachusetts State Police." (Not relevant but I thought I'd include it.)

Write a program to assess penalties for speeding. The basic inputs from the officer to the main section should be the speed limit at the location and the driver's speed. If there is a fine, then there will be an additional input asking if the stop was in a Construction Zone. The output should be the total owed, including fines and assessment. Be sure to check if the driver is not in fact exceeding the speed limit (then no fine or assessment: case dismissed). Also be sure to check that the fine is not over \$500 (or \$1,000 in a Construction Zone, or \$1500 in a construction zone between the specified zone hours.) The fine limits do not include the donation to the Head Injury Fund.

**Your program must include two (and only two) user created functions.** You must use one function, named **`fine`**, to compute and return the basic fine (if any). This function will require **two parameters**, the driver's speed and the speed limit, in that order; and, another function, named **`con_zone`** to compute an additional fine if there is a construction zone penalty. This function will require **only one parameter**, the fine as computed by the **`fine`** function. The **`con_zone`** function will require three inputs from the officer: the starting time of the construction zone, the end time of the construction zone, and, the time the driver was stopped, in that order, and, computes and returns the revised fine. **All times will be entered in military time (0001 to 2400).**

**Make sure you check ALL paths in the program. You may use the sample runs below to check your results. Your program should handle one speeding incident. You do not have to screen for input errors.**

As usual, follow the:

### **General Instructions**

Create a folder named **`HW3_LASTNAME_FIRSTNAME`**. You will populate the folder with **ALL** of the .py files you write for this homework. To submit the homework, verify the folder includes all your .py files, compress the folder then upload to Canvas. Remember to include the following comments at the top of each of your .py files:

**`# description:`**

**`# author:`**

**`# date:`**

### **Sample Executions:**

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 63

Enter Speed Limit in MPH: 65

No fine. Speed does not exceed Speed Limit

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 67

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: n

The fine is \$ 100 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: n

The fine is \$ 120 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 2300

Enter Zone Time End in 24 hour format: 0300

Enter Stop Time in 24 Hour Format: 0400

The fine is \$ 190 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 0100

Enter Zone Time End in 24 hour format: 0400

Enter Stop Time in 24 Hour Format: 0200

The fine is \$ 260 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 2200

Enter Zone Time End in 24 hour format: 2400

Enter Stop Time in 24 Hour Format: 2300

The fine is \$ 260 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 2200

Enter Zone Time End in 24 hour format: 0400

Enter Stop Time in 24 Hour Format: 0300

The fine is \$ 260 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 77

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 2200

Enter Zone Time End in 24 hour format: 0400

Enter Stop Time in 24 Hour Format: 2300

The fine is \$ 260 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 150

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: n

The fine is \$ 550 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 150

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 2200

Enter Zone Time End in 24 hour format: 0400

Enter Stop Time in 24 Hour Format: 0500

The fine is \$ 1050 including a \$50 donation to the head injury fund

This program computes possible fines for motorists  
stopped on the Massachusetts Turnpike

Enter Speed in MPH: 120

Enter Speed Limit in MPH: 65

Is it a Construction Zone? Enter Y or N: y

Enter Zone Time Begin in 24 hour format: 0100

Enter Zone Time End in 24 hour format: 0400

Enter Stop Time in 24 Hour Format: 0200

The fine is \$ 1550 including a \$50 donation to the head injury fund