Dear class,

I have provided a sample outline for the two-page report below to help you write the summary. You are **not required** to follow this outline; the outline is meant to help you get started with this portion of the project. Also, the two-page report **must NOT be in an outline format**; it needs to be in paragraph form.

As always, please feel free to let me know if you have any questions/concerns.

Best,

-Hyunseung

**####### Sample Outline of Two-Page Executive Summary########**

**Introduction/Motivation**: (a brief introduction about motivation/what the report is about/what you plan to describe)

**Background Information/Data Cleaning**:

1. Discuss any relevant/key aspects about the data (e.g. mean/sd of Y, some Xs)
2. Discuss any outliers removed/fixed/imputed **even before building a model** (e.g. body fat % looks suspicious, some predictors look suspicious, etc.)
   1. Example 1: I removed individual with body fat % BLANK because of BLANK.
   2. Example 2: I fixed/imputed individuals with body fat % BLANK by BLANK

**Final Model Statement**

1. State your final model/easy-to-use rule of thumb.
2. State an example usage of the final model
   1. Example 1: a man with BLANK is expected to have a body fat % of BLANK based on our model). His 95% prediction interval is between BLANK and BLANK.
3. Interpret your model (in *laymen’s terms*\*\*)
   1. Example 1: Our estimated coefficients are BLANK and BLANK, which are in the units of BLANK and BLANK. This means that for every BLANK increase in BLANK, the model predicts that body fat % will increase, on average, by BLANK.

**Rationale for your Final Model and Relevant Statistical Analysis or Model Diagnostics**

1. Discuss, in some length, why you chose the final model. Include relevant tables/figures/etc (e.g. scatterplot of final model, table of key statistics, etc.)
   1. Example 1: We chose this model because of the following reasons. First, BLANK (e.g. background research). Second, BLANK (e.g. statistical analysis/figures/tables). Third, other models using BLANK had BLANK (e.g. some key statistics), which was BLANK in comparison to our final model.
2. Discuss any key estimates or statistical tests you have conducted to support your model. Make sure to interpret your results carefully.
   1. Example 1: We conducted the following test to see whether the predictor(s) we have chosen are significant in predicting the outcome. (formally state hypothesis; formally state which test statistic you used; state the p-value/test stat value; state the Type I error you’re willing to tolerate). From our statistical test/p-value, we can conclude that BLANK (interpret your statistical tests/p-values in a laymen’s term based on this data’s predictors; see lecture notes for details).
   2. Example 2: We found our R^2 to be BLANK, which implies (interpret it in layman’s terms)
   3. Example 3: The estimated slope and intercept are BLANK and BLANK, with 95% CIs BLANK and BLANK. This implies that BLANK (interpret in laymen’s terms). Also, based on the 95% CI, we can reject/retain the null hypothesis of BLANK and BLANK. In other words (interpret them in laymen’s terms)
3. Include relevant model diagnostics you did (e.g. plots/tables/etc.) and explain your model diagnostics (e.g. why you did it, what assumption is this diagnostic checking, what is your conclusion from the diagnostic checks, how did you resolve any violations of model assumptions)
   1. Example 1: We checked the following four assumptions for SLR/MLR. First, we checked BLANK using BLANK (see Figure BLANK). Because BLANK, we believed BLANK is plausible, even though there is slight violations of BLANK. Second, we checked BLANK.
   2. Example 2: We also looked at three types of outliers in regression models: BLANK. For BLANK, we used BLANK and looked for BLANK; see Figure BLANK. We found BLANK and we removed/kept/fixed this outlier. After rerunning the diagnostics checks, we found BLANK.

**Model Strengths/Weaknesses**

1. Discuss strengths and weaknesses of your model
   1. Example 1: Some strengths of our model include BLANK, BLANK, and BLANK. In particular, our model satisfies the linear regression assumptions of BLANK and BLANK, brining credence to our results/interpretation in BLANK.
   2. Example 2: Some weaknesses of our model include BLANK, BLANK, and BLANK. In particular, for certain groups of males, the model may provide BLANK and BLANK because of BLANK.

**Conclusion/Discussion**: (summarize what you wrote above; final thoughts/discussions)

**Contributions**:

1. If you would like, you can write the person’s name next to the subsections above to show contribution for the two-page report.
2. Other examples
   1. Example 1: JD reviewed/wrote/edited BLANK for report and BLANK for presentation. HK did BLANK, including BLANK. Overall, we met blank times, spent BLANK hours, etc.
   2. Example 2: JD: Figures BLANK, model strength/weakness, final editing, presentation slides BLANK. HK: figures BLANK, data cleaning

**References:** must be only on the 3rd page and may not exceed more than one page.