This will use the "tidyverse" suite of packages

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------- tidyverse 1.2.1 --
```

```
## v ggplot2 3.1.0     v purrr   0.2.5
## v tibble  2.0.1     v dplyr   0.7.8
## v tidyr   0.8.2     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.3.0
```

```
## -- Conflicts ------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

Exercise 1

Consider the following:

```
vector = "Good morning! "
```

How many characters are in "vector" ?

Exercise 2

If:

```
x <- c("Open", "Sesame ")
y <- c("You","Suck.")
nchar(x)
```

```
## [1] 4 7
```

Then, what is the value of:

```
nchar(c(x,y))
```

Exercise 3

If:

```
m <- "The capital of the United States is Washington, D.C."
unlist(str_split(m," "))
```

```
## [1] "The"         "capital"     "of"          "the"         "United"
## [6] "States"      "is"          "Washington," "D.C."
```

. . . And:

```
str_trunc(m,11, ellipsis = "")
```

```
## [1] "The capital"
```

. . . And:

```
str_sub(m,start = 13,end = 25)
```

```
## [1] "of the United"
```

Come up with a way to extract "Washington" from m.

Exercise 4

If:

```
paste(m,", you idiot!", sep = "")
```

```
## [1] "The capital of the United States is Washington, D.C., you idiot!"
```

Then come up with a way to use the vector "m" to paste together "United States, you idiot!"

Exercise 5

If:

```
q = "What is the capital of the United States?"
c(q, paste0(m,", you idiot!"))
```

```
## [1] "What is the capital of the United States?"
## [2] "The capital of the United States is Washington, D.C., you idiot!"
```

Then, what will be the value of "d" for:

```
d = str_split(c(q, paste0(m,", you idiot!")), pattern = " ")
```

Exercise 6

If:

```
c(unlist(map(d,1)),"Heck!?")
```

```
## [1] "What"   "The"    "Heck!?"
```

And:

```
unlist(map(d,2))
```

```
## [1] "is"      "capital"
```

Then what does map(d,1) do? . . . And why did I wrap it in unlist()

Exercise 7

If:

```
t = c("a","ab","c","d","e","fa")
grep("a",t)
```

```
## [1] 1 2 6
```

```
grepl("a",t)
```

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

. . . And:

```
f = c("b","ca","at","c","e","aa")
v = list(f,t)
v
```

```
## [[1]]
## [1] "b"  "ca" "at" "c"  "e"  "aa"
##
## [[2]]
## [1] "a"  "ab" "c"  "d"  "e"  "fa"
```

```
grep("a",v)
```

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

```
grepl("a",v)
```

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

Then what will be the values of the following two expressions?

```
grep("What",d)
grepl("What",d)
```

Exercise 8

If:

```
q
```

```
## [1] "What is the capital of the United States?"
```

```
str_replace(q,"a","A")
```

```
## [1] "WhAt is the capital of the United States?"
```

Then write some code to change ALL spaces to underscores "_" in the vector q