# 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 \leftarrow "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")</pre>
```

#### 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."</pre>

#### 4. What is a side-effect function?

```
t1_q4 \leftarrow "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)
}</pre>
```

#### 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)</pre>
```

[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 elipses
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)
}</pre>
```

#### 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)</pre>
```

[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, ...)</pre>
```

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

#return the list of results
return(results)
}</pre>
```

#### 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))</pre>
```

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)
)</pre>
```

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

Error: 'resp' input must be a numeric atomic vector
NULL.
```

#### Task 3: Querying an API and a Tidy-Style Function

For this task we will connect to an API from News API.

# Question 1: Use the GET() function from the httr package to return an interesting topic. Let's get top headlines for recent sports events

```
URL_sports_headlines <- "https://newsapi.org/v2/everything?q=Yankees&source=us&apiKey=e09f04
id_sports_headlines <- httr::GET(URL_sports_headlines)</pre>
```

### Question 2: Now let's parse what was returned and find the data frame with article information

```
#Look at structure of data
str(id_sports_headlines, max.level = 1)
List of 10
 $ url
           : chr "https://newsapi.org/v2/everything?q=Yankees&source=us&apiKey=e09f041046
$ status_code: int 200
$ headers
           :List of 13
  ..- attr(*, "class")= chr [1:2] "insensitive" "list"
 $ all_headers:List of 1
 $ cookies :'data.frame':
                             0 obs. of 7 variables:
 $ content : raw [1:78897] 7b 22 73 74 ...
$ date
            : POSIXct[1:1], format: "2025-06-21 01:06:55"
$ times
             : Named num [1:6] 0 1.19 1.22 1.25 1.5 ...
 ..- attr(*, "names")= chr [1:6] "redirect" "namelookup" "connect" "pretransfer" ...
             :List of 7
 $ request
  ..- attr(*, "class")= chr "request"
            :Class 'curl_handle' <externalptr>
 $ handle
 - attr(*, "class")= chr "response"
```

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</pre>

	source.id	source.name
1	espn	ESPN
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7	<na></na>	MacRumors
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9	<na></na>	Rolling Stone
10	<na></na>	HYPEBEAST
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1	Dobbins defends claim father played for Yan
2	Sources: Yankees closer Weaver out 4-6 w
4	Aaron Judge and Shohei Ohtani both blast home runs in first inning of Yankees-Dod Judge, 18 HRs, insists he's still 'work in progr
5	This Nike Dunk Low Roots for the "New York Yank
6	Jac jack: Royals' Caglianone belts first ML
7	Apple TV+ Announces MLB Friday Night Baseball Schedule for
8	MLB reveals uniforms for 2025 All-Star Game, Home Run De
9	Yankees vs. Dodgers: How to Watch the World Series Rem
10	Feid Surprises His Fans With 'FERXXO VOL X: Sagra
11	Cody Bellinger's Dad Says Yankees' Offseason Haul Better Than Keeping Juan
12	Gary Cooper's Genre-Defining Sports Movie With Babe Ruth Is Streaming For
13	88-
14	Rockies' lows: 10th sweep; 3rd-fastest to 5
15	Judge, Ohtani lapping field in All-Star vo

16	The Meatpacking District Packs I
17	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 dead.
19	New York Yankees, Boston Red Sox Renew Rivalry In Differing Spots In The AL I
20	Madhappy Opens First New York City Flag:
21	As New York Yankees Roll Into Dodger Stadium, They Are Getting Positive Injury I
	Yankees Experience Lost Weekend In Boston And Then See Rafael Devers Moved Out Of The AL I
23	Kim Ng Made Baseball History. Now She's Taking On Softl
24	The Yankees Offense Has Completely Stopped Producing I
25	Pitching Helps New York Yankees Complete One-Third Of Season In Good SI
26	Yankees Select Jayvien Sandr:
27	MLB Power Rankings: A brand-new team debuts at No
28	What all 30 MLB teams must do before the trade dead.
29	Hunter Dobbins Enters Red Sox-Yankee Rivalry With Unique Pitching I
30	Versatile Offense And Stingy Pitching Fuel Tampa Bay Rays' S
31	Jazz Chisholm Jr. Smiles His Way Through A Smooth Return For The New York Yanl
32	Aaron Judge Living Up To Preferred 'Hitter' Label With .396 Ave:
33	Carlos Carrasco rejoins the Yankees to bolster depleted bull
34	The gauntlet of the SEC baseball tournament and what to know going
35	The Opener: Burnes, Yankees, Blackl
36	The Red Sox Swindled The Yankees Out Of A Potential All-Star Cate
37	Yankees vs. Red Sox: Historic MLB rivalry by the num
38	Pride of the Yankees: Three days with Aaron Judge on the road to immortal
39	Yankees' Stanton to begin rehab assign
40	Stanton continues to progress as Yanks optimis
41	The Opener: Yankees, Nationals, Verlander, She
42	Yankees Notes: Weaver, Stanton, Rice, Stroman, Vo
43	Former Yankees Pitcher Sam Militello Has Had A 'Rewarding' 25 Years With The Tampa Spar
44	Yankees Place Carlos Carrasco On Outright Wai
45	Yankees place RHP de los Santos (elbow) or
46	Yankees To Select Carlos Carrasco; Jake Woodford Triggers Opt
47	Yankees' struggles, Dodgers' depth, and big homers: The World Series reunion had it
48	Yankees Reportedly Interested In Right-Handed Bat, Rotation I
49	Who are the top 10 New York Yankees of all t
50	Yankees call players only meeting to address 3 straight scoreless los
51	Diddy Trial Juror Dismissed by Judge Over Residency Is
52	Yankees vs. Dodgers top questions: What's at stake in this star-studded se
53	Passan's early MLB trade deadline preview: Latest intel on all 30 to
54	Dodgers' Mookie Betts is day-to-day after injuring his left toe in mi:
55	2025 MLB odds: Back Yankees to win American Lea
56	Last Night in Baseball: Yankees give New York fans something to cheer al
57	Preview: Top storylines, prospects and major leaguers for all to
58	Judge 1-for-12 as NY swept: Got to swing at str

59	Yankees having Billy Joel bobblehead giveaway on July 11 vs. (
60	Last Night in Baseball: Giancarlo Stanton is (Also) I
61	Last Night in Baseball: The Yankees Have Lost 6 in a Row (But Weren't Shut O
62	June MLB games on ESPN: Yankees-Red Sox, Mets-Phillies, 1
63	L.A.'s Betts day-to-day after stubbing toe in mi
64	UTA Signs Director D.J. Ca
65	Rangers catcher Heim exits early with hand in
66	Torre to be honorary AL coach for All-Star
67	Dodgers, Yankees haven't 'skipped a beat' despite inju
68	2025 MLB power rankings: Tigers jump, Dodgers best Yankees a
69	Yanks finally score, otherwise sputter in latest
70	Yanks' bats 'in a little rut,' blanked in 3rd stra
71	Guardians put Hedges on IL after 5th concus
72	In need of depth, Yanks call up vet RHP Carra
73	Yanks' Cabrera cites 'small possibility' he'll re
74	Aaron, Bret renew Boone Bowl in Yanks-Ran
75	Angels catcher O'Hoppe hit in head by backs
76	Dominic Smith Opts Out Of Minor League Deal With Yan
77	NYC native Moore posts 1st MLB hit vs. Yan
78	Dodgers rout: LA scores most runs ever in a game against New '
79	Yankees avoid getting swept by Dodgers despite hitless night from Aaron J
80	Yankees place reliever Cruz on IL due to should
81	20 Times 'SNL' Was Hosted by Two or More Pe
82	Yankees Planning To Place Luke Weaver On Injured
83	Cooper Hummel Triggers Release Clause In Deal With Yan
84	Yankees Considering Starts For Ben Rice At Cate
85	Yankees' Jake Cousins Dealing With Potential UCL In
86	Madhappy In the City (EXCLUS
87	It's a Polo Shirt Kind of Su
88	Dodgers vs. Yankees: Which team has the edge at each position? Here's our pi
89	Jazz is back! Chisholm Jr. hits a solo shot in injury return to help Yankees
90	Judge homers off Red Sox rookie after jab at Ya
91	Yanks' Weaver gets PRP injection in hamst:
92	Death of Gardner's son still under investigation
93	Dodgers' Betts (toe) progressing, eyes quick re
94	Yanks' Chisholm likely to play 3B as return no
95	Hard tag reignites Chisholm's feud with Gas
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7 8	Apple	and Major League Baseball this week announced the July schedule for Friday Night Base
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10 11		SummaryThe Colombian star revealed several tracks on Twitch last week. The album feature Any Yankees fans still shedding tears over Juan Soto's Pinstripes
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15		Aaron Judge, the slugger who leads the majors in batting average, and Shohei
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17		Baseball meets AI in Google I
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20		SummaryMadhappy has opened its doors to the brand's first-ever New York City flagsh
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26		The Yankees announced today that they have selected the contract of left-hander Jay
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29		Hunter Dobbi:
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35		On the heels of an early morning trade, here are three things we'll be keeping an ex
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41		Here are four things we'll be keeping an eye on around the baseball world throughou
42		Yankees manager Aaron Boone provided the media (including the New York Post's Greg
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44		The Yankees have placed right-hander Carlos Carrasco on outright waivers, reports Jo
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46		Right-hander Jake Woodford has opted out of his minor league deal with the Yankees
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The Yankees are "aggressively" searching for a right-handed bat to add to their line

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51	Diddy's federal jury in NYC is bringing in an alternate bec
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64	EXCLUSIVE: UTA has signed filmmaker D.J. Caruso for representation in all areas. Ca
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76	Dominic Smith has become a free agent after triggering the opt-out clause in his mi
77	Los Angeles Angels second baseman Christian Moore, 22, a New York Ci
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79	Ryan Yarbrough 1
80	New York Yankees reliever
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82	The Yankees expect to place closer Luke Weaver on the 15-day injured list, reports
83	Utility player Cooper Hummel has triggered a release clause in his minor league dea
84	The Yankees are set to welcome Giancarlo Stanton back from the injured list in the
85	Yankees reliever Jake Cousins has yet to pitch in the majors this season due to a f
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90	Aaron Judge hit one of his two home runs Sunday night off Red Sox rooki
91	Yankees closer Luke Weaver, who is out four to six
<b>-</b>	Taminoto Diobot Bano noavot, who is out tout to bix

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1	https://www.espn.com/mlb/story/_/id/4
2	https://www.espn.com/mlb/story/_/id/45439
3	https://www.espn.com/mlb/story/_/id/45399577/aaron-judge-sl
4	https://www.espn.com
5	https://hypebea
6	https://www.espn.com/mlb/story/_/id/45545360,
7	https://www.macrumors
8	https://www.espn.com/mlb/story/_/id/45525302/major
9	http://www.rollingstone.com/product-recommendations/
10	https://hypebea
11	https://www.tmz.com/20
12	https://www.slashfilm.com/1861749/gary-cooper-
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15	https://www.espn.com/mlb/story/_/id/45526
16	https://www.newyorker.co
17	https://www.searchenginejournal.com/go
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19	https://www.forbes.com/sites/larryfleisher/2025/06/06/new-york-yankees-bost
20	https://hypel
21	https://www.forbes.com/sites/larryfleisher/2025/05/30/as-new-york-yankees-roll-
22 23	https://www.forbes.com/sites/larryfleisher/2025/06/15/yankees-experience-lost-weekend-in-
24	https://www.forbes.com/sites/danepstein/2025/06/18
25	https://www.forbes.com/sites/larryfleisher/2025/05/28/pitching-helps-ne
26	https://www.mlbtra
27	
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29	https://www.forbes.com/sites/larryfleisher/2025/06/09/hunter-dobbin
30	https://www.forbes.com/sites/tomlayberger/2025/06/18/versatile-or
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36	https://www.forbes.com/sites/danepstein/2025/05/24/the-red-so
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More than

39	https://www.espn.com/mlb/story/_/io
40	https://www.espn.com/mlb/story/_/id/4
41	https://www.mlbtraderumors.com/1
42	https://www.mlbtraderumors.com/20
43	https://www.forbes.com/sites/tomlayberger/2025/06/16/former-yankees-pitcher-sam-mili
44	https://www.mlbtraderumors.com/202
45	https://www.espn.com/mlb/story/_/id/45544164
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Jun 11, 2025, 07:48 PM ET\r\nBOSTON -- Red Sox rookie Hunter Dobbins made some headling
In a significant blow to the first-place New York Yankees, closer Luke Weaver is expect
Baseball fans were treated to a major showdown Friday night, as the Los Angeles Dodgers a
May 24, 2025, 09:25 PM ET\r\nDENVER -- Aaron Judge insisted he doesn't pay too much atter
Name: Nike Dunk Low "New York Yankees"SKU: IM2222-101Colorway: White/Midnight Navy-Pho
Jun 19, 2025, 03:59 PM ET\r\nARLINGTON, Texas -- Jac Caglianone has his first career ho
Apple and Major League Baseball this week announced the July schedule for Friday Night
Major League Baseball unveiled its uniforms for the 2025 All-Star Weekend on Monday, inspections.

If you purchase an independently reviewed product or service through a link on our web-Summary\r\nThe Colombian star revealed several tracks on Twitch last week. Any Yankees fans still shedding tears over Juan Soto's Pinstripes departure can go a "The Pride of the Yankees" was nominated for 11 Academy Awards that year, including

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Another series, another sweep as the Colorado Rockies continue to make history for a Jun 16, 2025, 06:50 PM ET\r\nAaron Judge and Shohei Ohtani, who have combined to win f You pronounce John T. Jobbagys last name with the accent on the first syllable: Joe-On March 29, 2025, the New York Yankees hit a franchise record nine home runs in one g The Boston Red Sox might be the best embodiment of the emotional swings that teams go New York Yankees' Aaron Judge runs to second base for a double during the fourth inn Summary\r\nMadhappy has opened its doors to the brand's first-ever New York Ci New York Yankees' Jazz Chisholm Jr. runs to first base during a baseball game against New York Yankees' Aaron Judge reacts after striking out in the third inning of a baseb Kim Ng, who became the first female GM in the history of major North American mens pro New York Yankees' Aaron Judge walks to the dugout during the sixth inning of a baseball New York Yankees starting pitcher Max Fried (54) in the sixth inning of a baseball gam-The Yankees announced today that they have selected the contract of left-hander Jay 27 May 22, 2025, 07:00 AM ET\r\nThe Detroit Tigers have continued their meteoric rise up our More than a week into June, it's now too late to be early in the 2025 MLB season.\r\nWi Boston Red Sox pitcher Hunter Dobbins did not allow a walk or get a strikeout in his Yan NEW YORK: José Caballero and Jonathan Aranda of the Tampa Bay Rays celebrate after de New York Yankees' Jazz Chisholm Jr. follows through on a single during the fifth inn New York Yankees' Aaron Judge during the first inning of a baseball game against the N { window.open(this.href, '\_blank'); }, 200); return false; "> Why did airlines screen" There was the Siege of Constantinople in 717. There was the Philadelphia Election Riot On the heels of an early morning trade, here are three things we'll be keeping an eye on

The New York Yankees and Boston Red Sox will square off for the first time in the 20 AARON JUDGE LAUGHED when I asked him about nap time. He's got a four-month-old daught Jun 10, 2025, 11:34 AM ET\r\nYankees slugger Giancarlo Stanton will begin a rehab assign Fingers seemingly crossed, New York Yankees manager Aaron Boone implied good news is r Here are four things we'll be keeping an eye on around the baseball world throughout the Yankees manager Aaron Boone provided the media (including the New York Post's Greg Jo Sam Militello hugs a player after the University of Tampa won the Division-II national c The Yankees have placed right-hander Carlos Carrasco on outright waivers, reports Jo-Jun 19, 2025, 11:19 AM ET\r\nThe New York Yankees placed reliever Yerry de los Santos of

New York Mets' Luis Torrens, left, is tagged out by Boston Red Sox catcher Carlos Na:

In the end, this was just another regular season series with brighter lights. But may The Yankees are "aggressively" searching for a right-handed bat to add to their line The New York Yankees are the most successful professional franchise in the history of .

Right-hander Jake Woodford has opted out of his minor league deal with the Yankees

The New York Yankees' offense is drifting toward uncharted territory and not in a good 50 Diddy's federal jury in NYC is bringing in an alternate ... because a juror has just be 51

The New York Yankees had seven months to think about their fifth-inning collapse in G The calls began in recent days, cursory in nature but loaded with meaning. MLB trade Mookie Betts was out of the Los Angeles Dodgers lineup against the New York Yankees on It was a nightmare offseason for the defending American League champion Yankees. \r\nI: There is always baseball happening almost too much baseball for one person to handle to The opening weekend of the NCAA baseball tournament is in the books, and it was an enti: BOSTON -- Aaron Judge blamed himself for swinging at pitches outside the strike zone a "The Piano Man" will be commemorated at Yankee Stadium this summer, as the New York There is always baseball happening almost too much baseball for one person to handle to There is always baseball happening almost too much baseball for one person to handle to ESPN's "Sunday Night Baseball" presented by Capital One heats up during the month of J May 30, 2025, 08:17 PM ET\r\nLOS ANGELES -- Mookie Betts is out of the Los Angeles Dodg EXCLUSIVE: UTA has signed filmmaker D.J. Caruso for representation in all areas.\r\nCar May 21, 2025, 09:05 PM ET\r\nNEW YORK -- Texas Rangers catcher Jonah Heim left Wednes Hall of Fame manager Joe Torre, who guided the New York Yankees to four World Series The Los Angeles Dodgers and New York Yankees continue their three-game series this Sat The Phillies vaulted into the top spot in our power rankings for the first time only to NEW YORK -- The good news for the Yankees on Wednesday was they scored a run after 30 NEW YORK -- For nearly three months, the New York Yankees arguably had the best offense CLEVELAND -- Guardians catcher Austin Hedges has been placed on the seven-day concussion LOS ANGELES -- The New York Yankees, in need of a fresh arm after Saturday's blowout le NEW YORK -- Less than a month after undergoing surgery on a fractured left ankle, Oswa NEW YORK -- For the first time in two decades, the Boone brothers will be in opposite May 27, 2025, 01:17 AM ET\r\nANAHEIM, Calif. -- Angels catcher Logan O'Hoppe left Monda Dominic Smith has become a free agent after triggering the opt-out clause in his min-Jun 17, 2025, 01:25 AM ET\r\nNEW YORK -- Christian Moore's first visit to Yankee Stadi Max Muncy hit two three-run homers and tied his career high with seven RBIs, helping to Ryan Yarbrough limited baseballs best offense to four hits over six innings, Ben Ric May 22, 2025, 12:16 PM ET\r\nNEW YORK -- New York Yankees reliever Fernando Cruz was p Technically its 21, because the Smothers Brothers did it twice. Sue us.\r\nThe 11th ep The Yankees expect to place closer Luke Weaver on the 15-day injured list, reports Jo Utility player Cooper Hummel has triggered a release clause in his minor league deal The Yankees are set to welcome Giancarlo Stanton back from the injured list in the re Yankees reliever Jake Cousins has yet to pitch in the majors this season due to a flo Madhappy, the sunny-go-lucky Californian clothing label, is finally heading back east Move over, tank tops. There's a new shirt of the summer in town, and it's surprisingly Player by player, the New York Yankees and Los Angeles Dodgers feature two of the most h Jazz Chisholm Jr. hit a tiebreaking home run in his return from a month on the injur-NEW YORK -- The Yankees-Red Sox rivalry, a historic feud running on fumes in recent year NEW YORK -- Yankees closer Luke Weaver had a platelet rich plasma injection in his i Jun 12, 2025, 05:27 PM ET\r\nMore than two months after the death of Miller Gardner, ti LOS ANGELES -- Sunday marked the first time Los Angeles Dodgers shortstop Mookie Bet

NEW YORK -- Yankees infielder Jazz Chisholm Jr. could be reinstated from the injured

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#### Question 3: Building a function to search the API

#base url from website

build\_newsapi\_url <- function(subject, start\_date, end\_date, api\_key) {</pre>

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base_url <- "https://newsapi.org/v2/everything?"</pre>
  #checking date format is correct - just make a simple stop if incorrect format
 is_valid_date <- function (dates){</pre>
   grepl("^\d{4}-\d{2}-\d{2}$", dates)
 }
  if (!is_valid_date(start_date)){
    stop("start_date must be in 'yyyy-mm-dd' format")
   if (!is_valid_date(end_date)){
    stop("end_date must be in 'yyyy-mm-dd' format")
  #construct the full url
  url <- paste0(base_url,</pre>
                "q=", subject,
                "&from=", start_date,
                "&to=", end date,
                "&apikey=", api_key)
  return(url)
}
build_newsapi_url("sports", "2025-06-12", "2025-06-15", "e09f041046584e7c85072592a8add194")
[1] "https://newsapi.org/v2/everything?q=sports&from=2025-06-12&to=2025-06-15&apikey=e09f041
url
function (description, open = "", blocking = TRUE, encoding = getOption("encoding"),
```

method = getOption("url.method", "default"), headers = NULL)

method <- match.arg(method, c("default", "internal", "libcurl",</pre>

```
"wininet"))
if (!is.null(headers)) {
    nh <- names(headers)
    if (length(nh) != length(headers) || any(nh == "") ||
        anyNA(headers) || anyNA(nh))
        stop("'headers' must have names and must not be NA")
        headers <- pasteO(nh, ": ", headers)
        headers <- list(headers, pasteO(headers, "\r\n", collapse = ""))
}
.Internal(url(description, open, blocking, encoding, method, headers))
}
<br/>
<br/>
<br/>
cbytecode: 0x11e4a3708>
<environment: namespace:base>
```