

Solutions for CS174 Homework 2

1. Because X is on the first coin toss and Y is on the second coin toss, so X and Y are independent.
2. The problem is meant to be “*not necessarily consecutively*” instead of “*not consecutively*”. In this case, the probability is $\frac{\binom{n}{3}(n-3)!}{n!} = \frac{1}{6}$.
3. $O(n \lg n)$ as in lecture notes.
4. \leq .
5. Chebyshev.
6. $\sqrt{2n}$.
7. $n \ln n + \Omega(n)$.