*\*Please save this file as “LAST NAME\_Assignment 2.docx”*

***Open-Ended Responses***

1. **II.1** Which of the following would **not** be an example of data wrangling? (Highlight correct answer)
   1. Filtering a tibble based on a condition
   2. Converting data to long form
   3. Computing a t-test statistic
   4. Adding new variables to a data.frame object
   5. Joining two tibbles together
2. **II.2** We discussed how tidy data is rectangular. Why doesn’t R allow you to have data.frames or tibbles that are non-rectangular? For example, the following will generate an error:

tibble(x = 1:10, y = 1:9) # error

|  |
| --- |
| I think this is because individual data points are still vectors and referenced by their row and column. Something that is irregular/non-rectangular would not be able to use that notation. |

1. **II.3** Imagine my rawdata.csv file lives in a folder like Documents\Work\Dissertation\Survey. When importing this data, what is the advantage to running lines 2-3 as opposed to just line 1?

1 read\_csv(“Documents/Work/Dissertation/Survey/rawdata.csv”)

2 setwd(“Documents/Work/Dissertation/Survey”)

3 read\_csv(“rawdata.csv”)

|  |
| --- |
| I think this has to do with setting your working directory and being able to easily pull up the file again. |

1. **II.4** Convert the following code into (a) full length sentence(s) that accurately and completely describe what is happening:

copus %>%

filter(!is.na(Size), Level == “100”) %>%

select(Size, Level, L) %>%

group\_by(Size) %>%

summarize(Max = max(L), Min = min(L)) %>%

mutate(Range = Max – Min)

|  |
| --- |
| Get then Copus data then filter out any “Na” and 100 level classes from the Size variable. Then, select the following 3 variables: Size, Level, and L. Then group them by Size and compute the range of the L variable. |

1. **II.5** I collected 3 measurements from 3 different participants; the data are shown below. Highlight the word that correctly completes the sentence:

*Participant 1 has explicitly / implicitly / no missing data; Participant 2 has explicitly / implicitly / no Participant 3 has explicitly / implicitly / no missing data.*

|  |  |  |
| --- | --- | --- |
| **Participant** | **Measurement** | **Score** |
| 1 | 1 | 10 |
| 1 | 2 | 9 |
| 1 | 3 | 10 |
| 2 | 1 | 8 |
| 2 | 2 | 7 |
| 3 | 1 | 9 |
| 3 | 2 | NA |
| 3 | 3 | 10 |

1. **II.6** I have two tibbles, df1 and df2 that I’m looking to join by a common ID. I did this two ways, shown in the code below. Besides the fact that option #2 is more efficient (less code), what is an advantage to option #2?

df1 <- tibble(ID = 1:10, Score1 = rnorm(10))

df2 <- tibble(ID = sample(1:10), Score2 = rnorm(10))

# join option #1

df.joined <- df2 %>%

arrange(ID) %>%

mutate(Score1 = df1$Score1) %>%

select(ID, Score1, Score2)

# join option #2

df.joined <- df1 %>%

left\_join(df2, by = "ID")

|  |
| --- |
| Not sure about this one, but I think option 2 is additionally better b/c it allows for missing cases. |

**II.9** Some people don’t like the default TukeyHSD() function in base R; they find the multcomp::glht() function more efficient. If I ran a general anova model and then wrapped it in a glht() call and stored that in an object called comp, how could I access a table of the covariance matrix?

|  |
| --- |
| Not sure…but in class we learned that the code summary(xxxx) will give you all the stats you need for APA reporting, so maybe that will give it to you? |

***Coding Section***

To complete this section, start a new script file with the following layout:

# YOUR NAME

# Assignment 1 Introduction to R

# #1 ---------------- (new section: CTRL + SHIFT + R)

here’s my code # with adequate commenting

# #2 ---------------- (new section: CTRL + SHIFT + R)

here’s my code # with adequate commenting

For the following questions, use the data from “df.csv” found in the data director on [GitHub](https://aub.ie/R22).

1. **II.3** Import the df.csv data to an object called “df”.
2. **II.4** In one continuous statement connected by piping operators, making the following changes to df and store it as df2:
   1. Rename “X1” as “ID”
   2. All negative values in Variables V2 though V6 should have been positive (all values will be positive for these variables); change this
   3. Any obs with V7 less than -0.9 is an outlier; replace these instances with NA, but do not remove the rest of their data. *Hint: If you are getting an error such as “`false` must be a logical vector, not a double vector,” check out the following and replace NA with NA\_real\_ (*[*https://stackoverflow.com/questions/53636644/r-if-else-assign-na-value/53636776*](https://stackoverflow.com/questions/53636644/r-if-else-assign-na-value/53636776)*).*
   4. si
   5. Sort the data by V1 (A to C) and within each category, in decreasing V2
   6. Calculate the mean and standard deviation of V2 for each category of V1
3. **II.5** Ignoring all modifications in #2 and starting from a fresh import of df.csv, modify the data into an object called df.l that matches the screenshot here:

Text

Description automatically generated with medium confidence

1. **II.6** Create this dataset in R (call it “key”) and join it to df.l (from #3) so every obs in df.l that has V1 = “A” and Variable = “V2” should be assigned a NewValue = 1; every obs in df.l that has V1 = “A” and Variable = “V3” should be assigned a New Value = 2… and so on. Here is the desired, joined data. While you can do this with a LOT of chained if\_else statements… do you really want to? No, no you don’t.

A screenshot of a computer

Description automatically generated with low confidence

If V1 ==A and Variable == V2, then NewValue = 1

Question 5 is about a **different** df dataset (defined below):

1. **II.7** Study the code section below that has one line that has been redacted. What is the redacted line?

Text

Description automatically generated

Finally, Question 6 pertains back to the copus.csv data:

1. **II.8** One problem (of many) with the following plot is that the x-axis should be presented in the order of “Mostly lecture”, followed by “Transitioning”, and finally “High engagement”. Modify the copus data (Bcluster is on the x-axis) so that this variable will show up correctly in the plot.

Chart, box and whisker chart

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