**CB[1] – Using Software Cortland Watson**

**Type in your score here 🡪 \_\_\_\_ out of 25 points possible**

1. (5 points) Ponder/Reflect Exercise – Reflect on what you have learned from this portion of the class. Examples of what you can do are: a brief outline of material covered, insights you gained from class or personal study, or items you feel that you need to follow up or work on. (3-5 sentences)
   1. This week I have been able to learn the importance of blocking and I have been able to learn why it is important. We are able to control for nuisance variables by using this system. At the same time, we are able to see if blocking is useful by running test that both include and exclude the blocking variable so that we are able to see the comparison.
2. (a) Use the file marketing.txt from the homework page. The first column is sales of a product of interest (in dollars), the second column is the shelf height factor (shelf height for the product being sold), and the third column is day of week (the blocking factor). On each day, the researcher in this study randomly assigned a product of interest to a location on a five-level store shelf and then recorded the total sales for each shelf at the end of the day. Our primary interest is to see if the shelf heights have different mean sales. Use one of the following software: SAS or R to analyze the data and do the following:
   1. (5 points) Check the assumption of equal variance and residuals being normally distributed using two software.
   2. (4 points) Get an ANOVA table using using two software.
   3. (5 points) For effect of interest: i) state the null and alternative hypotheses, ii) give the test statistic, iii) give the degrees of freedom, iv) state the p-value, v) determine whether you should reject or not reject the null hypothesis, and vi) write a sentence which gives an appropriate conclusion.
   4. (2 points) Does the blocking factor turn out to be an important source of variability?
   5. (4 points) Now ignore the blocks and re-run the analysis as a BF[1] design using either R or SAS. What are the degrees of freedom for the F distribution used to test for shelf height? How do your conclusions change? Why are the results different from the CB[1] analysis?