COMP 1433 Quiz 2 (Monday)

1. Which of the following R functions generates a sequence of 10 random numbers between 0 and 1?
   A. rnorm(10, 0, 1)
   B. runif(10, 0, 1)
   C. rbinom(10, 1, 0.5)
   D. rexp(10, 1)

   The correct answer is B. This function generates a sequence of 10 random numbers that are uniformly distributed between 0 and 1. The other options generate random numbers from different distributions (normal, binomial, exponential) but not necessarily within the specified interval of [0,1]. See P57 Lecture 6.

2. What is the purpose of facet_wrap() function in ggplot2?
   A. To add a layer to an existing plot
   B. To create multiple subplots based on a categorical variable
   C. To create a legend for a plot
   D. To change the shape of data points in a plot

   The correct answer is B. See Pg 24 Lecture 7.

3. Which of the following is a characteristic of a pseudo-random number generator in R?
   A. It produces truly random numbers.
   B. It requires a seed value to start generating numbers.
   C. It generates random numbers that never repeat.
   D. It always generates positive integers.

   The correct answer is B. See Pg 10 Lecture 8.

4. Given 1000 flipping of a fair coin, which of the following code allows us to calculate the probability of 256 heads-up or less?
   A. dbinom(256, 1000, prob=0.5, lower.tail=TRUE)
   B. dbinom(256, 1000, prob=0.5, lower.tail=FALSE)
   C. pbinom(256, 1000, prob=0.5, lower.tail=TRUE)
   D. pbinom(256, 1000, prob=0.5, lower.tail=FALSE)

   The correct answer is C. See P29 Lecture 9.

5. Which of the following probability distribution is continuous?
   A. Bernoulli
   B. Binomial
   C. Exponential
   D. Poisson

The correct answer is C. Bernoulli distribution is a binary distribution that models the probability of success or failure in a single trial. Binomial distribution is a distribution that models the number of successes in a fixed number of independent trials with a constant probability of success. Poisson distribution is a distribution that models the number of events occurring in a fixed interval of time or space.