Attach all of your R code at the end of your solution file or in a separate text file.

Problem 1 (40 points)

A measure of the time a drug stays in the blood system is given by the half-life of the drug. This measure is dependent on the type of drug, the weight of the patient, and the dose administered. To study the half-life of aminoglyco sides in trauma patients, a pharmacy researcher recorded the data for patients in a critical care facility. The data is in the data file drug.csv which can be downloaded from the canvas. The data consists of measurements of dosage per kilogram of weight of the patient, type of drug, either Amikacin or Gentamicin, and the half-life measured 1 hour after administration.

(1) (**3 points**) Practice of R. Use R to (a) create a data named "drug" from the data file drug.csv; (b) look at a few first lines of data; (c) the names of the variables in the data. For this part, you do not need to include any output from R.

(2) (**3 points**) Describe the data set. You need to include the information about the purpose of the study, the variables (and their names), and the sample size in your description.

(3) (**4 points**) Determine the type of each variable. First, determine if a variable is quantitative or qualitative. If a variable is quantitative, further determine if it is continuous or discrete. If a variable is qualitative, further determine if it is ordinal or nominal.

(4) (**10 points**) For the type of drugs, use R to construct a frequency table. Your table should contain the frequency and the relative frequency (with 3 decimal digits). Present your table in your solution file. **Comment** on your findings about this table.

(5) (**10 points**) For the Half-life, use R to construct a frequency table. Your table should contain the frequency and the relative frequency (with 3 decimal digits) based on the following intervals: $[0.50, 1.00), [1.00, 1.50), [1.50, 2.00), [2.00, 2.50), [2.50, 3.00)$, and $[3.00, 3.50)$. Present your table in the solution file. **Comment** on your findings about this table.

(6) (**10 points**) For the dosage, use R to construct a frequency table. Your table should contain the frequency and the relative frequency (with 3 decimal digits) based on the following intervals: $[0, 2.00), [2.00, 4.00), [4.00, 6.00), [6.00, 8.00), [8.00, 10.00)$, and $[10.00, 12.00)$. **Comment** on your findings about this table.