Q1. What is a probability distribution, exactly? If the values are meant to be random, how can you predict them at all?

Answer:A probability distribution is a statistical function that describes all the possible values and likelihoods that a random variable can take within a given range. Is the expected value of the probability distribution of a random variable always one of the possible values of x? Explain. No, because the expected value may not be a possible value of x for one trial, but it represents the average value of x over a large number of trials.

Q2. Is there a distinction between true random numbers and pseudo-random numbers, if there is one? Why are the latter considered “good enough”?

Answer: So, the distinction between random and pseudorandom. If it's statistically random, then it's pseudorandom for the purposes for which we're using the term. Pseudorandom means it's produced by an algorithm that generates a series of bits that appear unpredictable, but in fact are computed from an algorithm.

Q3. What are the two main factors that influence the behaviour of a "normal" probability distribution?

Answer: Normal Probability Distribution are influenced by two factors: Mean and Variance

Q4. Provide a real-life example of a normal distribution.

Answer: A normal distribution or Gaussian distribution refers to a probability distribution where the values of a random variable are distributed symmetrically. These values are equally distributed on the left and the right side of the central tendency. Thus, a bell-shaped curve is formed. A fair rolling of dice is also a good example of normal distribution. In an experiment, it has been found that when a dice is rolled 100 times, chances to get '1' are 15-18% and if we roll the dice 1000 times, the chances to get '1' is, again, the same, which averages to 16.7% (1/6).

Q5. In the short term, how can you expect a probability distribution to behave? What do you think will happen as the number of trials grows?

Answer: Variance will decrease with number of trials. In probability theory and statistics, a probability distribution is the mathematical function that gives the probabilities of occurrence of different possible outcomes for an experiment.It is a mathematical description of a random phenomenon in terms of its sample space and the probabilities of events (subsets of the sample space).

Q6. What kind of object can be shuffled by using random.shuffle?

Answer: The shuffle() method takes a sequence, like a list, and reorganize the order of the items. Note: This method changes the original list, it does not return a new list.

Q7. Describe the math package's general categories of functions.

Answer: Functions are classified by the type of mathematical equation which represents their relationship. Some functions are algebraic. Other functions like f(x) = sin x, deal with angles and are known as trigonometric. Still other functions have logarithmic and exponential relationships and are classified as such. Trigonometric functions Quadratic functions Exponential functions Hyperbolic functions Periodic functions Arithmetic functions Logarithimic functions Conversions to Integer

Q8. What is the relationship between exponentiation and logarithms?

Answer: Logarithmic functions are the inverses of exponential functions. The inverse of the exponential function y = ax is x = ay. The logarithmic function y = logax is defined to be equivalent to the exponential equation x = ay. The inverse of an exponential function is a logarithmic function. Remember that the inverse of a function is obtained by switching the x and y coordinates. This reflects the graph about the line y=x. As you can tell from the graph to the right, the logarithmic curve is a reflection of the exponential curve.

Q9. What are the three logarithmic functions that Python supports?

Answer: The Three Logarithmic Functions that Python supports are:

log2(x) - logarithmic value of x to base 2

log10(x) - logarithmic value of x to base 10

log1p(a) - This function is used to compute logarithm(1+a) .

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