Quiz 4.1

1. What is the difference between a Monte Carlo algorithm and a Las Vegas algorithm?

2. Why is the “typical” random number generator (such as Java’s `java.util.Random` or Python’s `random`) called a “pseudorandom number generator (PRNG)”?

3. Imagine we are tasked to write a program to solve some problem $A$. We soon discover that $A$ is $NP$-Complete.
   - If we need an exact solution, what can we say is probably true about the running time of any algorithm we design?
   - Suppose we find a algorithm that generates a 2-approximation to $A$. What does this mean?