Pre-lab 3B

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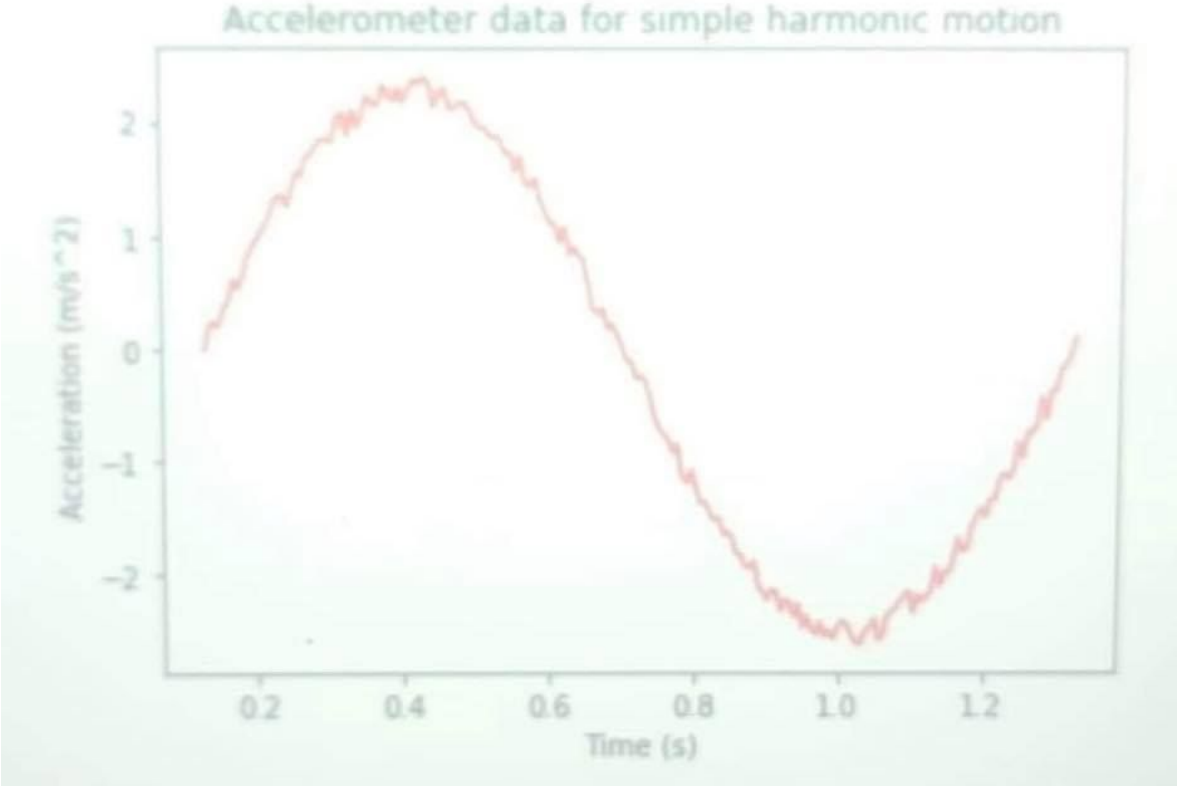
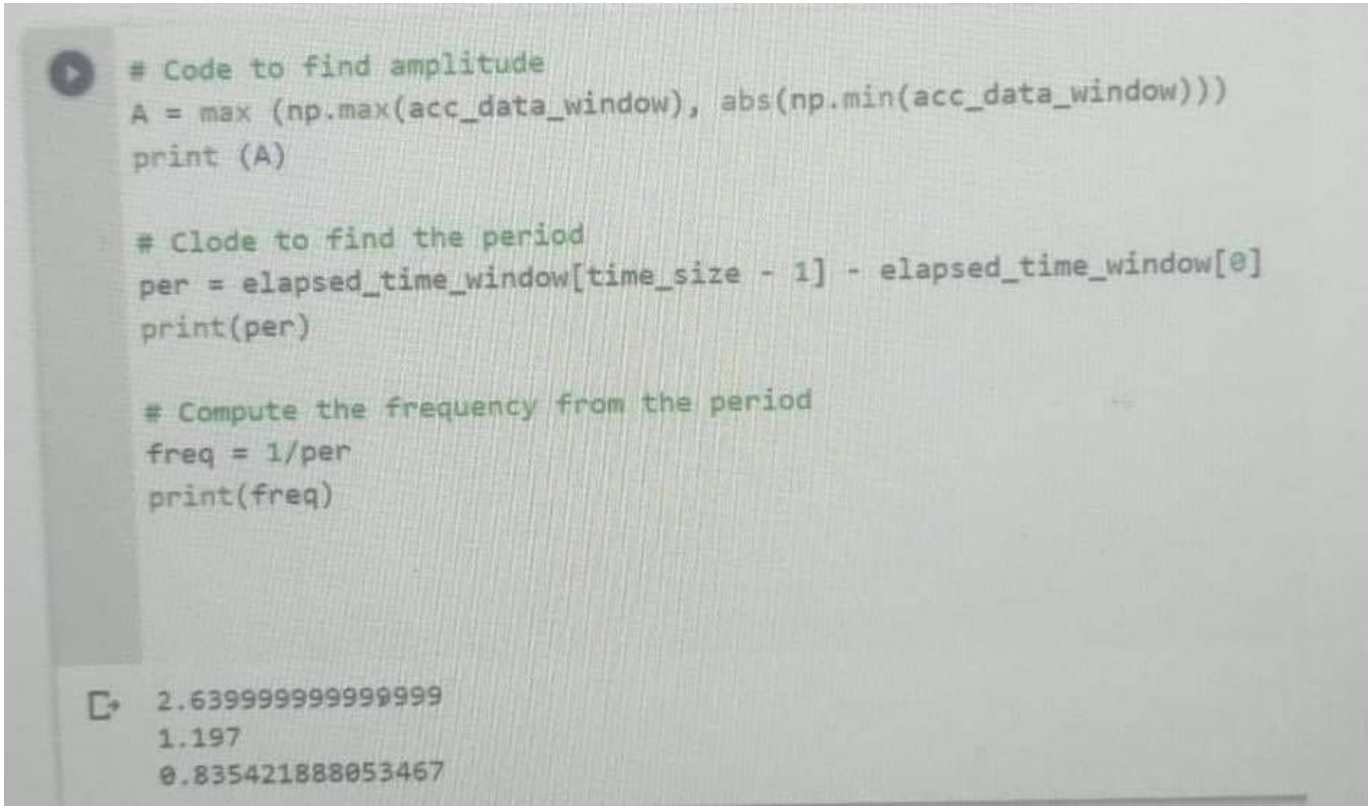
Plot from pre-lab notebook



Screenshot of code to find frequency and amplitude



```
# Code to find amplitude
A = max (np.max(acc_data_window), abs(np.min(acc_data_window)))
print (A)

# Clode to find the period
per = elapsed_time_window[time_size - 1] - elapsed_time_window[0]
print(per)

# Compute the frequency from the period
freq = 1/per
print(freq)
```

```
2.639999999999999
1.197
0.835421888053467
```

Derivatives

What is the first derivative of $y(t)=Asin(\omega t)$

$dy/dt = A\omega cos(\omega t)$

What is the second derivative of $y(t)=Asin(\omega t)$

$d^2y/dt^2 = -A(\omega^2)sin(\omega t)$

What quantities do these derivatives represent?

- The first one represents instantaneous velocity of an oscillating object, the second one represents the instantaneous acceleration of an oscillating object.