SupervisedLearning: DSVII End to End Data Science Course - Batch 7

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Distribution Assignment

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1. Plot a distribution of ages in titanic data set?

Hint - Plotting using Matplotlib

2. The average monthly sales of 2,000 firms are normally distributed with mean of Rs. 38,000 and standard deviation

Rs. 10,000. Find:-

(i) The number of firms with sales of over Rs. 50,000

(ii) The percentage of firms with sales between Rs. 38,500 and Rs. 41,000

(iii) The number of firms with sales between Rs. 30,000 and Rs. 50,000

3. An unbiased die is tossed 700 times. Use normal approximation to binomial to find the probability obtaining:-

(i) more than 124 aces

(ii) number of aces between 81 and 100

(iii) exactly 145 aces

4. A random variable X follows Poisson distribution with parameter 25. Use normal approximation to Poisson distribution to find the probability that X is greater than or equal to 30.

5. A test is conducted which consists of 25 MCQs with every question having 4 options. Determine the probability of a person answering exactly 5 wrong answers.

6. In an observational astronomy experiment, let the average rate of photons reaching the telescope is 4 photons per second (Poisson random variable with mean of 4). Find the probability that no photon reaches the telescope in a given second.

7. The number of calls coming per minute into a Customer support center is Poisson random variable with mean 3.

(a) Find the probability that no calls come in a given 1 minute period.

(b) Assume that the number of calls arriving in two different minutes are independent. Find the probability that atleast two calls will arrive in a given two minute period.

8. If a production line has a 20% defective rate. Calculate the probability of obtaining the first defected part after three good parts. What is the average number of inspections to obtain the first defective?

9. The probability that a student is accepted to a prestigious college is 0.3 . If 5 students from the same school apply, what is the probability that atmost 2 are accepted?

10. The maximum weight that an elevator in an apartment complex can accommodate is 800kg. The average adult weight be about 70kg with a variance of 200. What is the probability that the lift safely reaches the ground when there are 100 different adults in the lift? What if there are 12 adults?

11. A student, to test his luck, went to a examination unprepared. It was a MCQ type examination with two choices for each question. There are 50 questions of which atleast 20 are to be answered correctly to pass the test. What is the probability that he clears the exam ? If each question has 4 choices instead of two. What is the probability that he clears the exam?

12. A company manufactures LED bulbs with a faulty rate of 30%. If I randomly select 6 bulbs, what is the probability that exactly 2 are faulty?

13. For a writer, the efficiency of typing is 6 errors per hour entering 77 words per minute. What is the probability of 2 errors in 322 word report?