Wksht 1: Exploring spike trains and firing rates

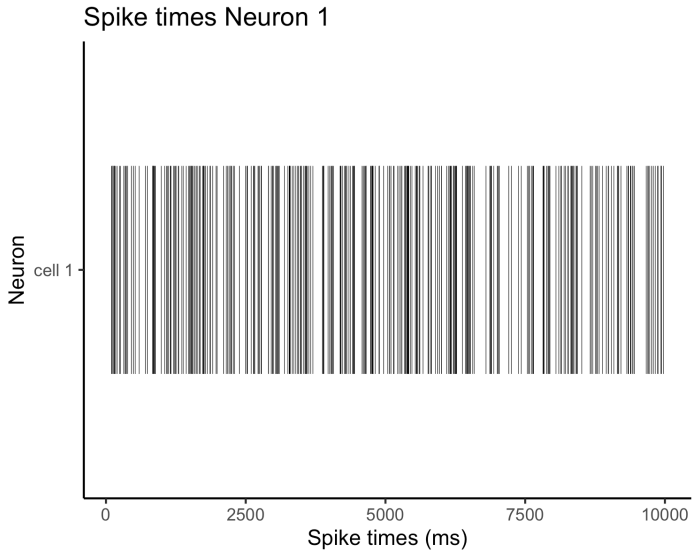
Download the file spikeTimes_exampleX_FR.csv from the Google Drive folder "Data" where X is replaced with your group #. Make sure it's in your working directory.

1. Import the spike train data frame using the code:

spike.df <- read_csv("spikeTimes_exampleX_FR.csv")

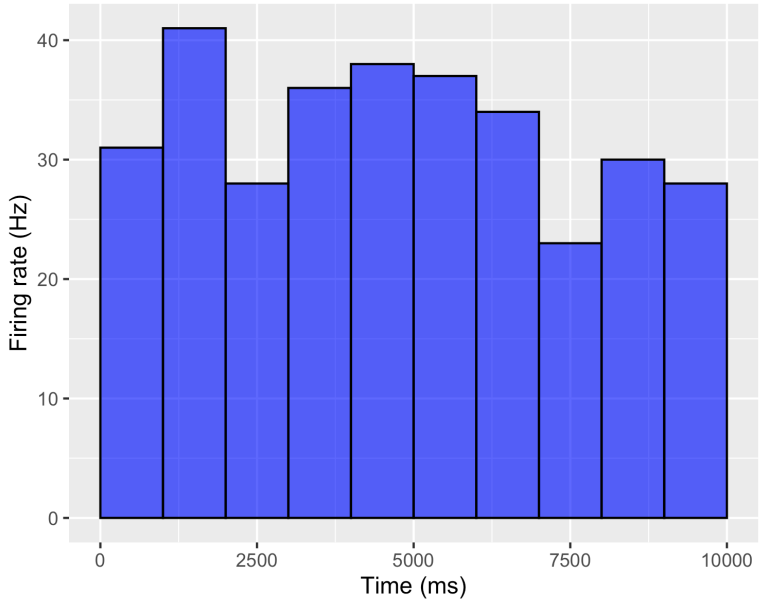
Where you will replace X with your group #. Note that you will need to load tidyverse to use this function.

2. Use geom_tile() to create a graphic of the spike train. It should look something like the figure below (*hint: you may need to adjust the width and height of the bars)*

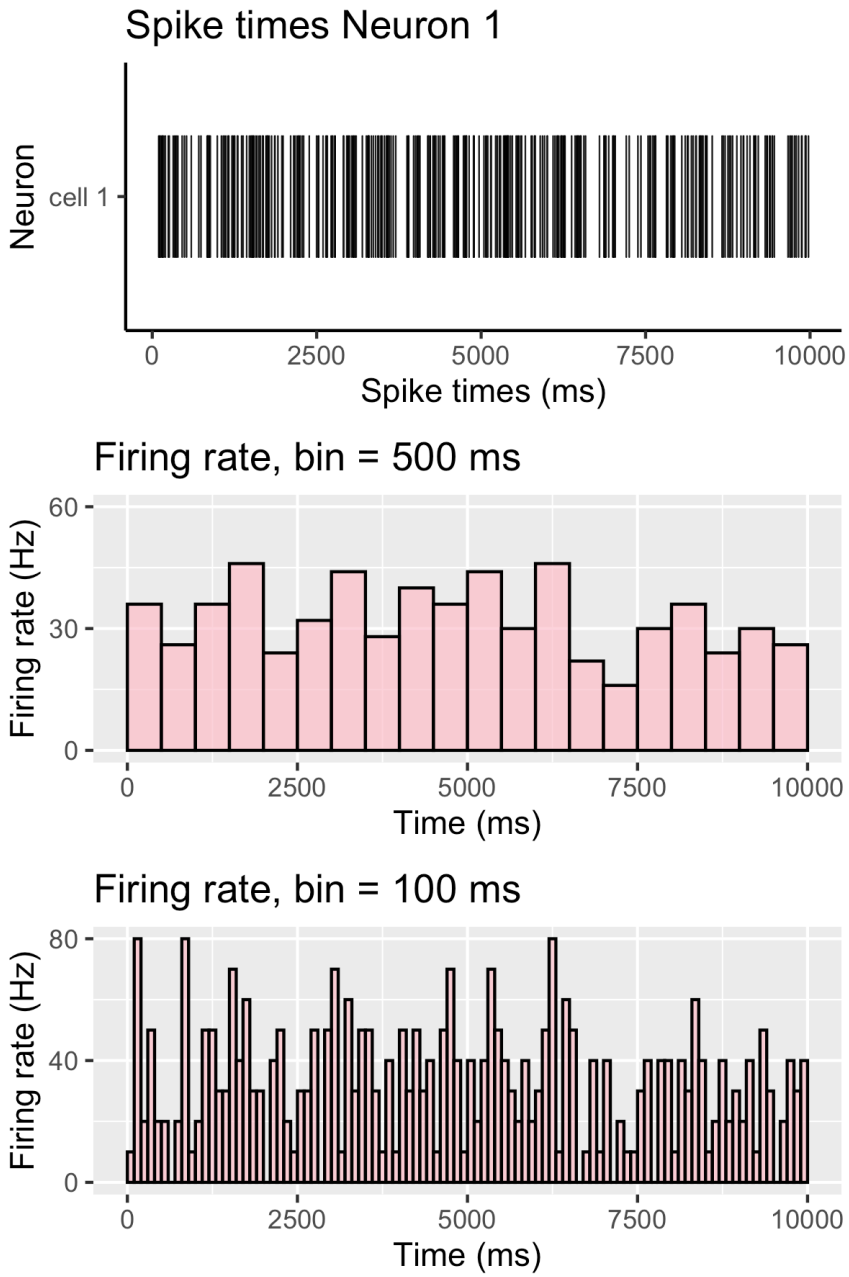


How many spikes does this neuron have? What's the average firing rate, r?

3. Use geom_histogram() to plot the firing rate in bins of width 1000 (ms).



4. (***Homework***) Use the gridExtra package (you might need to install it) to create the following plot:



**hint: it is probably easier to re-label the y axis (rather than try to compute the firing rate before binning).*

5. (***Homework)***
What can you say about this neuron's spike train? Analyze this subplot, and compute as many more as you want, to ***create one slide to present your findings to your classmates.***