**Computer challenges for the integrate and fire model, and its extensions.**

1. Consider the LIF model. Sketch voltage (V) versus time (t) for a small input current, for a large input current.
   1. How does an increase in the resistance (R) impact the dynamics?
2. Determine how the firing rate of the IF model varies with input I. Make a plot of the firing rate vs I (the “f-I curve”).
3. Determine how the firing rate of the LIF model varies with input I. Make a plot of the firing rate vs I (the “f-I curve”).
4. Develop a simulation of the quadratic integrate and fire neuron  
    Plot examples of the output of your model for different values of input I. Determine the f-I curve.
5. [ADVANCED] Simulate the Izhikevich neuron. Provide examples of two different types of spiking activity.