Assume that samples $\mathcal{X} = \{x_1, \ldots, x_N\}$ follow the Bernoulli distribution with parameter θ, i.e., $p(x) = \theta^x(1-\theta)^{1-x}$. Show that the maximum likelihood estimate of θ is $\theta^{MLE} = \frac{1}{N}\sum_{n=1}^{N} x_n$.