

2. Parking Probability (January 9, 2012)

$\lambda = 17$ vehicles ; $\mu = 5$ vehicles ; $N = 88$

$$\rho = \frac{\lambda}{\mu} = \frac{17 \text{ vehicles}}{5 \text{ vehicles}} = 3.40$$

$$\frac{\rho}{N} = \frac{3.40}{88}$$

$$\frac{\rho}{N} = 0.0386$$

Po is computed by a program:

The screenshot shows a web browser window with the following content:

- Browser: Firefox
- Address bar: file:///E:/Parking Study/calc/abc.html
- Input fields:
 - p:
 - N:
- Button: Calculate
- Output fields:
 - Probability of Having No Vehicles in the System (Po):
 - Probability of Not Finding an Open Parking Space (Pn>N):
 - Probability of Finding an Open Parking Space:

$$P_o = 0.0334$$

$$P_{n>N} = \frac{P_o (\rho^{N+1})}{N!N (1 - \frac{\rho}{N})} = \frac{0.0334 (3.40^{88+1})}{88!(88)(1-0.0386)} = 4.2594 \times 10^{-91}$$

$$P = 1 - P_{n>N}$$

$$P = 1 - 4.2594 \times 10^{-91}$$

$$P = 1.0000$$