

## Assignment: ASSIGNMENT 2

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```
## Check your current working directory using `getwd()`
dir <- getwd()

## List the contents of the working directory with the `dir()` function
dir(path = getwd())

## [1] "assignment_02_expected_output.txt" "assignment_02_RamaniAarti.html"
## [3] "assignment_02_RamaniAarti.pdf"      "assignment_02_RamaniAarti.pdf.pdf"
## [5] "assignment_02_RamaniAarti.R"        "assignment_02_RamaniAarti.rmd"

## If the current directory does not contain the `data` directory,
## set the working directory to project root folder (the folder should contain
## the `data` ##directory Use `setwd()` if needed
setwd("C:/Masters/GitHub/Winter2022/Ramani-DSC520")

## Load the file `data/tidynomicon/person.csv` to `person_df1` using `read.csv`
## Examine the structure of `person_df1` using `str()`
person_df1 <- read.csv(file="data/tidynomicon/person.csv", header = TRUE)
str(person_df1)

## 'data.frame':    5 obs. of  3 variables:
## $ person_id      : chr  "dyer" "pb" "lake" "roe" ...
## $ personal_name: chr  "William" "Frank" "Anderson" "Valentina" ...
## $ family_name    : chr  "Dyer" "Pabodie" "Lake" "Roerich" ...

## R interpreted names as factors, which is not the behavior we want
## Load the same file to person_df2 using `read.csv` and setting
## `stringsAsFactors` to `FALSE`
## Examine the structure of `person_df2` using `str()`
person_df2 <- read.csv(file="data/tidynomicon/person.csv",header=TRUE,sep=",",
stringsAsFactors=FALSE)
str(person_df2)

## 'data.frame':    5 obs. of  3 variables:
## $ person_id      : chr  "dyer" "pb" "lake" "roe" ...
## $ personal_name: chr  "William" "Frank" "Anderson" "Valentina" ...
## $ family_name    : chr  "Dyer" "Pabodie" "Lake" "Roerich" ...

## Read the file `data/scores.csv` to `scores_df`
## Display summary statistics using the `summary()` function
filepath <- "data/scores.csv"
scores_df <- read.csv(file=filepath,header=TRUE,sep=",",stringsAsFactors=FALSE)
summary(scores_df)
```

```
##      Count      Score      Section
## Min.   :10.00  Min.   :200.0  Length:38
## 1st Qu.:10.00  1st Qu.:300.0  Class :character
## Median :10.00  Median :322.5  Mode  :character
## Mean   :14.47  Mean   :317.5
## 3rd Qu.:20.00  3rd Qu.:357.5
## Max.   :30.00  Max.   :395.0
```

```
## Load the `readxl` library
#install.packages("readxl")
library(readxl)

## Using the excel_sheets() function from the `readxl` package,
## list the worksheets from the file `data/G04ResultsDetail2004-11-02.xls`

filepath <- "data/G04ResultsDetail2004-11-02.xls"
excel_sheets(filepath)
```

```
## [1] "Instructions"      "Voter Turnout"      "President"
## [4] "House of Rep"      "Co Clerk"           "Co Reg Deeds"
## [7] "Co Public Defender" "Co Comm 1"          "Co Comm 3"
## [10] "Co Comm 5"         "Co Comm 7"          "St Bd of Ed 2"
## [13] "St Bd of Ed 4"      "Legislature 5"       "Legislature 7"
## [16] "Legislature 9"      "Legislature 11"      "Legislature 13"
## [19] "Legislature 23"     "Legislature 31"      "Legislature 39"
## [22] "MCC 1"             "MCC 2"              "MCC 3"
## [25] "MCC 4"             "OPPD"               "MUD"
## [28] "NRD 3"             "NRD 5"              "NRD 7"
## [31] "NRD 9"             "OPS 2"              "OPS 4"
## [34] "OPS 6"             "OPS 8"              "OPS 10"
## [37] "OPS 11"            "OPS 12"             "ESU 2"
## [40] "ESU 3"             "Arlington Sch 24"    "Bennington Sch 59"
## [43] "Elkhorn Sch 10"     "Fremont Sch 1"       "Ft Calhoun Sch 3"
## [46] "Gretna Sch 37"      "Millard Sch 17"      "Ralston Sch 54"
## [49] "Valley Sch 33"      "Waterloo Sch 11"     "Bennington Mayor"
## [52] "Elkhorn Mayor"      "Valley Mayor"        "Ralston Mayor"
## [55] "Ralston Library Bd" "Bennington City Cnc 1" "Bennington City Cnc 2"
## [58] "Elkhorn City Cnc A" "Elkhorn City Cnc B"  "Elkhorn City Cnc C"
## [61] "Ralston City Cnc 1" "Ralston City Cnc 2"  "Ralston City Cnc 6"
## [64] "Waterloo Bd Trustees" "Valley City Cnc"     "Amendment 1"
## [67] "Amendment 2"        "Amendment 3"         "Amendment 4"
## [70] "Initiative 417"     "Initiative 418"      "Initiative 419"
## [73] "Initiative 420"
```

```
## Using the `read_excel` function, read the Voter Turnout sheet
## from the `data/G04ResultsDetail2004-11-02.xls`
## Assign the data to the `voter_turnout_df1`
## The header is in the second row, so make sure to skip the first row
## Examine the structure of `voter_turnout_df1` using `str()`

filepath <- "data/G04ResultsDetail2004-11-02.xls"
voter_turnout_df1 <- read_excel(filepath, "Voter Turnout", skip=1, col_names=TRUE)
str(voter_turnout_df1)
```

```
## tibble [342 x 4] (S3: tbl_df/tbl/data.frame)
## $ Ward Precinct      : chr [1:342] "01-01" "01-02" "01-03" "01-04" ...
## $ Ballots Cast       : num [1:342] 421 443 705 827 527 323 358 410 440 500 ...
## $ Registered Voters: num [1:342] 678 691 1148 1308 978 ...
## $ Voter Turnout      : num [1:342] 0.621 0.641 0.614 0.632 0.539 ...

## Using the `read_excel()` function, read the Voter Turnout sheet
## from `data/G04ResultsDetail2004-11-02.xls`
## Skip the first two rows and manually assign the columns using `col_names`
## Use the names "ward_precint", "ballots_cast", "registered_voters", ##"voter_turnout"
## Assign the data to the `voter_turnout_df2`
## Examine the structure of `voter_turnout_df2` using `str()`

filepath <- "data/G04ResultsDetail2004-11-02.xls"
colnames = c("ward_precint", "ballots_cast", "registered_voters", "voter_turnout")
voter_turnout_df2 <- read_excel(filepath, "Voter Turnout", skip=2, col_names=colnames)
str(voter_turnout_df2)
```

```
## tibble [342 x 4] (S3: tbl_df/tbl/data.frame)
## $ ward_precint      : chr [1:342] "01-01" "01-02" "01-03" "01-04" ...
## $ ballots_cast      : num [1:342] 421 443 705 827 527 323 358 410 440 500 ...
## $ registered_voters: num [1:342] 678 691 1148 1308 978 ...
## $ voter_turnout     : num [1:342] 0.621 0.641 0.614 0.632 0.539 ...
```

```
## Load the `DBI` library
##install.packages("DBI")
library(DBI)
##install.packages("RSQLite")
library(RSQLite)
## Create a database connection to `data/tidynomicon/example.db` using the
## dbConnect() function. The first argument is the database driver which in this
## case is `RSQLite::SQLite()` The second argument is the path to the database file
## Assign the connection to `db` variable
filepath <- "data/tidynomicon/example.db"
db <- dbConnect(RSQLite::SQLite(), filepath)

## Query the Person table using the `dbGetQuery` function and the
## `SELECT * FROM PERSON;` SQL statement
## Assign the result to the `person_df` variable
## Use `head()` to look at the first few rows of the `person_df` dataframe
SQLStatement <- "SELECT * FROM PERSON;"
person_df <- dbGetQuery(db, SQLStatement)
head(person_df)
```

```
##   person_id personal_name family_name
## 1      dyer      William      Dyer
## 2       pb       Frank    Pabodie
## 3      lake      Anderson      Lake
## 4       roe    Valentina    Roerich
## 5  danforth       Frank  Danforth
```

```
## List the tables using the `dbListTables()` function
## Assign the result to the `table_names` variable
table_names <- dbListTables(db)
## setNames(nm = dbListTables(db))

## Read all of the tables at once using the `lapply` function and assign the
## to result the `tables` variable
## Use `table_names`, `dbReadTable`, and `conn = db` as arguments
## Print out the tables
tables <- lapply(table_names, dbReadTable, conn = db)

## Warning in result_fetch(res@ptr, n = n): Column 'reading': mixed type, first
## seen values of type real, coercing other values of type string

## tables
print(tables)
```

```
## [[1]]
##   visit_id person_id quantity reading
## 1      619      dyer      rad    9.82
## 2      619      dyer      sal    0.13
## 3      622      dyer      rad    7.80
## 4      622      dyer      sal    0.09
## 5      734       pb      rad    8.41
## 6      734      lake      sal    0.05
## 7      734       pb      temp  -21.50
## 8      735       pb      rad    7.22
## 9      735    <NA>      sal    0.06
## 10     735    <NA>      temp  -26.00
## 11     751       pb      rad    4.35
## 12     751       pb      temp  -18.50
## 13     751      lake      sal    0.00
## 14     752      lake      rad    2.19
## 15     752      lake      sal    0.09
## 16     752      lake      temp  -16.00
## 17     752       roe      sal   41.60
## 18     837      lake      rad    1.46
## 19     837      lake      sal    0.21
## 20     837       roe      sal   22.50
## 21     844       roe      rad   11.25
##
## [[2]]
##   person_id personal_name family_name
## 1      dyer      William      Dyer
## 2       pb       Frank     Pabodie
## 3      lake     Anderson      Lake
## 4       roe    Valentina    Roerich
## 5 danforth       Frank   Danforth
##
## [[3]]
##   site_id latitude longitude
## 1    DR-1   -49.85   -128.57
## 2    DR-3   -47.15   -126.72
```

```
## 3   MSK-4   -48.87   -123.40
##
## [[4]]
##   visit_id site_id visit_date
## 1      619    DR-1 1927-02-08
## 2      622    DR-1 1927-02-10
## 3      734    DR-3 1930-01-07
## 4      735    DR-3 1930-01-12
## 5      751    DR-3 1930-02-26
## 6      752    DR-3      <NA>
## 7      837   MSK-4 1932-01-14
## 8      844    DR-1 1932-03-22
```

```
## Use the `dbDisconnect` function to disconnect from the database
dbDisconnect(db)

## Import the `jsonlite` library

#install.packages("jsonlite")
library(jsonlite)

## Convert the scores_df dataframe to JSON using the `toJSON()` function
toJSON(scores_df)
```

```
## [{"Count":10,"Score":200,"Section":"Sports"}, {"Count":10,"Score":205,"Section":"Sports"}, {"Count":20
```

```
## Convert the scores dataframe to JSON using the `toJSON()` function with the `pretty=TRUE` option
toJSON(scores_df, pretty=TRUE)
```

```
## [
##   {
##     "Count": 10,
##     "Score": 200,
##     "Section": "Sports"
##   },
##   {
##     "Count": 10,
##     "Score": 205,
##     "Section": "Sports"
##   },
##   {
##     "Count": 20,
##     "Score": 235,
##     "Section": "Sports"
##   },
##   {
##     "Count": 10,
##     "Score": 240,
##     "Section": "Sports"
##   },
##   {
##     "Count": 10,
##     "Score": 250,
```

```

##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 265,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 275,
##      "Section": "Regular"
##    },
##    {
##      "Count": 30,
##      "Score": 285,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 295,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 300,
##      "Section": "Regular"
##    },
##    {
##      "Count": 20,
##      "Score": 300,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 305,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 305,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 310,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 310,
##      "Section": "Sports"
##    },
##    {
##      "Count": 20,

```

```

##      "Score": 320,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 305,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 315,
##      "Section": "Sports"
##    },
##    {
##      "Count": 20,
##      "Score": 320,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 325,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 325,
##      "Section": "Sports"
##    },
##    {
##      "Count": 20,
##      "Score": 330,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 330,
##      "Section": "Sports"
##    },
##    {
##      "Count": 30,
##      "Score": 335,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 335,
##      "Section": "Regular"
##    },
##    {
##      "Count": 20,
##      "Score": 340,
##      "Section": "Regular"
##    },
##    {

```

```

##      "Count": 10,
##      "Score": 340,
##      "Section": "Sports"
##    },
##    {
##      "Count": 30,
##      "Score": 350,
##      "Section": "Regular"
##    },
##    {
##      "Count": 20,
##      "Score": 360,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 360,
##      "Section": "Sports"
##    },
##    {
##      "Count": 20,
##      "Score": 365,
##      "Section": "Regular"
##    },
##    {
##      "Count": 20,
##      "Score": 365,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 370,
##      "Section": "Sports"
##    },
##    {
##      "Count": 10,
##      "Score": 370,
##      "Section": "Regular"
##    },
##    {
##      "Count": 20,
##      "Score": 375,
##      "Section": "Regular"
##    },
##    {
##      "Count": 10,
##      "Score": 375,
##      "Section": "Sports"
##    },
##    {
##      "Count": 20,
##      "Score": 380,
##      "Section": "Regular"
##    },
##    },

```



```
## {  
##   "Count": 10,  
##   "Score": 395,  
##   "Section": "Sports"  
## }  
## ]
```