class06

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#Q1

```
##creating preliminary function grade() and testing with reduced dataset

student1 <- c(100, 100, 100, 100, 100, 100, 100, 90)
student2 <- c(100, NA, 90, 90, 90, 90, 97, 80)
student3 <- c(90, NA, NA, NA, NA, NA, NA, NA)

##input: vector of nums
##output: numerical average
##method: replace missing scores with score 0, drop lowest score, then calculate average o

grade <- function(x){
  ##create temporary variable to adjust input vector
  y <- x

  ##convert "NA" values to 0 to avoid errors in calculating average with mean()
  y[is.na(y)] <- 0

  ##-which.min(x) returns student scores EXCLUDING the minimum score, then taking the aver
  mean(y[-which.min(y)])
}
```

```
##testing function grade() on example class gradebook
gradebook <- read.csv("https://tinyurl.com/gradeinput", row.names = 1)

##using apply function to grade all students in gradebook (apply function grade() over rou
final_scores <- apply(gradebook, c(1), grade)
```

#Q2

```r
which.max(final_scores)
```

```
student-18
        18
```

```r
max(final_scores)
```

```
[1] 94.5
```

Student 18 scored the highest in the gradebook with a score of 94.5.

#Q3

```r
##create variable of gradebook replacing value NA with 0
mask <- gradebook
mask[is.na(mask)] <- 0

hw_avgs <- apply(mask, 2, mean)
which.min(hw_avgs)
```

```
hw2
  2
```

```r
min(hw_avgs)
```

```
[1] 72.8
```

HW2 was toughest on students, where they scored 72.8 on average.

#Q4

```r
apply(mask, 2, cor, y = final_scores)
```

```
      hw1       hw2       hw3       hw4       hw5
0.4250204 0.1767780 0.3042561 0.3810884 0.6325982
```

HW5 was more predictive of a student's overall score, with a pearson correlation r = 0.633.

#Q5

Submitted!