## 31 Lecture - CS101

## Important Subjective

1. What is the probability of getting heads on a fair coin flip?

Answer: The probability of getting heads on a fair coin flip is $50 \%$.
2. How is a coin flip used to generate random numbers?

Answer: A coin flip can be assigned heads to 0 and tails to 1 , and then flipped a number of times to generate a binary string. This binary string can then be converted to a decimal number, giving you a random number.
3. Why is generating truly random numbers on a computer a challenge?

Answer: Computers are deterministic machines, which means that they always follow a set of instructions and produce the same output every time they are given the same input.
4. How are coin flips used to ensure fairness in games and simulations?

Answer: In games like poker or blackjack, the outcome of a coin flip can be used to determine who goes first or who gets to make a certain decision. In simulations, coin flips can be used to introduce random events, such as a car accident or a power outage, that can affect the outcome of the simulation.
5. What is the Monty Hall problem?

Answer: The Monty Hall problem is a probability puzzle that involves three doors and a prize behind one of the doors. The problem involves choosing a door and then switching to another door after one of the other doors is revealed to be empty.
6. How is the Monty Hall problem solved using coin flips?

Answer: The Monty Hall problem can be solved using coin flips to demonstrate that the probability of winning the prize is higher if you switch doors.
7. What is the purpose of using a coin flip in simulations?

Answer: The purpose of using a coin flip in simulations is to introduce random events that can affect the outcome of the simulation.
8. How is a coin flip used in cryptography?

Answer: Coin flips can be used in cryptography to generate random numbers that are used as keys to encrypt and decrypt data.
9. What is the probability of getting three heads in a row on a fair coin flip?

Answer: The probability of getting three heads in a row on a fair coin flip is $1 / 8$ or $12.5 \%$.
10. How can coin flips be used to study probability and statistics?

Answer: Coin flips can be used to study probability and statistics by flipping a coin multiple times and keeping track of the results to learn about the probability of getting heads or tails.

