BUAN 6356 (Johnston)
Homework 3B (20230927)
Due: 1 October 2023 (11:59PM)

Points available: 290

This part of the assignment is about hypothesis testing using linear models. The data variables are: achievement score, method of preparation (nominal, 3 categories) and aptitude. You are provided with the following 5 research questions to be answered with the data provided in HW 3A. Additional questions may be presented using these 5 models. The research questions and their associated model names are

1. Does the method of preparation explain the achievement score? (m1)
2. Does aptitude explain the achievement score? (m2)
3. Does method of preparation combined with aptitude explain the achievement score? (m3)
4. Do the methods of preparation interact with aptitude to explain the achievement score? (m4)
5. Does the interaction model (methods of preparation interact with aptitude) provide a better explanation of the achievement score than the additive model (method of preparation combined with aptitude)? (m5)

Additional questions will be asked which require use of the anova() function. Remember that ALL degrees-of-freedom values are positive integers (regardless of the anova() output) and negative values indicate parameters entered in the wrong order. The *F*-statistic value and *p*-value will be correct if the 2 appropriate models are passed as parameters.

The data for this assignment is "dobson_covariance_6_12_mod.txt" and is available through UTDbox>data. You will need to load this data yourself.

No testing (validation) sample will be used with this assignment.

You will want to use as many models as are applicable from the Stat Notes handout 11 and R code in the pre-recorded materials.

You may submit this assignment as many times as needed until you get full credit.

Notes/Hints:

- You CAN work with factor or indicator variables which you create.
- Refer to the "formulas" handout for additional syntax which may be useful
- An lm() model formula with only an intercept term would look like "Y~1".
- I recommend use of the function fmt_anova() from stat_notes_11d_20230125.txt in the folder at UTDbox>pre_recorded_materials_03_Linear_model_comparisons. Note the number of printed digits.
- Names for anova() models should follow the form A<baseline><alternate>, where the NULL model is m0 from HW 3A.
- The "multiple answers" format used by eLeraning for part B of this HW treats ALL inputs as character strings rather understanding some of them as numeric. Exact matches will be required.