

Problem 1: Find the distribution!

These are the data-set for the number of car accidents in the rush hour of a small city. You are assigned to predict the **number of car accidents in a given hour of the day**. You need to find the full probability distribution of this quantity.

Also, make sure to clearly **state the assumptions** you are making at each step.

16	24	16	12	16	11	14	15	9	14	7
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Table 1: The Number of Accident during rush hour

Tip: *You can/should make reasonable assumption about the data.*

Problem 2: Find the parameters!

Write a python function to find μ and σ :

$$N(x|\mu, \sigma) = N(x|\mu_1, \sigma_1)N(x|\mu_2, \sigma_2)...N(x|\mu_N, \sigma_N)$$

In which N is a Normal distribution:

$$N(x|\mu, \sigma) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(-\frac{(x-\mu)^2}{2\sigma^2}\right)$$

Your function should take two vectors:

$$\begin{aligned}\vec{\mu} &= \text{numpy.array}[\mu_1, \mu_2, \dots, \mu_N] \\ \vec{\sigma} &= \text{numpy.array}[\sigma_1, \sigma_2, \dots, \sigma_N]\end{aligned}$$

And return μ and σ .