Assignment 1.3: Detecting Peaks in population activity of SUML Glutamate Neurons.
Due: September 29th, 2025 at 11.59 pm

Write a Python code that extracts meaningful peaks from fiber photometry and theta power signals.

In your code, make sure that your functions perform the following:

- Load and tidy "FP_SUML_Data"
- Load correct external libraries (hint: look at some functions we used in tutorial 3)
- Takes a list or array of fiber photometry and theta values and returns the total number of activity bursts per REM sleep episode (hint: a burst can be defined as a value greater than a certain threshold. Bonus points for allowing the user to pass in the threshold as a function's argument)
- Each mouse has approximately 8-12 REM sleep episodes. You will need to detect peaks in both the fiber photometry and theta power signals, and then calculate the average number of peaks in each signal across all REM episodes for each mouse.
- Create a dataframe with fiber photometry peaks and theta bursts **per each** REM episode. Your final dataframe should look like this (these numbers are arbitrary):

	MouseID	REM_Episode	Theta_Peaks	FP_Peaks
0	Mouse1	1	12	5
1	Mouse1	2	8	7
2	Mouse1	3	16	9
3	Mouse2	1	14	4
4	Mouse2	2	6	13
5	Mouse2	3	18	10
6	Mouse3	1	11	6
7	Mouse3	2	7	8
8	Mouse3	3	15	12