**DAILY ASSESSMENT FORMAT**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date:** | **30-07-2020** | **Name:** | **Bhavith** |
| **Course:** | **Basic Statistics** | **USN:** | **4AL17EC009** |
| **Topic:** | **Probability,Normal,Binomial Distributions** | **Semester & Section:** | **6th,A** |
| **Github Repository:** | **Bhavith-Online-Courses** |  |  |

|  |
| --- |
| **FORENOON SESSION DETAILS** |
| **Image of session** |
| **Report – Report can be typed or hand written for up to two pages.** **Probability distributions**  * **The two videos in this lesson explain the key-features of probability distributions and cumulative probability distributions.** * **The first explains how a **probability distribution specifies the probabilities for each of the values** that a random variable may take. It also illustrates how a probability distribution can take the form of a **table, graph or equation**.** * **Finally, it explains how for a **discrete** random variable the probability distribution is called a **probability mass function**, giving probabilities, while for a **continuous** random variable the probability distribution is called a **probability density function**, giving probabilities per unit of the random variable. To obtain probabilities for a continuous random variable the sum (or integral) of all probabilities over an interval have to be considered.** * **The second video shows how a **cumulative probability distribution** can be obtained from a probability distribution by summing the probabilities in the latter from the smallest up to the largest value of the random variable. Also cumulative probability distributions can exist in the form of a table, graph or an equation.** * **Interestingly, the difference between discrete and continuous variables disappears for cumulative probability distributions: for both variables the cumulative distribution gives cumulative probabilities: the probability of an event lower than or equal to the specified value of the random variable.** * **The second video ends by illustrating how the cumulative probability distribution is useful to find a cumulative probability relating to a specified value of the random variable, but also the reverse: to find the threshold value of the random variable at a given probability level.**  **The binomial distribution**  * **In this lecture the the **binomial probability distribution** is introduced. It starts by explaining the type of elementary **random variable** to which the distribution relates: a variable with only **two mutually exclusive outcomes** and a **fixed probability p** to obtain one of the two outcomes (a **Bernoulli trial**). Next it shows how the distribution gives the probability of **observing x successes in n Bernoulli trials**.** * **The assumptions of independence among each outcome and a constant probability of success are specified, and the equation that describes this distribution is given with its two **parameters p and n**.** * **The use of this equation is demonstrated with an example. Finally the equations for the mean and standard deviation of a binomial probability distribution are given and it is shown how the standard deviation of this distribution varies for different values of the parameters.**  **The normal distribution**  * **In this lecture important features of the the **normal probability distribution** are explained and methods to use it for making probability statements about a normally distributed random variable are demonstrated.** * **The first video explains the functional form of the normal distribution and and the role of the two **parameters** in determining **location (the mean)** and the **spread (the standard deviation)** of the distribution. In addition it shows how the normal distribution not only exists as a statistical equation but is also a function that describes the outcome of many processes where some form of diffusion is important.** * **The next video shows how the probability that a normally distributed random variable falls within a given range can be expressed in units of standard deviations (sigma) around the mean: the **probability values of 0.68, 0.95 and almost 1** correspond with **intervals of 1, 2 and 3 sigma around the mean** respectively.** * **And the third video further generalizes this by applying a **z-transformation to a normally distributed variable**. **Probability statements** can then be made for **any value of the random variable** (not just 1, 2 or 3 sigma around the mean) on the basis of the resulting z-scores, by using a table that lists cumulative probabilities with the corresponding z-values.** * **It is shown how a cumulative probability can be found and interpreted for a given value of the random variable, and (reversely) how a threshold value of the random variable is found and interpreted for a given cumulative probability.** |