

# Class 6

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## Example input vectors to start with

```
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)
which.min(student2)
```

```
## [1] 8
```

```
student2[-which.min(student2)]
```

```
## [1] 100 NA 90 90 90 90 97
```

```
mean(student2[-which.min(student2)], na.rm=TRUE)
```

```
## [1] 92.83333
```

```
## which.min will provide an index where the minimum value is provided in the array. na.rm = True is r
```

```
## Q1 compute the average grade of the student input
```

```
Grade <- function(student) {
  ## assigning any of the Na to 0
  if (any(is.na(student))) {
    student[is.na(student)] = 0
  }
  ## remove one minimum value (such as 0)
  ## calculate mean value
  return(mean(student[-which.min(student)]))
}
```

```
mean(na.omit(student2))
```

```
## [1] 91
```

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

```
## [1] 91
```

```
Grade(student3)
```

```
## [1] 12.85714
```

```
## Copying all the student values into here
```

```
data1 <- read.csv("/Users/chan-yukuo/Desktop/BIMM143/Lab6/student_homework.csv", row.names=1)
which.max(apply(data1, 1, Grade))
```

```
## student-18
```

```
##          18
results <- apply(data1,1,Grade)
###apply(X, MARGIN, FUN)
## Margin =1 means calculate the matrix x in row
### Q2 94.5 student 18 have the highest score

hw_Grade <- function(hw) {
  ## assigning any of the Na to 0
  if (any(is.na(hw))){
    hw[is.na(hw)]=0
  }
  ## remove one minimum value (such as 0)
  ## calculate mean value

  return(mean(hw))
}

which.min(apply(data1,2,hw_Grade))

## hw2
##      2
apply(data1,2,hw_Grade)

##      hw1      hw2      hw3      hw4      hw5
## 89.00 72.80 80.80 85.15 79.25
## Does not remove the lowest value.
sum(is.na(student3))

## [1] 7
## Q4 Look at the correlation of each hw
data1[is.na(data1)]=0
cor(results,data1$hw5)

## [1] 0.6325982
apply(data1,2,cor,y=results)

##          hw1          hw2          hw3          hw4          hw5
## 0.4250204 0.1767780 0.3042561 0.3810884 0.6325982
## specifying the y input of the cor
```