COMP 1433 Quiz 2 (Tuesday)

1. What does the function str() do in R?
   A. Convert an object into string format.
   B. Compute summary statistics of a variable.
   C. Display the structure of an object.
   D. Sort a vector in ascending order.

   The correct answer is C. See P43 of Lecture 6.

2. What is the purpose of aesthetic mapping in ggplot2?
   A. To assign data variables to visual properties of the objects in a plot
   B. To specify the type of plot to create
   C. To add annotations to a plot
   D. To control the appearance of the legend

   The correct answer is A. See P19 Lecture 7.

3. Suppose we have a data frame df with columns x, y, and z. Which of the following R code can we use to obtain a random sample of 100 rows from df?
   A. sample(df, size = 100)
   B. sample(nrow(df), size = 100)
   C. df[sample(seq_len(nrow(df)), 100),]
   D. df[sample(df, 100),]

   The correct answer is C. To obtain a random sample of rows from a data frame in R, we can use the sample() function to generate a random sequence of row indices, and then use the [...] operator to select those rows. See Pg 20 Lecture 8.

4. Given 1000 flipping of a fair coin, which of the following code allows us to calculate the probability of 512 heads-up or more?
   A. dbinom(512, 1000, prob=0.5, lower.tail=TRUE)
   B. dbinom(512, 1000, prob=0.5, lower.tail=FALSE)
   C. pbinom(512, 1000, prob=0.5, lower.tail=TRUE)
   D. pbinom(512, 1000, prob=0.5, lower.tail=FALSE)

   The correct answer is D. See P29 Lecture 9.

5. Which of the following about Monte Carlo simulation is NOT true?
   A. The confidence of the estimation largely depends on the variance of samples.
   B. It is a very effective method possibly allow 100% accuracy.
   C. Larger sample size may be helpful to draw unbiased results.
   D. The Monte Carlo simulation is based on the principles of inferential statistics.

   The correct answer is B. See P17 Lecture 9