

class6

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Quarto

Quarto enables you to weave together content and executable code into a finished document. To learn more about Quarto see <https://quarto.org>.

ALL about functions in R

Every function in R has at least 3 things: - name - arguments (the input(s) to your function)
- the body

```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
v dplyr      1.1.1      v readr      2.1.4
v forcats    1.0.0      v stringr    1.5.0
v ggplot2    3.4.2      v tibble     3.2.1
v lubridate  1.9.2      v tidyr      1.3.0
v purrr      1.0.1

-- Conflicts ----- tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()     masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become
```

```
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)
```

Let's start slow and find the average for student 1:

```
mean(student1)
```

```
[1] 98.75
```

How can we drop the student's lowest score?

```
min(student1)
```

```
[1] 90
```

```
which.min(student1)
```

```
[1] 8
```

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

```
#or
```

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

```
[1] 100
```

will this work for student2?

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

```
[1] 92.83333
```

We can “mask” the NA or change them to be zero. The rational here is if you do not do a hw, then you get zero points.

```
student2
```

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

```
is.na(student2)
```

```
[1] FALSE TRUE FALSE FALSE FALSE FALSE FALSE
```

```
student2[is.na(student2)] <- 0
```

```
grade <- function(student){  
  #assigns any missing grades to 0  
  student[is.na(student)] <- 0  
  #takes the mean of the student's grades after removing the lowest score first  
  mean(student[-which.min(student)])  
}
```

We can now use this function called 'grade' to grade any student! yay

```
grade(student1)
```

```
[1] 100
```

```
grade(student2)
```

```
[1] 91
```

```
grade(student3)
```

```
[1] 12.85714
```

```
student_hw <- read.csv("~/Desktop/student_homework.csv", row.names = 1)  
  
final_grades <- apply(student_hw, MARGIN=1, FUN=grade)  
  
which.max(final_grades)
```

```
student-18  
18
```

```
#18th student
```

```
#toughest hw
```

```
#assign all na assignments to 0
student_hw[is.na(student_hw)] <- 0
which.min(apply(student_hw, MARGIN = 2, FUN=mean))
```

```
hw2
2
```

```
which.min(apply(student_hw, MARGIN=2, FUN=sum))
```

```
hw2
2
```

```
#which assignment best correlates with overall final grade?
apply(student_hw, 2, cor, y=final_grades)
```

	hw1	hw2	hw3	hw4	hw5
	0.4250204	0.1767780	0.3042561	0.3810884	0.6325982