

Class06

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#every fxn in R has atleast 3 things # - a name, one or more input arguments, The body, where

```
add <- function(x,y) {x+y}
```

```
add(x=c(10,1,1,10),y=1)
```

```
[1] 11  2  2 11
```

```
mean(c(10,10,NA), na.rm=T)
```

```
[1] 10
```

#Q1. Write a function grade() to determine an overall grade from a vector of student homework assignment scores dropping the lowest single score. If a student misses a homework (i.e. has an NA value) this can be used as a score to be potentially dropped. Your final function should be adequately explained with code comments and be able to work on an example class gradebook such as this one in CSV format: <https://tinyurl.com/gradeinput> [3pts]

```
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)
```

Student 1 Avg

```
mean(student1)
```

```
[1] 98.75
```

Student 2 Avg

```
mean(student2, na.rm=T)
```

```
[1] 91
```

Student 3

```
mean(student3, na.rm=T)
```

```
[1] 90
```

Subtracting Value by Eye

```
mean(student1[-8])
```

```
[1] 100
```

Min Function

```
min.ind <- which.min(student1)  
mean(student1[-min.ind])
```

```
[1] 100
```

```
min.ind <- which.min(student2)
mean(student2[-min.ind], na.rm=F)
```

```
[1] NA
```

Making NAs Zero

```
student2[ is.na(student2) ] = 0
student2
```

```
[1] 100  0  90  90  90  90  97  80
```

Finds min value bf getting mean

```
grade <- function(x) {
  x[ is.na(x) ] <- 0
  mean(x[-which.min(x)])}
```

Question 1: Writing Grade() Function

```
gradebook <- read.csv("https://tinyurl.com/gradeinput", row.names=1)
head(gradebook)
```

	hw1	hw2	hw3	hw4	hw5
student-1	100	73	100	88	79
student-2	85	64	78	89	78
student-3	83	69	77	100	77
student-4	88	NA	73	100	76
student-5	88	100	75	86	79
student-6	89	78	100	89	77

```
ans <- apply(gradebook,1,grade)
```

Question 2: Highest Scoring Student

```
which.max(ans)
```

```
student-18  
18
```

```
ans[which.max(ans)]
```

```
student-18  
94.5
```

Question 3: Which was toughest HW Assignment

```
masked_gradebook <- gradebook  
masked_gradebook[ is.na(masked_gradebook)] = 0  
apply(masked_gradebook,2,mean)
```

```
hw1 hw2 hw3 hw4 hw5  
89.00 72.80 80.80 85.15 79.25
```

Grade2

Q4: Cor()

```
x <- c(100,90,80,100)  
y <- c(100,90,81,99)  
z <- c(100,80,90,100)  
cor(x,z)
```

```
[1] 0.6363636
```

```
cor(ans,masked_gradebook$hw5)
```

```
[1] 0.6325982
```

```
apply(masked_gradebook, 2, cor, y=ans)
```

hw1	hw2	hw3	hw4	hw5
0.4250204	0.1767780	0.3042561	0.3810884	0.6325982