**Traffic light management system**

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1. There are two roads, and each road has its own traffic light. Implement a program that decides to turn on/off the traffic lights with respect to time and determines which traffic lights should be red and which ones should be green based on the following criteria:

If both roads have no cars, then both traffic lights (1 and 2) show red light.

If either road has cars, then the one that has cars show gre-

en and the one that doesn’t have cars will show red.

If both roads have cars, then the one with the most cars on

the road shows green and the other shows red.

1. Check if the number of cars on the road has changed between time t and t-1, if so, then show a message that the traffic light has been updated.
2. Calculate the frequency of the signal sent from the sensor under the road to the traffic light by using the following formula:

Frequency(t)=Velocity/Wavelength(t)

Here the velocity shall be constant, which is 1350m/s. And

the wavelength is determined by the following:

100\*(1/number of cars on a road)

1. Calculate the angular frequency by deriving it from both frequencies by using the formula below:

Angular frequency(t)=2\*π\*(Frequency of road 1(t)+Frequency of road 2(t))

1. Find the sine function by using the following formula and output it with respect to time:

Sine function(t)=d/dt(sin\*(angular frequency\*t))

1. Plot the frequency of road 1 and road 2.

Also, make a 3D plot of the sine function.

1. Save the number of cars for each road in a cell array and write it to an excel file and show the user a message that the data was written to an excel file.