R for Text Mining Coding Examples

These are only for reference, as copying and pasting can cause some complications for RStudio

Getting Started - Word Search

Data Management Starts Now

Easy maths

Hello World

Data types

Easy Plot and Getting Help

Subsetting and Indices: or, getting to a value

Bonus: Practice and Subsetting

Regular Expressions in R

More REGEX

REGEX Practice

Let's look at Moby Dick - importing your own data

Let's look at a plot of Moby Dick

Index/Glossary of Functions and Operators

- A Quick Glossary of R Objects
- R For Text Mining - Coding Examples (mostly in order of their use)

Getting Started - Word Search

Find the following:
ahab, corpus ,dog, fox, lazy ,mining, quick, rstudio, text, whale

```
r k s y k o n w u a t y v c e i o y z y
q s v x m g s q n w z y o u q l c x g u
f v t u g z n e f a x r m k i n a d f x
d q v u s q j m l c p a t i o q f h g c
l r j r d e i i y u i f i u t m x z w b
l z j l c i f n s k g z n v x j q x s r
z f z l d d o i q k m l s q e v f s m s
k t d q o i e n a h a b l g t c i o x k
e p w k g v y g k c i u q a n g s a x z
v m n b s n m n u d h f o q v z o c e t
```

Data Management Starts Now

Use this table to keep track of different objects you make, what kind it is, and description/comments. It is the draft of your data dictionary.

Date	Object	Type	Comments

Last backup:_____

Easy maths

```
#this is a comment

#Let's do some math. Run each of these lines of code in your script:
2+2
100/5
33*3
1 > 0

#level up! Use the assignment operator and range operator to build a
bigger object

x <- 1:4
```

Hello World

```
print("Hello World")

#level up! We can build an object here too, with a different kind of
data inside

greeting<-"Hello World"

print(greeting)

#well done on a classic exercise!
```

Data types

Numeric - integers, float (decimals), continuous

Categorical - Economy plane ticket, Business plane ticket, First Class Plane Ticket

Spatial - coordinates, 101 Trustee lane

Boolean - TRUE, FALSE

String - "Call Me Ishmael."

Timeseries - data with built in understanding over time (rise of minimum wage, etc)

Easy Plot and Getting Help

```
#I'd like a scatter plot - comments do not calculate

plot(1:20)

#level up, feed additional arguments to the function
plot(1:20, type="s")

#but Adrienne, how did you know that?
#let's see the help documentation
?help
?plot

#double the ? to force a search of the documentation

??plots
```

Objects in R

See Glossary-- after the exercise!

Subsetting and Indices: or, getting to a value

```
#R indexing starts at 1 (not 0)
#remember, building an object in R requires the <- 'assignment
operator'

colors <- c('red', 'green', 'blue')

#that object has an index, so we can access the values based on a
number
#the square brackets, directly next to your object, indicate
subsetting

colors[1]
#should return 'red'
```

Bonus: Practice and Subsetting

Prompt:

```
# build the 2 vectors, your favorite food and favorite numbers.
# Check them
#practice subsetting. R indices start with 1.

f[2]
n[1]

#level up. Try this prompt with your own vector subsets to print a
funny sentence

print(c("I’m going to the picnic and I’m bringing",n[1],f[1]))
```

Sample Answer:

```
# build the 2 vectors, your favorite food and favorite numbers.

f <- c(“cookies”, “apples”, “chocolate”, “salmon”, “tea”)
n <- c(1, 8, 111, a kajillion, 42)

# Check them by running them on their lines
#practice subsetting. R indices start with 1.

f[2]
n[1]

#pull a sample into the prompt.

print(c("‘I’m going to the picnic and I’m bringing",n[1],f[2]))
```

Regular Expressions in R

```
#“Regular expressions” or regex is a set of tools for sifting through
text data.

#Symbols represent patterns or characters.
#So we can put together a series of symbols and characters to match
patterns.
```

```
#Let's start with a short vector we made ourselves

fox <- "The quick brown fox jumped over the lazy hound dog."

#how long is this (how many values)? What type of data is it?

class(fox)

#level up
#we don't want cases!

fox <- tolower(fox)
```

More REGEX

```
#In reality, we want each word to be a value in this object
?strsplit

fox1 <- strsplit(fox,"\\W")

#how long is this now? But wait, is it still a character vector?

class(fox1)

#nope! strsplit makes lists. We want character type data
#Unlisting it and assigning (that unlisted object) will do the trick

fox1 <- unlist(fox1)
fox1
```

REGEX Practice

```
#Let's practice with REGEX
?grep
#let's start with words that start with f

grep('^f', fox1)

#Value return is indexed. I can assign it to something

animals <- fox1[4]
animals

#Can you call out the words that start with d?
```

```
#Can you call out the words that end with d?
#What about any string that matches ‘o’ in the middle?
```

Answers:

```
#All highlighted text at the REGEX operators that allow for string
matching

#starts with f or d
grep(‘^f’, fox1)
grep('^d', fox1)
animals <- fox1[10]
animals

#ends with d
grep('d$', fox1)

#strings that match ‘o’ in the middle
grep('.o.', fox1)
```

Let’s look at Moby Dick - importing your own data

```
#visit https://tinyurl.com/TinkerR2019 and visit the data folder
# download the moby_data.RData file to your desktop. Don’t open!
#get the file directory for your file names to use in the load() command

load(“~/moby_data.RData”)
moby_words

#take a look - how long is this book?
length(moby_words))


#now to crunch it, how do we want to do that?
#create a vector holding the index of words 1 to 214944
novel_timeline <- seq(1:length(moby_words))

#How many words start with a?
grep('^a', moby_words)

#that’s a lot,all index values, let’s store it somewhere managable!
starts_a <- grep('^a', moby_words)

#now I can subset with those index values and get the actual words (the
values at those index points) into an object
```

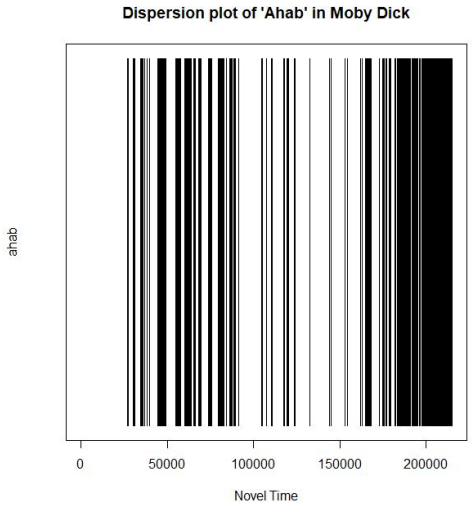
```
moby_words[starts_a]
a_words <- moby_words[starts_a]
```

Let's look at a plot of Moby Dick

```
#how often does ahab appear?
which(moby_words == "ahab")
ahab_index <- which(moby_words == "ahab")

#with a novel plotline and an 'ahab index'
we can do a dispersion plot of 'ahab'
across the story
#in our plot, x axes will be novel
timeline, y will be Ahab occurrences, but
it must be the same length as the x

y <- rep(NA, 214944)
y[ahab_index] <- 1
plot(x=novel_timeline, y=y, main="Title",
xlab="Novel Time", ylab="ahab", type='h',
ylim=c(0,1), yaxt='n')
```



BONUS - Frequently used words?

```
#what are the most frequently used words?
#make a table object with table function
moby_freqs <- table(moby_words)

#sort the table by highest to lowest (decreasing), and assign that to
the object

moby_freqs <-sort(moby_freqs, decreasing=T)

#subset the top 20 values in that table
moby_freqs[1:20]
#interesting, let's plot the more exciting words
plot(moby_freqs[c(2,5:12, 15:25)])
```

Index/Glossary of Functions and Operators

A Quick Glossary of R Objects

Object	Description	Example
Vector	a group of variables of the same value type can hold primitive values (numbers, T/F, text,)	greeting - 3 values: *“call”,”me”,”ishmael”*
matrix	a vector represented and accessible in two dimensions, must be the same data types within	a matrix of page numbers *1 2 3* *16 20 17*
dataframe	a set of data with a number of rows and columns, not necessarily the same type. A spreadsheet or table type thing.	Moby_df - 2 observations of 2 variables *age reading level* *2 NA* 10 5th grade
list	a generic vector that is allowed to include different types of objects, including other lists	a list of chapters I read: *Loomings, 2, 3, 4:6*

R For Text Mining - Coding Examples (mostly in order of their use)

Function	Description	Example
print()	Displays the string or full variable named in the console	print(“Hello World”)
<-	Assignment Operator (name of object on left, values within on right)	greeting <- “Hello World” x <- 1:4
plot()	Creates a visual graphic of the data or function named	plot(1:20)

c() #Combine	Combines the listed items into a vector	c(1, 2, 3, 4)
?	Help documentation for value following to see R documentation on a function, object, dataset, etc.	?plot
[ ]	Square brackets appended to an object will subset the row, column, indexed items in that obect	iris[42, 5]
install.packages()	Installs a new package to your machine, typically fetching packages automatically. You must then call them into the working environment with 'library()'	install.packages("fun")
class()	Returns the class or datatype of the object	class(fox)
tolower()	Takes a character vector and returns the same with all lower case	fox <- tolower(fox)
strsplit()	This function takes strings and splits them per the REGEX pattern you specify	strsplit(fox, "\\W")
unlist()	This function will return the unlisted values of the list fed into it . you have to assign a new object to get it to stick around	fox1 <- unlist(fox1)
grep()	This function searches the given vector for matches in the pattern. It takes many arguments	grep('^f', fox1)
load()	This function loads up a data object from a directory you specify	load("~/moby_data.RData")
seq()	This is sequence generation,	ten_count <- seq(1:10)

	and it will build a sequence between the values you specify, in the pattern dictated. Typically builds an object	
which()	Returns a boolean T or F off the logical index argument fed	which(moby_words == "ahab")
rep()	Replicate. It builds an object off the given value, for the pattern and length specified	y <- rep(NA, 214944)
plot()	Base plotting function in R, takes many arguments. Data fed must be of the same length/dimensions, or you will get an error. Defaults to x=y for x values	plot(1:20)