**Analytical Methods for Business**

Authorized by the Federal Credit Union Act of 1934, credit unions are not-for-profit financial institutions offering a range of financial services to members. Credit unions are regulated and insured by the National Credit Union Administration (NCUA), which collects data regularly on the health and performance of credit unions. There were about 5000 credit unions operating in the United States as of 2021. Credit union members typically receive higher interest rates on deposits and lower rates on loans than what is available from for-profit banks.

**Preprocessing**

1. Load the data file associated with this assignment into R. This file contains NCUA data on 2262 credit unions operating in the United States. This will be your master data set. Variables are:
   1. charter.number: The number of the governmentally-issued charter or founding document of the credit union.
   2. name: The name of the credit union.
   3. city: The city in which the credit union’s headquarters is located.
   4. state: The US state in which the credit union’s headquarters is located.
   5. members: The number of members of the credit union.
   6. total.assets: The total assets of the credit union in millions of US dollars.
   7. total.loans: The total loans held as assets by the credit union in millions of US dollars.
   8. total.deposits: The total funds deposited with the credit union in millions of US dollars.
2. Use R to create a) a data frame with California credit unions, b) a data frame with Florida credit unions, and c) a data frame with all credit unions based in New York or New Jersey. These are your intermediate data frames.
3. Use the method demonstrated in class to take a random sample of n=20 from each of your intermediate data frames. These are your primary data frames. In total you will have created have 7 data frames.

**Analysis**

Using R and your primary data sets report the following:

1. The R code and resulting 90% confidence interval on the members variable for Florida credit unions. Give a clear written interpretation of your confidence interval.
2. The R code and resulting 99% confidence interval on the members variable for Florida credit unions. State the difference in width for the two confidence intervals.
3. The R code and results of a hypothesis test on the total assets of California credit unions, testing whether the population mean is greater than $170 million. Report the null and alternate hypotheses and the p value resulting from the hypothesis test. Give a brief but clear written interpretation of the results of the test.
4. The R code and results of a hypothesis test determining if the population mean total.assets differs between California and New York/New Jersey. Report the null and alternate hypotheses and the p value resulting from the hypothesis test. Give a brief but clear written interpretation of the results of the test.
5. The R code and results to extract and report only the a) name, b) city, c) members, and d) total assets of the largest Florida credit union in your sample.