STAT 420 – Homework 10

This Homework assignment is required for graduate students to complete and optional for undergraduate students.

Fish Data Project

This homework concerns a data set named **fish in a lake.txt** containing 159 fish of 7 different species all gathered from the same lake in one season. There are seven variables available to potentially be used as predictors (#2 and #4-9 in the table).

	Variable	Notes
1	Obs	Observation number
2	Species	Level = Common Name (*Latin name)* 1 = Bream (*Abramis brama*) 2 = Whitewish (*Leusiscus idus*) 3 = Roach (*Leuciscus rutilus*) 4 = <None> (*Abramis bjrkna*) 5 = Smelt (*Osmerus eperlanus*) 6 = Pike (*Esox lucius*) 7 = Perch (*Perca fluviatilis*)
3	Weight	Weight of the fish (in grams)
4	Length1	Length from the nose to the beginning of the tail (in cm)
5	Length2	Length from the nose to the notch of the tail (in cm)
6	Length3	Length from the nose to the end of the tail (in cm)
7	HeightPct	Maximal height as % of Length3
8	WidthPct	Maximal width as % of Length3
9	Sex	1 = male, 0 = female

Missing values are denoted with NA, and there are many missing values for the variable Sex.

You will use the data to construct a model for predicting the Weight of a fish from this lake given values for the predictor variables.

- There is not necessarily one, singular correct answer/model, but some models are certainly better than others.
- You do not necessarily have to use all seven predictors.
- You may use any methods we studied this semester to complete this task and provide evidence that your final choice of model is a good one.
- Some methods will be more useful than others for this data. Please only show tables/results/plots associated with leading you toward your final model. Don't include results that lead to a dead end.
- The final submission should be no more than 3 pages in length – that is, it shall contain no more than one page of explanatory text (if put altogether) and no more than two pages of tables, results, and plots (if put altogether).
- This is intentionally open-ended to see how you do without being given explicit steps, so have fun building it.