Week2-Assignment2

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Numeric Vector

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

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

Char Vector

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

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

Week1 Sleep Vector

```
# 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
# Week Starts with Sunday. So, Tuesday is index 3
week1_sleep [3]
```

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

Week1 Weekday Sleep

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

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

Week1 Total Sleep

```r
# 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)
# Print the vector
total_sleep_week1
```

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

Week2 Sleep Vector

```r
# 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 Total Sleep

```r
# 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)
# Print the vector
total_sleep_week2
```

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

Week1, Week2 Sleep Comparision

```r
# 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
```

Week1 Mean

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

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

Naming Vectors

```r
# 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")
```

```r
# 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
#display name of Week1
names(week1_sleep)
```

```
## [1] "Sunday"    "Monday"    "Tuesday"   "Wednesday" "Thursday"  "Friday"
## [7] "Saturday"
```

Vector Selection using Name

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

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

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

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

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

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

Week1 and Week2 Sleep Mean

```r
# 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])
# Display Vector
weekdays1_mean
```

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

```r
weekdays2_mean
```

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

Week1, Week2 Mean Comparision

```r
# Determine if the total sleep in week 1 is less than week 2 by using the < operator
weekdays1_mean > weekdays2_mean
```

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

No of days greater than 8 hrs

```r
#Determine how many days in week 1 had over 8 hours of sleep using the `>` operator
sum(week1_sleep > 8,na.rm = TRUE)
```

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

Matrix creation

```r
# 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)
# Combine all the vector
students_combined <- c(student01,student02,student03)
# Create matrix
grades <- matrix(students_combined, byrow = T, nrow = 3)
# Display matrix
grades
```

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

Matrix rbind

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

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

Matrix cbind

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

Matrix Change row and col names

```
# 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
# Display matrix
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
```

Matrix colSums()

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

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

Matrix rowSums()

```r
## 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
```

Weighted Grades

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

Factor Vector

```r
# 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 <- factor(genres_vector)
# Display matrix
factor_genre_vector
```

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

Summary Vector

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

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

Ordered Factor

```
## 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","yes","neutral")
)
# Display Matrix
factor_recommendations_vector
```

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

Summary Vector

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

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

Head Function

```
## 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
```

Tail Function

```
## 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
```

Dataframes

```
# 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)
#Data frame creation using Names
characters_df <- data.frame(Name=name,Race=race,Fellowship=in_fellowship,Ring=ring_bearer,Age=age)
#Display Data Frame
characters_df
```

```
##        Name   Race Fellowship  Ring  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
```

Dataframes Sorting

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

```
##      Name   Race Fellowship  Ring  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
```

Dataframes Selection

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

```
##      Name   Race Fellowship Ring  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
```