

assignment_01_ChattapadhyayKausik.R

kausik

2022-09-08

```
# Assignment: ASSIGNMENT 1  
# Name: Chattapadhyay, Kausik  
# Date: 2022-09-07
```

```
## Create a numeric vector with the values of 3, 2, 1 using the `c()` function  
## Assign the value to a variable named `num_vector`  
## Print the vector  
num_vector <- c(3,2,1)  
num_vector
```

```
## [1] 3 2 1
```

```
## Create a character vector with the values of "three", "two", "one" "using the `c()` function  
## Assign the value to a variable named `char_vector`  
## Print the vector  
char_vector <- c("three", "two", "one")  
char_vector
```

```
## [1] "three" "two"    "one"
```

```
## Create a vector called `week1_sleep` representing how many hours slept each night of the week  
## Use the values 6.1, 8.8, 7.7, 6.4, 6.2, 6.9, 6.6  
week1_sleep <- c(6.1, 8.8, 7.7, 6.4, 6.2, 6.9, 6.6)  
week1_sleep
```

```
## [1] 6.1 8.8 7.7 6.4 6.2 6.9 6.6
```

```
## Display the amount of sleep on Tuesday of week 1 by selecting the variable index  
week1_sleep[3]
```

```
## [1] 7.7
```

```
## Create a vector called `week1_sleep_weekdays`  
## Assign the weekday values using indice slicing  
week1_sleep_weekdays <- week1_sleep[2:6]  
week1_sleep_weekdays
```

```
## [1] 8.8 7.7 6.4 6.2 6.9
```

```
## Add the total hours slept in week one using the `sum` function
## Assign the value to variable `total_sleep_week1`
total_sleep_week1 <- sum(week1_sleep)
total_sleep_week1
```

```
## [1] 48.7
```

```
## Create a vector called `week2_sleep` representing how many hours slept each night of the week
## Use the values 7.1, 7.4, 7.9, 6.5, 8.1, 8.2, 8.9
week2_sleep <- c(7.1, 7.4, 7.9, 6.5, 8.1, 8.2, 8.9)
week2_sleep
```

```
## [1] 7.1 7.4 7.9 6.5 8.1 8.2 8.9
```

```
## Add the total hours slept in week two using the sum function
## Assign the value to variable `total_sleep_week2`
total_sleep_week2 <- sum(week2_sleep)
total_sleep_week2
```

```
## [1] 54.1
```

```
## Determine if the total sleep in week 1 is less than week 2 by using the < operator
total_sleep_week1 < total_sleep_week2
```

```
## [1] TRUE
```

```
## Calculate the mean hours slept in week 1 using the `mean()` function
mean(week1_sleep)
```

```
## [1] 6.957143
```

```
## Create a vector called `days` containing the days of the week.
## Start with Sunday and end with Saturday
days <- c("Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday")
```

```
## Assign the names of each day to `week1_sleep` and `week2_sleep` using the `names` function and `days`
names(week1_sleep) <- days
names(week2_sleep) <- days
week1_sleep
```

```
##      Sunday      Monday      Tuesday Wednesday      Thursday      Friday      Saturday
##         6.1         8.8         7.7         6.4         6.2         6.9         6.6
```

```
week2_sleep
```

```
##      Sunday      Monday      Tuesday Wednesday      Thursday      Friday      Saturday
##         7.1         7.4         7.9         6.5         8.1         8.2         8.9
```

```
## Display the amount of sleep on Tuesday of week 1 by selecting the variable name
week1_sleep["Tuesday"]
```

```
## Tuesday
##      7.7
```

```
## Create vector called weekdays from the days vector
weekdays <- days[2:6]
weekdays
```

```
## [1] "Monday"      "Tuesday"    "Wednesday" "Thursday"   "Friday"
```

```
## Create vector called weekends containing Sunday and Saturday
weekends <- days[c(1,7)]
weekends
```

```
## [1] "Sunday"    "Saturday"
```

```
## Calculate the mean about sleep on weekdays for each week
## Assign the values to weekdays1_mean and weekdays2_mean
weekdays1_mean <- mean(week1_sleep[weekdays])
weekdays1_mean
```

```
## [1] 7.2
```

```
weekdays2_mean <- mean(week2_sleep[weekdays])
weekdays2_mean
```

```
## [1] 7.62
```

```
## Using the weekdays1_mean and weekdays2_mean variables,
## see if weekdays1_mean is greater than weekdays2_mean using the `>` operator
weekdays1_mean > weekdays2_mean
```

```
## [1] FALSE
```

```
## Determine how many days in week 1 had over 8 hours of sleep using the `>` operator
length(week1_sleep[week1_sleep > 8])
```

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

```
## Create a matrix from the following three vectors
student01 <- c(100.0, 87.1)
student02 <- c(77.2, 88.9)
student03 <- c(66.3, 87.9)

students_combined <- c(student01, student02, student03)
grades <- matrix(students_combined, byrow = TRUE, nrow = 3)
grades
```

```
##      [,1] [,2]
## [1,] 100.0 87.1
## [2,]  77.2 88.9
## [3,]  66.3 87.9
```

```
## Add a new student row with `rbind()`
student04 <- c(95.2, 94.1)
grades <- rbind(grades, student04=student04)
grades
```

```
##      [,1] [,2]
##      100.0 87.1
##      77.2 88.9
##      66.3 87.9
## student04 95.2 94.1
```

```
## Add a new assignment column with `cbind()`
assignment04 <- c(92.1, 84.3, 75.1, 97.8)
grades <- cbind(grades, assignment04)
grades
```

```
##              assignment04
##      100.0 87.1      92.1
##      77.2 88.9      84.3
##      66.3 87.9      75.1
## student04 95.2 94.1      97.8
```

```
## Add the following names to columns and rows using `rownames()` and `colnames()`
assignments <- c("Assignment 1", "Assignment 2", "Assignment 3")
students <- c("Florinda Baird", "Jinny Foss", "Lou Purvis", "Nola Maloney")

rownames(grades) <- students
colnames(grades) <- assignments
grades
```

```
##              Assignment 1 Assignment 2 Assignment 3
## Florinda Baird      100.0      87.1      92.1
## Jinny Foss          77.2      88.9      84.3
## Lou Purvis          66.3      87.9      75.1
## Nola Maloney        95.2      94.1      97.8
```

```
## Total points for each assignment using `colSums()`
colSums(grades)
```

```
## Assignment 1 Assignment 2 Assignment 3
##      338.7      358.0      349.3
```

```
## Total points for each student using `rowSums()`
rowSums(grades)
```

```
## Florinda Baird      Jinny Foss      Lou Purvis      Nola Maloney
##           279.2           250.4           229.3           287.1
```

```
## Matrix with 10% and add it to grades
weighted_grades <- grades * 0.1 + grades
weighted_grades
```

```
##           Assignment 1 Assignment 2 Assignment 3
## Florinda Baird      110.00      95.81      101.31
## Jinny Foss          84.92      97.79      92.73
## Lou Purvis          72.93      96.69      82.61
## Nola Maloney        104.72     103.51     107.58
```

```
## Create a factor of book genres using the genres_vector
## Assign the factor vector to factor_genre_vector
genres_vector <- c("Fantasy", "Sci-Fi", "Sci-Fi", "Mystery", "Sci-Fi", "Fantasy")
factor_genre_vector <- as.factor(genres_vector)
factor_genre_vector
```

```
## [1] Fantasy Sci-Fi Sci-Fi Mystery Sci-Fi Fantasy
## Levels: Fantasy Mystery Sci-Fi
```

```
## Use the `summary()` function to print a summary of `factor_genre_vector`
summary(factor_genre_vector)
```

```
## Fantasy Mystery Sci-Fi
##           2           1           3
```

```
## Create ordered factor of book recommendations using the recommendations_vector
## `no` is the lowest and `yes` is the highest
recommendations_vector <- c("neutral", "no", "no", "neutral", "yes")
factor_recommendations_vector <- factor(
  recommendations_vector,
  ordered = TRUE,
  levels = c("no", "neutral", "yes")
)
factor_recommendations_vector
```

```
## [1] neutral no      no      neutral yes
## Levels: no < neutral < yes
```

```
## Use the `summary()` function to print a summary of `factor_recommendations_vector`
summary(factor_recommendations_vector)
```

```
##           no neutral      yes
##           2           2           1
```

```
## Using the built-in `mtcars` dataset, view the first few rows using the `head()` function
head(mtcars)
```

```
##           mpg cyl disp  hp drat   wt  qsec vs am gear carb
## Mazda RX4      21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag  21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710     22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive  21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
## Valiant        18.1   6  225 105 2.76 3.460 20.22  1  0    3    1
```

```
## Using the built-in mtcars dataset, view the last few rows using the `tail()` function
tail(mtcars)
```

```
##           mpg cyl  disp  hp drat   wt  qsec vs am gear carb
## Porsche 914-2  26.0   4 120.3  91 4.43 2.140 16.7  0  1    5    2
## Lotus Europa   30.4   4  95.1 113 3.77 1.513 16.9  1  1    5    2
## Ford Pantera L 15.8   8 351.0 264 4.22 3.170 14.5  0  1    5    4
## Ferrari Dino   19.7   6 145.0 175 3.62 2.770 15.5  0  1    5    6
## Maserati Bora   15.0   8 301.0 335 3.54 3.570 14.6  0  1    5    8
## Volvo 142E     21.4   4 121.0 109 4.11 2.780 18.6  1  1    4    2
```

```
## Create a dataframe called characters_df using the following information from LOTR
name <- c("Aragon", "Bilbo", "Frodo", "Galadriel", "Sam", "Gandalf", "Legolas", "Sauron", "Gollum")
race <- c("Men", "Hobbit", "Hobbit", "Elf", "Hobbit", "Maia", "Elf", "Maia", "Hobbit")
in_fellowship <- c(TRUE, FALSE, TRUE, FALSE, TRUE, TRUE, TRUE, FALSE, FALSE)
ring_bearer <- c(FALSE, TRUE, TRUE, FALSE, TRUE, TRUE, FALSE, TRUE, TRUE)
age <- c(88, 129, 51, 7000, 36, 2019, 2931, 7052, 589)

characters_df <- data.frame(name, race, in_fellowship, ring_bearer, age)
characters_df
```

```
##      name    race in_fellowship ring_bearer  age
## 1  Aragon    Men           TRUE          FALSE  88
## 2   Bilbo Hobbit           FALSE           TRUE 129
## 3   Frodo Hobbit           TRUE           TRUE  51
## 4 Galadriel  Elf           FALSE          FALSE 7000
## 5      Sam Hobbit           TRUE           TRUE  36
## 6  Gandalf  Maia           TRUE           TRUE 2019
## 7  Legolas  Elf           TRUE          FALSE 2931
## 8   Sauron  Maia           FALSE           TRUE 7052
## 9   Gollum Hobbit           FALSE           TRUE  589
```

```
## Sorting the characters_df by age using the order function and assign the result to the sorted_characters_df
sorted_characters_df <- characters_df[order(age),]
## Use `head()` to output the first few rows of `sorted_characters_df`
head(sorted_characters_df)
```

```
##      name    race in_fellowship ring_bearer  age
## 5      Sam Hobbit           TRUE           TRUE  36
## 3   Frodo Hobbit           TRUE           TRUE  51
## 1  Aragon    Men           TRUE          FALSE  88
## 2   Bilbo Hobbit           FALSE           TRUE 129
## 9   Gollum Hobbit           FALSE           TRUE 589
## 6  Gandalf  Maia           TRUE           TRUE 2019
```

```
## Select all of the ring bearers from the dataframe and assign it to ringbearers_df
ringbearers_df <- characters_df[characters_df$ring_bearer == TRUE,]
## Use `head()` to output the first few rows of `ringbearers_df`
head(ringbearers_df)
```

```
##      name  race in_fellowship ring_bearer  age
## 2  Bilbo Hobbit      FALSE      TRUE  129
## 3  Frodo Hobbit       TRUE      TRUE   51
## 5    Sam Hobbit       TRUE      TRUE   36
## 6 Gandalf  Maia       TRUE      TRUE 2019
## 8  Sauron  Maia      FALSE      TRUE 7052
## 9  Gollum Hobbit      FALSE      TRUE  589
```