

December 11, 2022

The results below are generated from an R script.

```
# Assignment: ASSIGNMENT 1
# Name: Rodriguez, Felipe
# Date: 2022-12-11

## 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)

## 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)

## Display the amount of sleep on Tuesday of week 1 by selecting the variable index
week1_sleep[2]

## [1] 8.8

## Create a vector called 'week1_sleep_weekdays'
## Assign the weekday values using indice slicing
week1_sleep_weekdays <- week1_sleep[1:7]

## 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)

## 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, 7.2, 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)

## 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) <- c(days)
names(week2_sleep) <- c(days)

## 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]

## Create vector called weekends containing Sunday and Saturday
weekends <- c("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])
weekdays2_mean <- mean(week2_sleep[weekdays])

## 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
week1_sleep[days]

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

## 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 = T, nrow = 3)

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

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

## 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

## 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

## 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)

## 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")
)

## 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)

## 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
```

The R session information (including the OS info, R version and all packages used):

```

sessionInfo()

## R version 4.2.2 (2022-10-31)
## Platform: aarch64-apple-darwin20 (64-bit)
## Running under: macOS Monterey 12.5.1
##
## Matrix products: default
## LAPACK: /Library/Frameworks/R.framework/Versions/4.2-arm64/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods   base
##
## other attached packages:
## [1] knitr_1.41
##
## loaded via a namespace (and not attached):
## [1] Rcpp_1.0.9      digest_0.6.30   lifecycle_1.0.3 DBI_1.1.3       magrittr_2.0.3
## [6] evaluate_0.18   RSQLite_2.2.19  highr_0.9       stringi_1.7.8   cachem_1.0.6
## [11] rlang_1.0.6     cli_3.4.1       blob_1.2.3      vctrs_0.5.1     rmarkdown_2.18
## [16] tools_4.2.2     stringr_1.5.0   bit64_4.0.5     glue_1.6.2      tinytex_0.42
## [21] bit_4.0.5       xfun_0.35       yaml_2.3.6      fastmap_1.1.0   compiler_4.2.2
## [26] memoise_2.0.1   htmltools_0.5.4

Sys.time()

## [1] "2022-12-11 09:20:11 MST"

```