# Computational Neuroscience

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Question 1:

The figure below shows the plot of voltage over time for an Integrate and Fire based neuron model. The approximation of the curve is done using the Euler method.
The values associated with this neuron are: Leak Potential : -70mV, Reset Voltage = -70mV, Threshold voltage : -40mV, Resistance of membrane : 10MOhm, TimeConstant = 10ms, and the Induced current : 3.1nA.


Plot of Voltage against time.
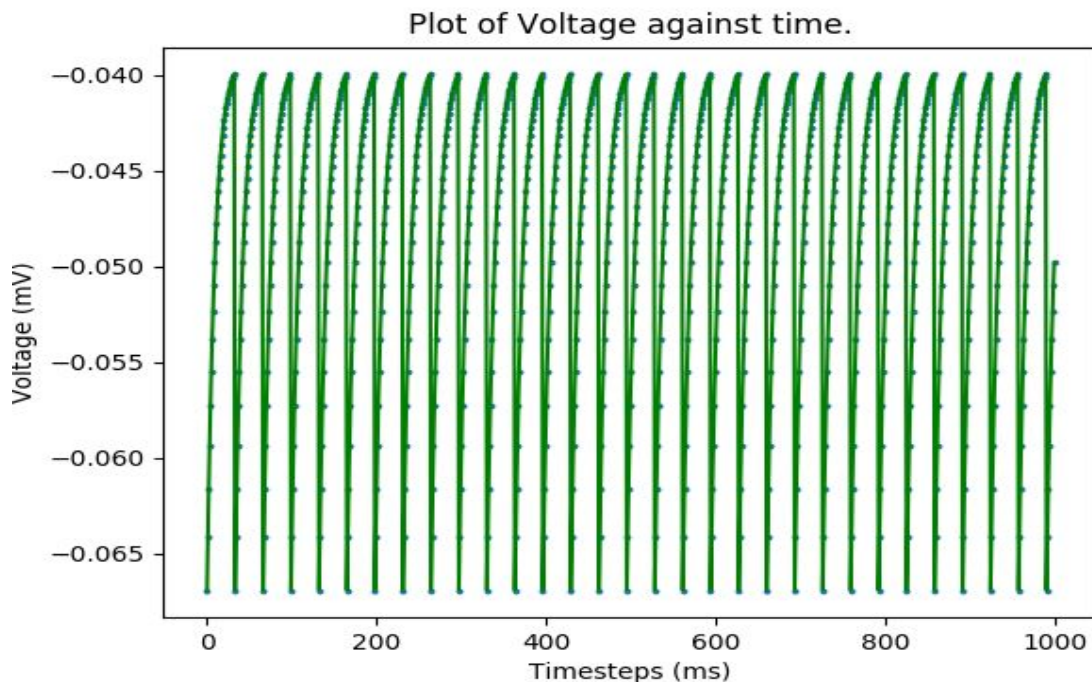
Question 2:

The figures below show the difference between a pair of neurons with an excitatory behaviour and an inhibitory behaviour.
The excitatory behaviour is using an Es value of 0mV, and the inhibitory behaviour uses a value of -80mV. The values for Leak Potential, Reset voltage and others are kept the same between the neurons. Different from the neuron's for Q1.

With an inhibitory behaviour, we expect each neuron to delay the firing of the neurons linked to it, and with an excitatory neuron pair we expect the opposite.

Plot of Voltage against time for inhibitory
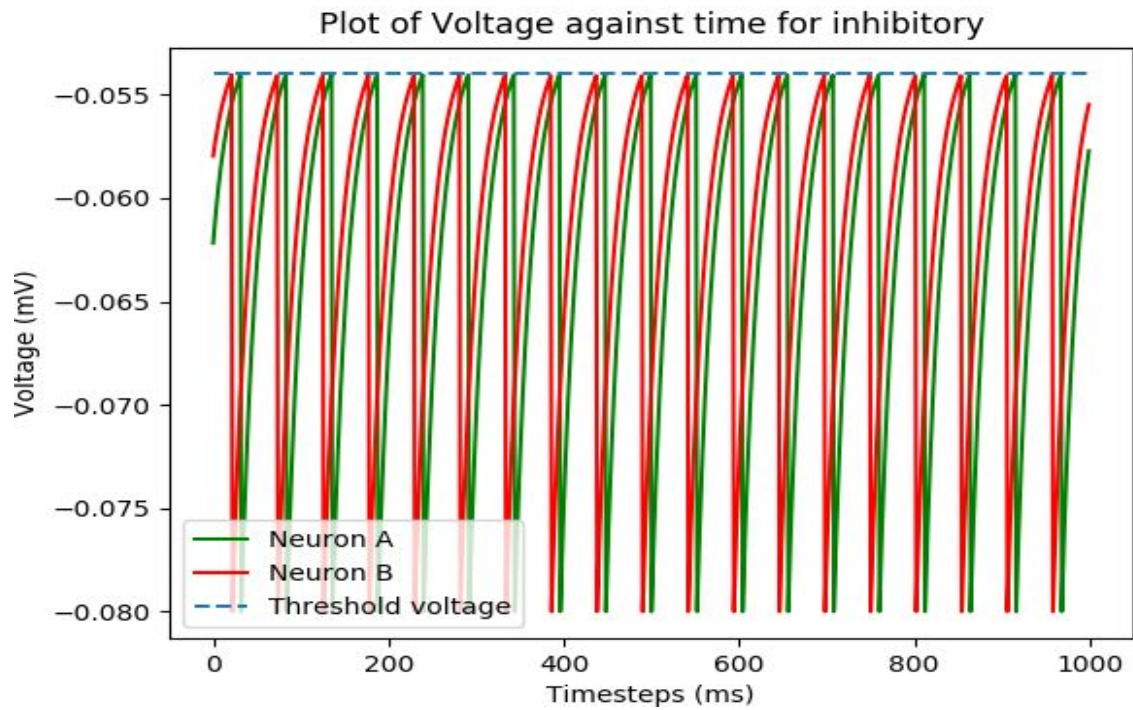
This implies that a pair of excitatory neurons would sync up over time, where an inhibitory pair would deviate.

Plot of Voltage against time for excitatory