Let $X_{i,j}$ be an indicator random variable equal to 1 if elements i and j collide, and equal to 0 otherwise. Simple uniform hashing means that the probability of element i hashing to slot k is $1/m$. Therefore, the probability that i and j both hash to the same slot $\Pr(X_{i,j}) = 1/m$. Hence, $E[X_{i,j}] = 1/m$. We now use linearity of expectation to sum over all possible pairs i and j:

$$
\begin{aligned}
E[\text{number of colliding pairs}] &= E\left[\sum_{i=1}^{n} \sum_{j=i+1}^{n} X_{i,j}\right] \\
&= \sum_{i=1}^{n} \sum_{j=i+1}^{n} E[X_{i,j}] \\
&= \sum_{i=1}^{n} \sum_{j=i+1}^{n} 1/m \\
&= \frac{n(n+1)}{2m} \\
&= \Theta(n^2/m)
\end{aligned}
$$

When m=c*n, you get ***θ(n/c).***