R Functions Lab (Class 06)

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R Markdown

```
# Q1. Function for the average grade of a student, excluding the lowest score and dropped NA scores

grade <- function(x) {
  # Find the minimum score, exluding NA scores
  xmin <- min(x, na.rm = TRUE)

  # Exclude the lowest score from the other grades
  xNoMin <- x[!x == xmin]

  # Find the mean of the other grades, excluding the lowest score and NA scores
  mean(xNoMin, na.rm = TRUE)
}
```

```
# Access the grades data
# Make it easier to access the student's grades
df <- read.csv('https://tinyurl.com/gradeinput')

# Convert the strings to numerics

chars <- sapply(df, is.character)

df[ , chars] <- as.data.frame(apply(df, 2, as.numeric))
```

```
## Warning in apply(df, 2, as.numeric): NAs introduced by coercion
```

```
## Warning in `[<-.data.frame`(`*tmp*`, , chars, value = structure(list(X =
## c(NA_real_, : provided 6 variables to replace 1 variables
```

```
# Q2. Apply the grade function to the entire class set

apply(df, 1, grade)
```

```
##  [1] 91.75000 82.50000 84.25000 88.00000 88.25000 89.00000 94.00000 93.75000
##  [9] 91.33333 81.33333 86.00000 91.75000 92.25000 87.75000 83.33333 89.50000
## [17] 88.00000 97.00000 82.75000 82.75000
```

```
# Look at the average grades and find the highest average grade

# Student 18 had the highest grade, 97.

# Q3. Find the average scores of each homework assignment. Look at which value is the lowest.
```

```
apply(df, 2, grade)
```

```
## Warning in min(x, na.rm = TRUE): no non-missing arguments to min; returning Inf
```

```
##        X      hw1      hw2      hw3      hw4      hw5
##      NaN 89.36842 81.94118 81.21053 89.94444 85.40000
```

```
# Homework 3, score = 81.21, was the hardest

# Q4. Apply the grade function to each homework assignment to obtain the average score for each one

apply(df, 2, grade)
```

```
## Warning in min(x, na.rm = TRUE): no non-missing arguments to min; returning Inf
```

```
##        X      hw1      hw2      hw3      hw4      hw5
##      NaN 89.36842 81.94118 81.21053 89.94444 85.40000
```

```
# Find the average class score

df2 <- apply(df, 1, grade)
mean(df2)
```

```
## [1] 88.2625
```

```
# Find the closest average homework assignment score to the average class score
# hw1 = 89.37
# average class score = 88.26
```