Calculating Entropy

Recall that the entropy formula is given by

$$H(S) = \sum_{i=1}^{c} -p_i \log_2 p_i.$$

For the 12 restaurant examples, where $c = 2$ and $p = n = 6$, we compute to see that the entropy $H(S)$ is 1:

$$H(S) = \left(-\frac{6}{12}\log_2 \frac{6}{12}\right) + \left(-\frac{6}{12}\log_2 \frac{6}{12}\right) = \left(-\frac{1}{2} \times (-1)\right) + \left(-\frac{1}{2} \times (-1)\right) = 1,$$

where we have used the fact that $6/12 = 1/2$ and $\log_2(6/12) = \log_2(2^{-1}) = -1$.