

Homework 4: Writing Functions, Querying an API, and Tidy-Style Functions

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```
#|message=FALSE
#|warning=FALSE

# Load in necessary packages
suppressPackageStartupMessages(library(tidyverse))
suppressPackageStartupMessages(library(httr))
suppressPackageStartupMessages(library(jsonlite))
```

Task 1: Conceptual Questions

1. What is the purpose of the `lapply()` function? What is the equivalent `purrr` function?

```
t1_q1 <- "The `lapply()` function is used to apply functions to lists. For example, if we used the function `mean()` within the `lapply()`, we could apply that function to each list element. The equivalent function in the `purrr` package is `map()`, which can be applied to 1 list. There is also `map2()` which can apply functions to 2 lists and then `pmap()` can apply the function to any number of lists"
```

2. Suppose we have a list called `my_list`. Each element of the list is a numeric data frame (all columns are numeric). We want to use `lapply()` to run the code `cor(numeric_matrix, method = "kendall")` on each element of the list. Write code to do this below!

```
#make a numeric list

df_1 <- data.frame(a = 1:5, b = 11:15)
df_2 <- data.frame(c = rnorm(5), d = rnorm(5))
df_3 <- data.frame(e = rnorm(4), f = c(2, 5, 22, 23))

my_list <- list(df_1, df_2, df_3)

t1_q2 <- lapply(my_list, FUN = cor, method = "kendall")
```

3. What are two advantages of using purrr functions instead of the BaseR apply family?

```
t1_q3 <- "One advantage of `purrr` over the apply family is that it provides a
`tidyverse` alternative to the `apply()` family, allowing for consistent syntax
and the output is more predictable. Another advantage is that `purrr` allows you
shorthand to make anonymous functions."
```

4. What is a side-effect function?

```
t1_q4 <- "Side-effect functions are functions that produce something but do not
change the data. Some examples of side-effect functions include `print()`,
`write_csv()`, or `plot()`"
```

5. Why can you name a variable sd in a function and not cause any issues with the sd function?

```
t1_q5 <- "You can name a variable `sd` within a function and not cause any issues
with the `sd` function due to Lexical Scoping. When a function is called, the
environment that the function is performed in is temporary. Once the function is
complete, that variable created within the function is not saved. It only works
within the local function and not the `globalenv()`."
```

Creating a list with the above question answers

```
task1_answer_list <- list(t1_q1, t1_q2, t1_q3, t1_q4, t1_q5)
```

Task 2: Writing R Functions

Question 1: Create a function to calculate root mean square error

```
#function to getRMSE - first input will be response, 2nd will be predictions, and add
#elipses
getRMSE <- function(resp, pred, ...) {
  #start by getting the squared error
  sq_error <- (resp - pred)^2
  #take mean of squared error, then the square root
  #add ... to allow for additional arguments
  rmse <- sqrt(mean(sq_error, ...))
  #return the root mean square error
  return(rmse)
}
```

Question 2: Testing our function to get the Root Mean Square Error

Let's create some response and predicted values

```
set.seed(10)
n <- 100
x <- runif(n)
resp <- 3 + 10*x + rnorm(n)
pred <- predict(lm(resp ~ x), data.frame(x))

getRMSE(resp, pred)
```

```
[1] 0.9581677
```

Now will replace 2 response values with missing

```
resp[c(5, 9)] <- NA_real_
```

Let's use my function without specifying how to handle missing values

```
getRMSE(resp, pred)
```

```
[1] NA
```

Let's retest the function specifying how to handle missing values

```
getRMSE(resp, pred, na.rm=T)
```

```
[1] 0.9627749
```

Question 3: Now let's create a function to calculate the mean absolute deviation.

```
#function to get the Mean absolute deviation - first input will be response,
#2nd will be predictions, and add ellipses
getMAE <- function(resp, pred, ...) {
  #take the mean of the absolute value of response minus predicted
  mean_abs_dev <- mean(abs((resp - pred)),...)

  #return the mean absolute deviation
  return(mean_abs_dev)
}
```

Question 4: Testing our function to get the Mean Absolute Deviation

Let's create some response and predicted values

```
set.seed(10)
n <- 100
x <- runif(n)
resp <- 3 + 10*x + rnorm(n)
pred <- predict(lm(resp ~ x), data.frame(x))

getMAE(resp, pred)
```

```
[1] 0.8155776
```

Now will replace 2 response values with missing

```
resp[c(12, 33)] <- NA_real_
```

Let's use my function without specifying how to handle missing values

```
getMAE(resp, pred)
```

```
[1] NA
```

Let's retest the function specifying how to handle missing values

```
getMAE(resp, pred, na.rm=T)
```

```
[1] 0.8185156
```

Question 5: Create a wrapper function to return both the Root Mean Square Error and Mean Absolute Deviation with a single call

```
pred_wrapper <- function(resp, pred, metrics = c("rmse", "mae"), ...) {  
  #first, need to check if input is a vector, atomic, and numeric  
  #will do first for resp input, then for pred input  
  
  if (!(is.vector(resp) && is.atomic(resp) && is.numeric(resp))) {  
    message("Error: 'resp' input must be a numeric atomic vector")  
    return(NULL)  
  }  
  
  if (!(is.vector(pred) && is.atomic(pred) && is.numeric(pred))) {  
    message("Error: 'pred' input must be a numeric atomic vector")  
    return(NULL)  
  }  
  #create a list to store the results  
  
  results <- list()  
  
  #Use root mean square function  
  if ("rmse" %in% metrics) {  
    results[["Root Mean Square Error"]] <- getRMSE(resp, pred, ...)  
  }  
}
```

```

}

#use mean absolute deviation function
if ("mae" %in% metrics){
  results[["Mean Absolute Deviation"]] <- getMAE(resp, pred, ...)
}

#return the list of results
return(results)
}

```

Question 6: Testing the Wrapper Function

Let's create some response and predicted values

```

set.seed(10)
n <- 100
x <- runif(n)
resp <- 3 + 10*x + rnorm(n)
pred <- predict(lm(resp ~ x), data.frame(x))

```

Let's test the wrapper function first by calling each metric by themselves

First will be for Root Mean Square Error

```

pred_wrapper(resp,pred, metrics = "rmse")

```

```

$`Root Mean Square Error`
[1] 0.9581677

```

Next we will call for Mean Absolute Deviation

```

pred_wrapper(resp,pred, metrics = "mae")

```

```

$`Mean Absolute Deviation`
[1] 0.8155776

```

Now let's call both metrics

```
pred_wrapper(resp,pred, metrics = c("rmse", "mae"))
```

```
$`Root Mean Square Error`  
[1] 0.9581677
```

```
$`Mean Absolute Deviation`  
[1] 0.8155776
```

Now we are going to change 2 response values to missing

```
resp[c(1, 82)] <- NA_real_
```

We will test using the original function, followed by testing indicating to remove missing values

```
pred_wrapper(resp,pred, metrics = c("rmse", "mae"))
```

```
$`Root Mean Square Error`  
[1] NA
```

```
$`Mean Absolute Deviation`  
[1] NA
```

```
pred_wrapper(resp,pred, metrics = c("rmse", "mae"), na.rm=TRUE)
```

```
$`Root Mean Square Error`  
[1] 0.9649399
```

```
$`Mean Absolute Deviation`  
[1] 0.8214778
```

Now, let's create a data frame. We will then test what happens when that is input into the function

```
test_df <- data.frame(  
  letters = 1:6,  
  age = sample(18:45, 6)  
)
```


Next, parse the data using jsonlite package

```
parsed_sports_headlines <- fromJSON(rawToChar(id_sports_headlines$content))
sports_headlines <- as_tibble(parsed_sports_headlines)
sports_headlines$articles
```

	source.id	source.name
1	espn	ESPN
2	espn	ESPN
3	espn	ESPN
4	<NA>	CNET
5	espn	ESPN
6	<NA>	HYPEBEAST
7	<NA>	MacRumors
8	espn	ESPN
9	<NA>	Rolling Stone
10	<NA>	HYPEBEAST
11	<NA>	TMZ
12	<NA>	/FILM
13	lenta	Lenta
14	espn	ESPN
15	espn	ESPN
16	<NA>	The New Yorker
17	<NA>	Search Engine Journal
18	espn	ESPN
19	<NA>	Forbes
20	<NA>	HYPEBEAST
21	<NA>	Forbes
22	<NA>	Forbes
23	time	Time
24	<NA>	Forbes
25	<NA>	Forbes
26	<NA>	Forbes
27	espn	ESPN
28	espn	ESPN
29	<NA>	Forbes
30	<NA>	Forbes
31	<NA>	Forbes
32	<NA>	Forbes
33	<NA>	Biztoc.com
34	espn	ESPN
35	<NA>	MLB Trade Rumors

36	<NA>	Forbes
37	fox-sports	Fox Sports
38	espn	ESPN
39	espn	ESPN
40	espn	ESPN
41	<NA>	MLB Trade Rumors
42	<NA>	MLB Trade Rumors
43	<NA>	Forbes
44	<NA>	MLB Trade Rumors
45	<NA>	MLB Trade Rumors
46	fox-sports	Fox Sports
47	fox-sports	Fox Sports
48	<NA>	MLB Trade Rumors
49	<NA>	TMZ
50	fox-sports	Fox Sports
51	fox-sports	Fox Sports
52	espn	ESPN
53	fox-sports	Fox Sports
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57	fox-sports	Fox Sports
58	espn	ESPN
59	fox-sports	Fox Sports
60	fox-sports	Fox Sports
61	espn	ESPN
62	espn	ESPN
63	<NA>	Deadline
64	espn	ESPN
65	espn	ESPN
66	fox-sports	Fox Sports
67	fox-sports	Fox Sports
68	espn	ESPN
69	espn	ESPN
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72	espn	ESPN
73	espn	ESPN
74	<NA>	MLB Trade Rumors
75	espn	ESPN
76	fox-sports	Fox Sports
77	fox-sports	Fox Sports
78	espn	ESPN

79	<NA>	Cracked.com
80	<NA>	MLB Trade Rumors
81	<NA>	MLB Trade Rumors
82	<NA>	MLB Trade Rumors
83	<NA>	MLB Trade Rumors
84	<NA>	Highsnobiety
85	<NA>	Highsnobiety
86	fox-sports	Fox Sports
87	fox-sports	Fox Sports
88	espn	ESPN
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Dobbins defends claim father played for Yan
Sources: Yankees closer Weaver out 4-6 w
Aaron Judge and Shohei Ohtani both blast home runs in first inning of Yankees-Dodg
Today's NYT Connections: Sports Edition Hints and Answers for May 20, +
Judge, 18 HRs, insists he's still 'work in progr
This Nike Dunk Low Roots for the "New York Yank
Apple TV+ Announces MLB Friday Night Baseball Schedule for J
MLB reveals uniforms for 2025 All-Star Game, Home Run De
Yankees vs. Dodgers: How to Watch the World Series Rema
Feid Surprises His Fans With 'FERXXO VOL X: Sagra
Cody Bellinger's Dad Says Yankees' Offseason Haul Better Than Keeping Juan S
Gary Cooper's Genre-Defining Sports Movie With Babe Ruth Is Streaming For 1
88-
Rockies' lows: 10th sweep; 3rd-fastest to 50
Judge, Ohtani lapping field in All-Star vot
The Meatpacking District Packs I
Google I/O 2025: The Background Google Didn't Tell You via @sejournal, @MordyObers

18 The 7 MLB execs under the most pressure at the trade deadl
 19 New York Yankees, Boston Red Sox Renew Rivalry In Differing Spots In The AL
 20 Madhappy Opens First New York City Flag
 21 As New York Yankees Roll Into Dodger Stadium, They Are Getting Positive Injury
 22 Yankees Experience Lost Weekend In Boston And Then See Rafael Devers Moved Out Of The AL
 23 Kim Ng Made Baseball History. Now She's Taking On Softb
 24 The Yankees Offense Has Completely Stopped Producing
 25 Pitching Helps New York Yankees Complete One-Third Of Season In Good St
 26 Yankees Enjoy Presence Of Cody Bellinger In Subway Series Dominated By Juan Soto's Re
 27 MLB Power Rankings: A brand-new team debuts at No
 28 What all 30 MLB teams must do before the trade deadl
 29 Hunter Dobbins Enters Red Sox-Yankee Rivalry With Unique Pitching
 30 Versatile Offense And Stingy Pitching Fuel Tampa Bay Rays' St
 31 Jazz Chisholm Jr. Smiles His Way Through A Smooth Return For The New York Yan
 32 Aaron Judge Living Up To Preferred 'Hitter' Label With .396 Aver
 33 Carlos Carrasco rejoins the Yankees to bolster depleted bul
 34 The gauntlet of the SEC baseball tournament and what to know going
 35 The Opener: Burnes, Yankees, Black
 36 The Red Sox Swindled The Yankees Out Of A Potential All-Star Cat
 37 Yankees vs. Red Sox: Historic MLB rivalry by the numb
 38 Pride of the Yankees: Three days with Aaron Judge on the road to immortal
 39 Yankees' Stanton to begin rehab assignm
 40 Stanton continues to progress as Yanks optimis
 41 The Opener: Yankees, Nationals, Verlander, Shee
 42 Yankees Notes: Weaver, Stanton, Rice, Stroman, V
 43 Former Yankees Pitcher Sam Militello Has Had A 'Rewarding' 25 Years With The Tampa Spar
 44 Yankees Place Carlos Carrasco On Outright Wait
 45 Yankees To Select Carlos Carrasco; Jake Woodford Triggers Opt
 46 Yankees' struggles, Dodgers' depth, and big homers: The World Series reunion had it
 47 Who are the top 10 New York Yankees of all t
 48 Yankees Reportedly Interested In Right-Handed Bat, Rotation
 49 Diddy Trial Juror Dismissed by Judge Over Residency I
 50 Yankees call players only meeting to address 3 straight scoreless los
 51 Yankees vs. Dodgers top questions: What's at stake in this star-studded ser
 52 Passan's early MLB trade deadline preview: Latest intel on all 30 t
 53 Bronx boos, Baez is back, an early Cy Young favorite: MLB's top 10 storylin
 54 Dodgers' Mookie Betts is day-to-day after injuring his left toe in mis
 55 Preview: Top storylines, prospects and major leaguers for all t
 56 2025 MLB odds: Back Yankees to win American Lea
 57 Last Night in Baseball: Yankees give New York fans something to cheer ab
 58 Judge 1-for-12 as NY swept: Got to swing at str
 59 Yankees having Billy Joel bobblehead giveaway on July 11 vs. C
 60 Last Night in Baseball: Giancarlo Stanton is (Also)

61 June MLB games on ESPN: Yankees-Red Sox, Mets-Phillies, r
 62 L.A.'s Betts day-to-day after stubbing toe in mi
 63 UTA Signs Director D.J. Car
 64 Rangers catcher Heim exits early with hand in
 65 Torre to be honorary AL coach for All-Star C
 66 Dodgers, Yankees haven't 'skipped a beat' despite inju
 67 2025 MLB power rankings: Tigers jump, Dodgers best Yankees ap
 68 Yanks' bats 'in a little rut,' blanked in 3rd stra
 69 Guardians put Hedges on IL after 5th concuss
 70 In need of depth, Yanks call up vet RHP Carr
 71 Yanks' Cabrera cites 'small possibility' he'll re
 72 Aaron, Bret renew Boone Bowl in Yanks-Ran
 73 Angels catcher O'Hoppe hit in head by backsv
 74 Dominic Smith Opts Out Of Minor League Deal With Yan
 75 NYC native Moore posts 1st MLB hit vs. Yan
 76 Dodgers rout: LA scores most runs ever in a game against New
 77 Yankees avoid getting swept by Dodgers despite hitless night from Aaron J
 78 Yankees place reliever Cruz on IL due to shoul
 79 20 Times 'SNL' Was Hosted by Two or More Pe
 80 Yankees Planning To Place Luke Weaver On Injured L
 81 Cooper Hummel Triggers Release Clause In Deal With Yan
 82 Yankees Considering Starts For Ben Rice At Cat
 83 Yankees' Jake Cousins Dealing With Potential UCL Inj
 84 Madhappy In the City (EXCLUS
 85 It's a Polo Shirt Kind of Sur
 86 Dodgers vs. Yankees: Which team has the edge at each position? Here's our pic
 87 Jazz is back! Chisholm Jr. hits a solo shot in injury return to help Yankees
 88 Judge homers off Red Sox rookie after jab at Y
 89 Yanks' Weaver gets PRP injection in hamstr
 90 Death of Gardner's son still under investigat
 91 Dodgers' Betts (toe) progressing, eyes quick re
 92 Yanks' Chisholm likely to play 3B as return ne
 93 Hard tag reignites Chisholm's feud with Gar
 94 Yanks' Williams has another rocky 9th but hang

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6 Name: Nike Dunk Low "New York Yankees"SKU: IM2222-101Colorway: White/Midnight Navy-1
 7 Apple and Major League Baseball this week announced the July schedule for Friday Night Bas
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SummaryThe Colombian star revealed several tracks on Twitch last week.The album feat
Any Yankees fans still shedding tears over Juan Soto's Pinstripes o

Aaron Judge, the slugger who leads the majors in batting average, and Shohei O
As the marl
Baseball meets AI in Google I,

SummaryMadhappy has opened its doors to the brand's first-ever New York City flagsh

Hunter Dobbin

On the heels of an early morning trade, here are three things we'll be keeping an ey

Here are four things we'll be keeping an eye on around the baseball world throughout
Yankees manager Aaron Boone provided the media (including the New York Post's Greg J

The Yankees have placed right-hander Carlos Carrasco on outright waivers, reports J
Right-hander Jake Woodford has opted out of his minor league deal with the Yankees a

The Yankees are "aggressively" searching for a right-handed bat to add to their line
Diddy's federal jury in NYC is bringing in an alternate ... beca

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EXCLUSIVE: UTA has signed filmmaker D.J. Caruso for representation in all areas. Ca

Dominic Smith has become a free agent after triggering the opt-out clause in his mi
Los Angeles Angels second baseman Christian Moore, 22, a New York Ci

Ryan Yarbrough 1.
New York Yankees reliever I

The Yankees expect to place closer Luke Weaver on the 15-day injured list, reports .
Utility player Cooper Hummel has triggered a release clause in his minor league dea
The Yankees are set to welcome Giancarlo Stanton back from the injured list in the m
Yankees reliever Jake Cousins has yet to pitch in the majors this season due to a f

Aaron Judge hit one of his two home runs Sunday night off Red Sox rookie
Yankees closer Luke Weaver, who is out four to six w
More than t
Dodgers shortsta

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1 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
2 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
3 https://www.espn.com/mlb/story/_/id/45399577/aaron-judge-sl
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10 <https://hypebeast.com/2025/6/16/mlb-trade-deadline>
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23 <https://www.forbes.com/sites/danepstein/2025/06/18/mlb-trade-deadline>
24 <https://www.forbes.com/sites/larryfleisher/2025/05/28/pitching-helps-new-york-yankees>
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35 <https://www.foxsports.com/sports/mlb>
36 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
37 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
38 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
39 https://www.espn.com/mlb/story/_/id/45439577/aaron-judge-sl
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41 <https://www.mlbtraderumors.com/2025/6/16/mlb-trade-deadline>
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1 Jun 11, 2025, 07:48 PM ET\r\nBOSTON -- Red Sox rookie Hunter Dobbins made some headlines
2 In a significant blow to the first-place New York Yankees, closer Luke Weaver is expected
3 Baseball fans were treated to a major showdown Friday night, as the Los Angeles Dodgers a
4 Looking for the most recent regular Connections answers? Click here for today's Connections
5 May 24, 2025, 09:25 PM ET\r\nDENVER -- Aaron Judge insisted he doesn't pay too much attention
6 Name: Nike Dunk Low "New York Yankees"SKU: IM2222-101Colorway: White/Midnight Navy-Pho
7 Apple and Major League Baseball this week announced the July schedule for Friday Night
8 Major League Baseball unveiled its uniforms for the 2025 All-Star Weekend on Monday, inspi
9 If you purchase an independently reviewed product or service through a link on our website,
10 Summary\r\nThe Colombian star revealed several tracks on Twitch last week.
11 Any Yankees fans still shedding tears over Juan Soto's Pinstripes departure can go all
12 "The Pride of the Yankees" was nominated for 11 Academy Awards that year, including Best
13
14 Another series, another sweep as the Colorado Rockies continue to make history for a
15 Jun 16, 2025, 06:50 PM ET\r\nAaron Judge and Shohei Ohtani, who have combined to win f

16 You pronounce John T. Jobbagys last name with the accent on the first syllable: Joe-
 17 On March 29, 2025, the New York Yankees hit a franchise record nine home runs in one g
 18 The Boston Red Sox might be the best embodiment of the emotional swings that teams go t
 19 New York Yankees' Aaron Judge runs to second base for a double during the fourth inn
 20 Summary\r\nMadhappy has opened its doors to the brand's first-ever New York Ci
 21 New York Yankees' Jazz Chisholm Jr. runs to first base during a baseball game against t
 22 New York Yankees' Aaron Judge reacts after striking out in the third inning of a baseba
 23 Kim Ng, who became the first female GM in the history of major North American mens pr
 24 New York Yankees' Aaron Judge walks to the dugout during the sixth inning of a basebal
 25 New York Yankees starting pitcher Max Fried (54) in the sixth inning of a baseball gam
 26 New York Yankees' Cody Bellinger gestures as he runs the bases after hitting a grand
 27 May 22, 2025, 07:00 AM ET\r\nThe Detroit Tigers have continued their meteoric rise up our
 28 More than a week into June, it's now too late to be early in the 2025 MLB season.\r\nWi
 29 Boston Red Sox pitcher Hunter Dobbins did not allow a walk or get a strikeout in his Yan
 30 NEW YORK: José Caballero and Jonathan Aranda of the Tampa Bay Rays celebrate after de
 31 New York Yankees' Jazz Chisholm Jr. follows through on a single during the fifth inn
 32 New York Yankees' Aaron Judge during the first inning of a baseball game against the N
 33 { window.open(this.href, '_blank'); }, 200); return false;">Why did airlines scr
 34 There was the Siege of Constantinople in 717. There was the Philadelphia Election Riot
 35 On the heels of an early morning trade, here are three things we'll be keeping an eye on
 36 New York Mets' Luis Torrens, left, is tagged out by Boston Red Sox catcher Carlos Na
 37 The New York Yankees and Boston Red Sox will square off for the first time in the 20
 38 AARON JUDGE LAUGHED when I asked him about nap time. He's got a four-month-old daught
 39 Jun 10, 2025, 11:34 AM ET\r\nYankees slugger Giancarlo Stanton will begin a rehab assign
 40 Fingers seemingly crossed, New York Yankees manager Aaron Boone implied good news is r
 41 Here are four things we'll be keeping an eye on around the baseball world throughout the
 42 Yankees manager Aaron Boone provided the media (including the New York Post's Greg J
 43 Sam Militello hugs a player after the University of Tampa won the Division-II national ch
 44 The Yankees have placed right-hander Carlos Carrasco on outright waivers, reports Joe
 45 Right-hander Jake Woodford has opted out of his minor league deal with the Yankees a
 46 In the end, this was just another regular season series with brighter lights. But mar
 47 The New York Yankees are the most successful professional franchise in the history of
 48 The Yankees are "aggressively" searching for a right-handed bat to add to their lineu
 49 Diddy's federal jury in NYC is bringing in an alternate ... because a juror has just be
 50 The New York Yankees' offense is drifting toward uncharted territory and not in a good
 51 The New York Yankees had seven months to think about their fifth-inning collapse in G
 52 The calls began in recent days, cursory in nature but loaded with meaning. MLB trade
 53 Wondering what you may have missed last week in the busy world of baseball? Weve got y
 54 Mookie Betts was out of the Los Angeles Dodgers lineup against the New York Yankees on
 55 The opening weekend of the NCAA baseball tournament is in the books, and it was an enti
 56 It was a nightmare offseason for the defending American League champion Yankees. \r\nIn
 57 There is always baseball happening almost too much baseball for one person to handle th
 58 BOSTON -- Aaron Judge blamed himself for swinging at pitches outside the strike zone as

59 "The Piano Man" will be commemorated at Yankee Stadium this summer, as the New York
 60 There is always baseball happening almost too much baseball for one person to handle th
 61 ESPN's "Sunday Night Baseball" presented by Capital One heats up during the month of Ju
 62 May 30, 2025, 08:17 PM ET\r\nLOS ANGELES -- Mookie Betts is out of the Los Angeles Dodge
 63 EXCLUSIVE:UTA has signed filmmaker D.J. Caruso for representation in all areas.\r\nCar
 64 May 21, 2025, 09:05 PM ET\r\nNEW YORK -- Texas Rangers catcher Jonah Heim left Wednes
 65 Hall of Fame manager Joe Torre, who guided the New York Yankees to four World Series
 66 The Los Angeles Dodgers and New York Yankees continue their three-game series this Sat
 67 The Phillies vaulted into the top spot in our power rankings for the first time only to
 68 NEW YORK -- For nearly three months, the New York Yankees arguably had the best offense
 69 CLEVELAND -- Guardians catcher Austin Hedges has been placed on the seven-day concussio
 70 LOS ANGELES -- The New York Yankees, in need of a fresh arm after Saturday's blowout lo
 71 NEW YORK -- Less than a month after undergoing surgery on a fractured left ankle, Oswa
 72 NEW YORK -- For the first time in two decades, the Boone brothers will be in opposite o
 73 May 27, 2025, 01:17 AM ET\r\nANAHEIM, Calif. -- Angels catcher Logan O'Hoppe left Monday
 74 Dominic Smith has become a free agent after triggering the opt-out clause in his min
 75 Jun 17, 2025, 01:25 AM ET\r\nNEW YORK -- Christian Moore's first visit to Yankee Stadi
 76 Max Muncy hit two three-run homers and tied his career high with seven RBIs, helping th
 77 Ryan Yarbrough limited baseballs best offense to four hits over six innings, Ben Rici
 78 May 22, 2025, 12:16 PM ET\r\nNEW YORK -- New York Yankees reliever Fernando Cruz was p
 79 Technically its 21, because the Smothers Brothers did it twice. Sue us.\r\nThe 11th ep
 80 The Yankees expect to place closer Luke Weaver on the 15-day injured list, reports J
 81 Utility player Cooper Hummel has triggered a release clause in his minor league deal
 82 The Yankees are set to welcome Giancarlo Stanton back from the injured list in the re
 83 Yankees reliever Jake Cousins has yet to pitch in the majors this season due to a fl
 84 Madhappy, the sunny-go-lucky Californian clothing label, is finally heading back east t
 85 Move over, tank tops. There's a new shirt of the summer in town, and it's surprisingly
 86 Player by player, the New York Yankees and Los Angeles Dodgers feature two of the most h
 87 Jazz Chisholm Jr. hit a tiebreaking home run in his return from a month on the injure
 88 NEW YORK -- The Yankees-Red Sox rivalry, a historic feud running on fumes in recent ye
 89 NEW YORK -- Yankees closer Luke Weaver had a platelet rich plasma injection in his in
 90 Jun 12, 2025, 05:27 PM ET\r\nMore than two months after the death of Miller Gardner, th
 91 LOS ANGELES -- Sunday marked the first time Los Angeles Dodgers shortstop Mookie Bet
 92 NEW YORK -- Yankees infielder Jazz Chisholm Jr. could be reinstated from the injured
 93 KANSAS CITY, Missouri -- The mutual dislike between New York Yankees third baseman J
 94 May 28, 2025, 02:22 AM ET\r\nANAHEIM, Calif. -- Devin Williams' first two months with t

Question 3: Building a function to search the API

```
build_newsapi_url <- function(title_subject, time_period_from, time_period_to, API_key) {
```

```
base_url <- "https://newsapi.org/v2/everything?"  
  
#need to figure out how to get date to yyyy-mm-dd format  
  
#construct the full url  
url <- paste0(base_url, endpoint)  
  
}
```