

RWorksheet#5_group1

2023-11-30

```
#GROUP1
#SUERO
#GALLENERO
#AHUMADA
#HUERVANA

install.packages("tidyverse")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
install.packages("dplyr")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
install.packages("rvest")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
install.packages("httr")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
install.packages("polite")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
install.packages("ggplot2")

## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v readr      2.1.4
## v forcats    1.0.0      v stringr    1.5.1
## v ggplot2    3.4.4      v tibble     3.2.1
## v lubridate  1.9.3      v tidyr      1.3.0
## v purrr      1.0.2

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```

library(rvest)

##
## Attaching package: 'rvest'
##
## The following object is masked from 'package:readr':
##
##     guess_encoding

library(dplyr)
library(polite)
library(httr)
library(ggplot2)

link <- "https://www.imdb.com/chart/toptv/?ref_=nv_tv_250"
session <- bow(link, user_agent= "Educational Purposes")
session

## <polite session> https://www.imdb.com/chart/toptv/?ref_=nv_tv_250
##   User-agent: Educational Purposes
##   robots.txt: 34 rules are defined for 2 bots
##   Crawl delay: 5 sec
##   The path is scrapable for this user-agent

1.1. Each group needs to extract the top 50 tv shows in Imdb.com. It will include the rank, the title of the tv
show, tv rating, the number of people who voted, the number of episodes, the year it was released.

link <- "https://www.imdb.com/chart/toptv/?ref_=nv_tv_250"
session <- bow(link, user_agent= "Educational Purposes")
session

## <polite session> https://www.imdb.com/chart/toptv/?ref_=nv_tv_250
##   User-agent: Educational Purposes
##   robots.txt: 34 rules are defined for 2 bots
##   Crawl delay: 5 sec
##   The path is scrapable for this user-agent

#ranks
rank <- scrape(session) %>%
  html_nodes('h3.ipc-title__text') %>%
  html_text()
rank[1:51]

## [1] "IMDb Charts"
## [2] "1. Breaking Bad"
## [3] "2. Planet Earth II"
## [4] "3. Planet Earth"
## [5] "4. Band of Brothers"
## [6] "5. Chernobyl"
## [7] "6. The Wire"
## [8] "7. Avatar: The Last Airbender"
## [9] "8. Blue Planet II"
## [10] "9. The Sopranos"
## [11] "10. Cosmos: A Spacetime Odyssey"
## [12] "11. Cosmos"
## [13] "12. Our Planet"
## [14] "13. Game of Thrones"

```

```
## [15] "14. The World at War"
## [16] "15. Bluey"
## [17] "16. Rick and Morty"
## [18] "17. Fullmetal Alchemist: Brotherhood"
## [19] "18. The Last Dance"
## [20] "19. Life"
## [21] "20. The Twilight Zone"
## [22] "21. Sherlock"
## [23] "22. The Vietnam War"
## [24] "23. Batman: The Animated Series"
## [25] "24. Attack on Titan"
## [26] "25. Scam 1992: The Harshad Mehta Story"
## [27] "26. The Office"
## [28] "27. Arcane"
## [29] "28. The Blue Planet"
## [30] "29. Better Call Saul"
## [31] "30. Human Planet"
## [32] "31. Firefly"
## [33] "32. Frozen Planet"
## [34] "33. Clarkson's Farm"
## [35] "34. Death Note"
## [36] "35. Only Fools and Horses"
## [37] "36. Hunter x Hunter"
## [38] "37. The Civil War"
## [39] "38. True Detective"
## [40] "39. Seinfeld"
## [41] "40. The Beatles: Get Back"
## [42] "41. The Decalogue"
## [43] "42. Persona"
## [44] "43. Fargo"
## [45] "44. Cowboy Bebop"
## [46] "45. Gravity Falls"
## [47] "46. Nathan for You"
## [48] "47. Last Week Tonight with John Oliver"
## [49] "48. When They See Us"
## [50] "49. Succession"
## [51] "50. Apocalypse: The Second World War"
```

```
#titles
titles <- scrape(session) %>%
  html_nodes("h3.ipc-title__text") %>%
  html_text()
titles50 <- titles[2:51]

#ratings
ratings <- scrape(session) %>%
  html_nodes("span.ipc-rating-star.ipc-rating-star--base.ipc-rating-star--imdb.ratingGroup--imdb-rating")
  html_text()

cleaned_ratings <- substr(ratings, 1, 3)
ratings50 <- cleaned_ratings[1:50]

#peoples vote
people_vote <- scrape(session) %>%
```

```

html_nodes("span.ipc-rating-star--voteCount") %>%
html_text()

people_vote50 <- people_vote[1:50]
cleaned_vote <- gsub("\\(|\\)", "", people_vote50)

#episodes
episodes <- scrape(session) %>%
  html_nodes("span.sc-43986a27-8:nth-of-type(2)") %>%
  html_text()
episodes50 <- episodes[1:50]

#year
year <- scrape(session) %>%
  html_nodes("span.sc-43986a27-8:nth-of-type(1)") %>%
  html_text()
year50 <- year[1:50]

#dataframe
topTv_df <- data.frame(
  Ranks = rank[1:50], # Correct variable name
  Titles = titles50,
  Ratings = ratings50,
  People_Votes = cleaned_vote,
  Episodes = episodes50,
  Year = year50
)
topTv_df

##              Ranks
## 1          IMDb Charts
## 2          1. Breaking Bad
## 3          2. Planet Earth II
## 4          3. Planet Earth
## 5          4. Band of Brothers
## 6          5. Chernobyl
## 7          6. The Wire
## 8          7. Avatar: The Last Airbender
## 9          8. Blue Planet II
## 10         9. The Sopranos
## 11         10. Cosmos: A Spacetime Odyssey
## 12         11. Cosmos
## 13         12. Our Planet
## 14         13. Game of Thrones
## 15         14. The World at War
## 16         15. Bluey
## 17         16. Rick and Morty
## 18         17. Fullmetal Alchemist: Brotherhood
## 19         18. The Last Dance
## 20         19. Life
## 21         20. The Twilight Zone
## 22         21. Sherlock
## 23         22. The Vietnam War
## 24         23. Batman: The Animated Series

```

## 25	24. Attack on Titan			
## 26	25. Scam 1992: The Harshad Mehta Story			
## 27	26. The Office			
## 28	27. Arcane			
## 29	28. The Blue Planet			
## 30	29. Better Call Saul			
## 31	30. Human Planet			
## 32	31. Firefly			
## 33	32. Frozen Planet			
## 34	33. Clarkson's Farm			
## 35	34. Death Note			
## 36	35. Only Fools and Horses			
## 37	36. Hunter x Hunter			
## 38	37. The Civil War			
## 39	38. True Detective			
## 40	39. Seinfeld			
## 41	40. The Beatles: Get Back			
## 42	41. The Decalogue			
## 43	42. Persona			
## 44	43. Fargo			
## 45	44. Cowboy Bebop			
## 46	45. Gravity Falls			
## 47	46. Nathan for You			
## 48	47. Last Week Tonight with John Oliver			
## 49	48. When They See Us			
## 50	49. Succession			
##	Titles	Ratings	People_Votes	Episodes
## 1	1. Breaking Bad	9.5	2.1M	62 eps
## 2	2. Planet Earth II	9.5	155K	6 eps
## 3	3. Planet Earth	9.4	218K	11 eps
## 4	4. Band of Brothers	9.4	509K	10 eps
## 5	5. Chernobyl	9.3	836K	5 eps
## 6	6. The Wire	9.3	367K	60 eps
## 7	7. Avatar: The Last Airbender	9.3	350K	62 eps
## 8	8. Blue Planet II	9.3	45K	7 eps
## 9	9. The Sopranos	9.2	451K	86 eps
## 10	10. Cosmos: A Spacetime Odyssey	9.3	127K	13 eps
## 11	11. Cosmos	9.3	43K	13 eps
## 12	12. Our Planet	9.3	49K	12 eps
## 13	13. Game of Thrones	9.2	2.2M	73 eps
## 14	14. The World at War	9.2	28K	26 eps
## 15	15. Bluey	9.4	22K	171 eps
## 16	16. Rick and Morty	9.1	583K	74 eps
## 17	17. Fullmetal Alchemist: Brotherhood	9.1	191K	68 eps
## 18	18. The Last Dance	9.1	146K	10 eps
## 19	19. Life	9.1	42K	11 eps
## 20	20. The Twilight Zone	9.1	91K	156 eps
## 21	21. Sherlock	9.1	978K	15 eps
## 22	22. The Vietnam War	9.1	27K	10 eps
## 23	23. Batman: The Animated Series	9.0	114K	85 eps
## 24	24. Attack on Titan	9.1	480K	98 eps
## 25	25. Scam 1992: The Harshad Mehta Story	9.3	154K	10 eps
## 26	26. The Office	9.0	683K	188 eps
## 27	27. Arcane	9.0	254K	10 eps

## 28	28. The Blue Planet	9.0	42K	8 eps
## 29	29. Better Call Saul	9.0	621K	63 eps
## 30	30. Human Planet	9.0	28K	8 eps
## 31	31. Firefly	9.0	278K	14 eps
## 32	32. Frozen Planet	9.0	33K	10 eps
## 33	33. Clarkson's Farm	9.0	53K	18 eps
## 34	34. Death Note	8.9	365K	37 eps
## 35	35. Only Fools and Horses	9.0	56K	64 eps
## 36	36. Hunter x Hunter	9.0	126K	148 eps
## 37	37. The Civil War	9.0	18K	9 eps
## 38	38. True Detective	8.9	618K	30 eps
## 39	39. Seinfeld	8.9	343K	173 eps
## 40	40. The Beatles: Get Back	9.0	27K	3 eps
## 41	41. The Decalogue	8.9	27K	10 eps
## 42	42. Persona	9.0	46K	20 eps
## 43	43. Fargo	8.9	399K	51 eps
## 44	44. Cowboy Bebop	8.9	134K	26 eps
## 45	45. Gravity Falls	8.9	129K	41 eps
## 46	46. Nathan for You	8.9	37K	32 eps
## 47	47. Last Week Tonight with John Oliver	8.9	94K	342 eps
## 48	48. When They See Us	8.9	134K	4 eps
## 49	49. Succession	8.9	248K	39 eps
## 50	50. Apocalypse: The Second World War	9.0	14K	6 eps
##	Year			
## 1	2008-2013			
## 2	2016			
## 3	2006			
## 4	2001			
## 5	2019			
## 6	2002-2008			
## 7	2005-2008			
## 8	2017			
## 9	1999-2007			
## 10	2014			
## 11	1980			
## 12	2019-2023			
## 13	2011-2019			
## 14	1973-1974			
## 15	2018-			
## 16	2013-			
## 17	2009-2010			
## 18	2020			
## 19	2009			
## 20	1959-1964			
## 21	2010-2017			
## 22	2017			
## 23	1992-1995			
## 24	2013-2023			
## 25	2020			
## 26	2005-2013			
## 27	2021-			
## 28	2001			
## 29	2015-2022			
## 30	2011			

```
## 31 2002-2003
## 32 2011-2012
## 33 2021-
## 34 2006-2007
## 35 1981-2003
## 36 2011-2014
## 37 1990
## 38 2014-
## 39 1989-1998
## 40 2021
## 41 1989-1990
## 42 2018-
## 43 2014-2024
## 44 1998-1999
## 45 2012-2016
## 46 2013-2017
## 47 2014-
## 48 2019
## 49 2018-2023
## 50 2009
```

2. Reviewers Data (Name, Date, Rating, Title of the Tv show, and the comment of each reviewers) 1st link

```
pad_with_na <- function(vec, target_length) {
  if (length(vec) < target_length) {
    return(c(vec, rep(NA, target_length - length(vec))))
  } else {
    return(vec)
  }
}

TWD_Link <- "https://www.imdb.com/title/tt1520211/reviews?ref_=tt_urv"
session2 <- bow(TWD_Link, user_agent = "Educational Purposes")

TWD_Title <- scrape(session2) %>%
  html_nodes("a[itemprop='url']") %>%
  html_text()

TWD_RevName <- scrape(session2) %>%
  html_nodes(".display-name-link a") %>%
  html_text()

TWD_RevDate <- scrape(session2) %>%
  html_nodes("span.review-date") %>%
  html_text()

TWD_UserRating <- scrape(session2) %>%
  html_nodes("span.rating-other-user-rating") %>%
  html_text() %>% str_trim()

TWD_TitleRev <- scrape(session2) %>%
  html_nodes("a.title") %>%
  html_text() %>%
```

```

gsub("\n ", "", .)

TWD_TextRev <- scrape(session2) %>%
  html_nodes("div.text") %>%
  html_text()

max_length <- max(
  length(TWD_Title),
  length(TWD_RevName),
  length(TWD_RevDate),
  length(TWD_UserRating),
  length(TWD_TitleRev),
  length(TWD_TextRev)
)

TWD_Title <- pad_with_na(TWD_Title, max_length)
TWD_RevName <- pad_with_na(TWD_RevName, max_length)
TWD_RevDate <- pad_with_na(TWD_RevDate, max_length)
TWD_UserRating <- pad_with_na(TWD_UserRating, max_length)
TWD_TitleRev <- pad_with_na(TWD_TitleRev, max_length)
TWD_TextRev <- pad_with_na(TWD_TextRev, max_length)

TWD_Df <- data.frame(
  Tv_Shows = TWD_Title,
  Reviewer_Name = TWD_RevName,
  Reviewer_Date = TWD_RevDate,
  Reviewer_Rating = TWD_UserRating,
  Title_Review = TWD_TitleRev,
  Text_Review = TWD_TextRev
)

head(TWD_Df)

```

```

##           Tv_Shows      Reviewer_Name      Reviewer_Date Reviewer_Rating
## 1 The Walking Dead      DiCaprioFan13 29 November 2022           9/10
## 2                <NA> TheLittleSongbird 11 November 2017           8/10
## 3                <NA>   Supermanfan-13    5 March 2021           9/10
## 4                <NA>       balder777    13 June 2021           8/10
## 5                <NA>    skybrick736     12 May 2018          10/10
## 6                <NA>    tommdennehy    2 December 2022           9/10
##                                     Title_Review
## 1                               The early seasons were classic!\n
## 2          Very much alive for Seasons 1-5, Season 7 dead\n
## 3    Going to miss it but it's prob time for it to go!\n
## 4                               Amazing if you binge-watch.\n
## 5                The Walking Dead: Season 1 (10/10)\n
## 6          A great thing, but dragged out too long\n
##
## 1
## 2 Had heard nothing but great things about 'The Walking Dead' from friends and IMDb reviewers. It to
## 3
## 4

```



```
## 5
```

```
## 6
```

2nd Link

```
pad_with_na <- function(vec, target_length) {  
  if (length(vec) < target_length) {  
    return(c(vec, rep(NA, target_length - length(vec))))  
  } else {  
    return(vec)  
  }  
}  
  
JJK_Link <- "https://www.imdb.com/title/tt12343534/reviews?ref_=tt_urv"  
session2 <- bow(JJK_Link, user_agent = "Educational Purposes")  
  
JJK_Title <- scrape(session2) %>%  
  html_nodes(".parent a") %>%  
  html_text()  
  
JJK_RevName <- scrape(session2) %>%  
  html_nodes(".display-name-link") %>%  
  html_text()  
  
JJK_RevDate <- scrape(session2) %>%  
  html_nodes("span.review-date") %>%  
  html_text()  
  
JJK_UserRating <- scrape(session2) %>%  
  html_nodes("span.rating-other-user-rating") %>%  
  html_text() %>% str_trim()  
  
JJK_TitleRev <- scrape(session2) %>%  
  html_nodes("a.title") %>%  
  html_text() %>%  
  gsub("\\n ", "", .)  
  
JJK_TextRev <- scrape(session2) %>%  
  html_nodes("div.text") %>%  
  html_text()  
  
max_length <- max(  
  length(JJK_Title),  
  length(JJK_RevName),  
  length(JJK_RevDate),  
  length(JJK_UserRating),  
  length(JJK_TitleRev),  
  length(JJK_TextRev)  
)  
  
JJK_Title <- pad_with_na(JJK_Title, max_length)  
JJK_RevName <- pad_with_na(JJK_RevName, max_length)
```

```

JKK_RevDate <- pad_with_na(JJK_RevDate, max_length)
JKK_UserRating <- pad_with_na(JJK_UserRating, max_length)
JKK_TitleRev <- pad_with_na(JJK_TitleRev, max_length)
JKK_TextRev <- pad_with_na(JJK_TextRev, max_length)

```

```

JKK_Df <- data.frame(
  Tv_Shows = JJK_Title,
  Reviewer_Name = JJK_RevName,
  Reviewer_Date = JJK_RevDate,
  Reviewer_Rating = JJK_UserRating,
  Title_Review = JJK_TitleRev,
  Text_Review = JJK_TextRev
)

```

```
head(JKK_Df)
```

```

##           Tv_Shows           Reviewer_Name  Reviewer_Date Reviewer_Rating
## 1 Jujutsu Kaisen      darshan-07180 7 December 2020          10/10
## 2           <NA> Achyut_Prashast_Singh    5 June 2021          10/10
## 3           <NA>      GangsterLuffy  3 October 2020          10/10
## 4           <NA>      NicolasTheWolf   27 June 2021           9/10
## 5           <NA>          kardolph 3 February 2021          10/10
## 6           <NA>          WeAreLive 23 January 2022           9/10

```

```

##                               Title_Review
## 1                               Surpassed the manga\n
## 2 With Jujutsu Kaisen, MAPPA has struck gold once again.\n
## 3                               Better than expected WOW!\n
## 4                               Breathtaking anime!\n
## 5           A SHONEN FULFILLING EVERY DEPARTMENT. ALMOST.\n
## 6                               Amazing\n

```

```

##
## 1
## 2 Months ago, when I had first heard of Jujutsu Kaisen and its "similarities" with Bleach, which is c
## 3
## 4
## 5
## 6

```

3rd Link

```

pad_with_na <- function(vec, target_length) {
  if (length(vec) < target_length) {
    return(c(vec, rep(NA, target_length - length(vec))))
  } else {
    return(vec)
  }
}

```

```

CE_Link <- "https://www.imdb.com/title/tt12590266/reviews?ref_=tt_urv"
session2 <- bow(CE_Link, user_agent = "Educational Purposes")

```

```

CE_Title <- scrape(session2) %>%
  html_nodes(".parent a") %>%

```

```

html_text()

CE_RevName <- scrape(session2) %>%
  html_nodes(".display-name-link") %>%
  html_text()
CE_RevDate <- scrape(session2) %>%
  html_nodes("span.review-date") %>%
  html_text()

CE_UserRating <- scrape(session2) %>%
  html_nodes("span.rating-other-user-rating") %>%
  html_text() %>% str_trim()

CE_TitleRev <- scrape(session2) %>%
  html_nodes("a.title") %>%
  html_text() %>%
  gsub("\\n ", "", .)

CE_TextRev <- scrape(session2) %>%
  html_nodes("div.text") %>%
  html_text()

max_length <- max(
  length(CE_Title),
  length(CE_RevName),
  length(CE_RevDate),
  length(CE_UserRating),
  length(CE_TitleRev),
  length(CE_TextRev)
)

CE_Title <- pad_with_na(CE_Title, max_length)
CE_RevName <- pad_with_na(CE_RevName, max_length)
CE_RevDate <- pad_with_na(CE_RevDate, max_length)
CE_UserRating <- pad_with_na(CE_UserRating, max_length)
CE_TitleRev <- pad_with_na(CE_TitleRev, max_length)
CE_TextRev <- pad_with_na(CE_TextRev, max_length)

CE_Df <- data.frame(
  Tv_Shows = CE_Title,
  Reviewer_Name = CE_RevName,
  Reviewer_Date = CE_RevDate,
  Reviewer_Rating = CE_UserRating,
  Title_Review = CE_TitleRev,
  Text_Review = CE_TextRev
)

head(CE_Df)

```

```

##           Tv_Shows      Reviewer_Name      Reviewer_Date Reviewer_Rating
## 1 Cyberpunk: Edgerunners and_mikkelsen 17 September 2022           9/10
## 2                <NA>      jasminn_tan   5 November 2022           8/10

```

```
## 3          <NA>          ITALUKE 13 September 2022          10/10
## 4          <NA>          IslandMyst 14 September 2022          8/10
## 5          <NA> royhectorkabanlit 18 September 2022          10/10
## 6          <NA>          jafhate 14 September 2022          10/10
##                                     Title_Review
## 1                                     A unique and unforgettable experience!\n
## 2                                     Left me feeling sad\n
## 3                                     Give it a try, you won't regret it\n
## 4          You know a show is good when the only complaint is there isn't enough of it\n
## 5 One of the very best Animated Series on Netflix, easily at the level of "Arcane"\n
## 6                                     Death can have me, when it earns me.\n
##
## 1
## 2
## 3
## 4          The show is great. The only real qualm I have is that it scales up to epic proportions
## 5 This Series is absolutely Phenomenal, I would put this as one of the very best Animated Series on Netflix
## 6
```

4th Link

```
pad_with_na <- function(vec, target_length) {
  if (length(vec) < target_length) {
    return(c(vec, rep(NA, target_length - length(vec))))
  } else {
    return(vec)
  }
}

G_Link <- "https://www.imdb.com/title/tt0988818/reviews?ref_=tt_urv"
session2 <- bow(G_Link, user_agent = "Educational Purposes")

G_Title <- scrape(session2) %>%
  html_nodes(".parent a") %>%
  html_text()

G_RevName <- scrape(session2) %>%
  html_nodes(".display-name-link") %>%
  html_text()

G_RevDate <- scrape(session2) %>%
  html_nodes("span.review-date") %>%
  html_text()

G_UserRating <- scrape(session2) %>%
  html_nodes("span.rating-other-user-rating") %>%
  html_text() %>% str_trim()

G_TitleRev <- scrape(session2) %>%
  html_nodes("a.title") %>%
  html_text() %>%
  gsub("\n ", "", .)

G_TextRev <- scrape(session2) %>%
```

```
html_nodes("div.text") %>%
html_text()
```

```
max_length <- max(
  length(G_Title),
  length(G_RevName),
  length(G_RevDate),
  length(G_UserRating),
  length(G_TitleRev),
  length(G_TextRev)
)
```

```
G_Title <- pad_with_na(G_Title, max_length)
G_RevName <- pad_with_na(G_RevName, max_length)
G_RevDate <- pad_with_na(G_RevDate, max_length)
G_UserRating <- pad_with_na(G_UserRating, max_length)
G_TitleRev <- pad_with_na(G_TitleRev, max_length)
G_TextRev <- pad_with_na(G_TextRev, max_length)
```

```
G_Df <- data.frame(
  Tv_Shows = G_Title,
  Reviewer_Name = G_RevName,
  Reviewer_Date = G_RevDate,
  Reviewer_Rating = G_UserRating,
  Title_Review = G_TitleRev,
  Text_Review = G_TextRev
)
```

```
head(G_Df)
```

```
##   Tv_Shows   Reviewer_Name   Reviewer_Date Reviewer_Rating
## 1  Gintama      wakemeup36 19 December 2009          10/10
## 2   <NA>      black-32147 13 August 2017          10/10
## 3   <NA>       jmb-30435   15 May 2019          10/10
## 4   <NA> blackmamba99971    7 July 2014          10/10
## 5   <NA>   quynhgiaocao   14 May 2016          10/10
## 6   <NA>   GangsterLuffy 26 February 2021          10/10
##                                     Title_Review
## 1      One of the greatest pieces of entertainment ever\n
## 2      Funniest show I've ever seen, super enjoyable!\n
## 3                      Best of all time\n
## 4                      Lmfao\n
## 5      An anime could brought you all kinds of emotions\n
## 6 One of the greatest if not greatest Anime of all time!\n
##
## 1
## 2
## 3
## 4 When it comes to comedy this show delivers just about the nastiest, funniest, and down right gritty.
## 5
## 6
```

5th Link

```
pad_with_na <- function(vec, target_length) {
  if (length(vec) < target_length) {
    return(c(vec, rep(NA, target_length - length(vec))))
  } else {
    return(vec)
  }
}

TBBT_Link <- "https://www.imdb.com/title/tt0898266/reviews?ref_=tt_urv"
session2 <- bow(TBBT_Link, user_agent = "Educational Purposes")

TBBT_Title <- scrape(session2) %>%
  html_nodes(".parent a") %>%
  html_text()

TBBT_RevName <- scrape(session2) %>%
  html_nodes(".display-name-link") %>%
  html_text()
TBBT_RevDate <- scrape(session2) %>%
  html_nodes("span.review-date") %>%
  html_text()

TBBT_UserRating <- scrape(session2) %>%
  html_nodes("span.rating-other-user-rating") %>%
  html_text() %>% str_trim()

TBBT_TitleRev <- scrape(session2) %>%
  html_nodes("a.title") %>%
  html_text() %>%
  gsub("\n ", "", .)

TBBT_TextRev <- scrape(session2) %>%
  html_nodes("div.text") %>%
  html_text()

max_length <- max(
  length(TBBT_Title),
  length(TBBT_RevName),
  length(TBBT_RevDate),
  length(TBBT_UserRating),
  length(TBBT_TitleRev),
  length(TBBT_TextRev)
)

TBBT_Title <- pad_with_na(CE_Title, max_length)
TBBT_RevName <- pad_with_na(TBBT_RevName, max_length)
TBBT_RevDate <- pad_with_na(TBBT_RevDate, max_length)
TBBT_UserRating <- pad_with_na(TBBT_UserRating, max_length)
TBBT_TitleRev <- pad_with_na(TBBT_TitleRev, max_length)
TBBT_TextRev <- pad_with_na(TBBT_TextRev, max_length)
```

```
TBBT_Df <- data.frame(
  Tv_Shows = TBBT_Title,
  Reviewer_Name = TBBT_RevName,
  Reviewer_Date = TBBT_RevDate,
  Reviewer_Rating = TBBT_UserRating,
  Title_Review = TBBT_TitleRev,
  Text_Review = TBBT_TextRev
)

head(TBBT_Df)
```

```
##           Tv_Shows Reviewer_Name Reviewer_Date Reviewer_Rating
## 1 Cyberpunk: Edgerunners DiCaprioFan13 5 August 2023          8/10
## 2           <NA> Supermanfan-13    11 June 2023          8/10
## 3           <NA>    Adam-09265    3 January 2021          8/10
## 4           <NA> perfect_peony 21 November 2016          6/10
## 5           <NA>    hfan77 18 December 2007         10/10
## 6           <NA>    Awakening124 1 October 2007          6/10
##
##                               Title_Review
## 1                               Pretty Good Sitcom\n
## 2                               Pretty Funny\n
## 3           The first fiew seasons will always be the best\n
## 4 Seasons 1-5 are a 9/10. After that a rapid spiral downhill\n
## 5                               One of TV's Best Written Sitcoms\n
## 6                               CBS, please keep this on the air!!!!\n
##
## 1
## 2
## 3 I miss the show when it was about nerdy men nerding over science experiments and awkward women enc
## 4
## 5
## 6
```

3. Create a time series graph for the tv shows released by year. Which year has the most number of tv shows released?

```
library(ggplot2)
library(dplyr)

ggplot(topTv_df, aes(x = Year, fill = Year)) +
  geom_bar() +
  labs(title = "Number of TV Shows Released by Year",
       x = "Year",
       y = "Number of TV Shows") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5),
        axis.text.x = element_text(angle = 44, hjust = 1))
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1959-1964' in 'mbcsToSbcs': dot substituted for <e2>
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '1959-1964' in 'mbcsToSbcs': dot substituted for <80>
```

[illegible]

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```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1959-1964' in 'mbcsToSbc': dot substituted for <e2>
```

[illegible]

[illegible]

[illegible]

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1973-1974' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbcsToSbc': dot substituted for <80>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1981-2003' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1990' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1989-1998' in 'mbcsToSbc': dot substituted for <e2>
```


[illegible]

[illegible]

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <80>  
  
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## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '1998-1999' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

```

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2003' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>

```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2002-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2005-2008' in 'mbcsToSbcs': dot substituted for <e2>
```

[illegible]

[illegible]

[illegible]

[illegible]


```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2006-2007' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2008-2013' in 'mbscsToSbscs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2009-2010' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbscsToSbscs': dot substituted for <e2>
```

[illegible]


```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2010-2017' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2011-2012' in 'mbcsToSbcs': dot substituted for <80>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <93>  
  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <e2>  
  
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## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <80>  
  
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## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2012' in 'mbscsToSbscs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <80>  
  
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## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2014' in 'mbcsToSbcs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <e2>  
  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2011-2019' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <93>  
  
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## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2012-2016' in 'mbcsToSbcs': dot substituted for <e2>
```


[illegible]

[illegible]

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <e2>  
  
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## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2017' in 'mbcsToSbc': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <80>  
  
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## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2013-2023' in 'mbsToSbs': dot substituted for <e2>
```

[illegible]

```

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2013-2023' in 'mbcsToSbcs': dot substituted for <93>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2014- ' in 'mbcsToSbcs': dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2014- ' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2014- ' in 'mbcsToSbcs': dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2014- ' in 'mbcsToSbcs': dot substituted for <80>

```


[illegible]

[illegible]

[illegible]

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <93>  
  
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## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <80>  
  
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## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2015-2022' in 'mbcsToSbcs': dot substituted for <e2>
```

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

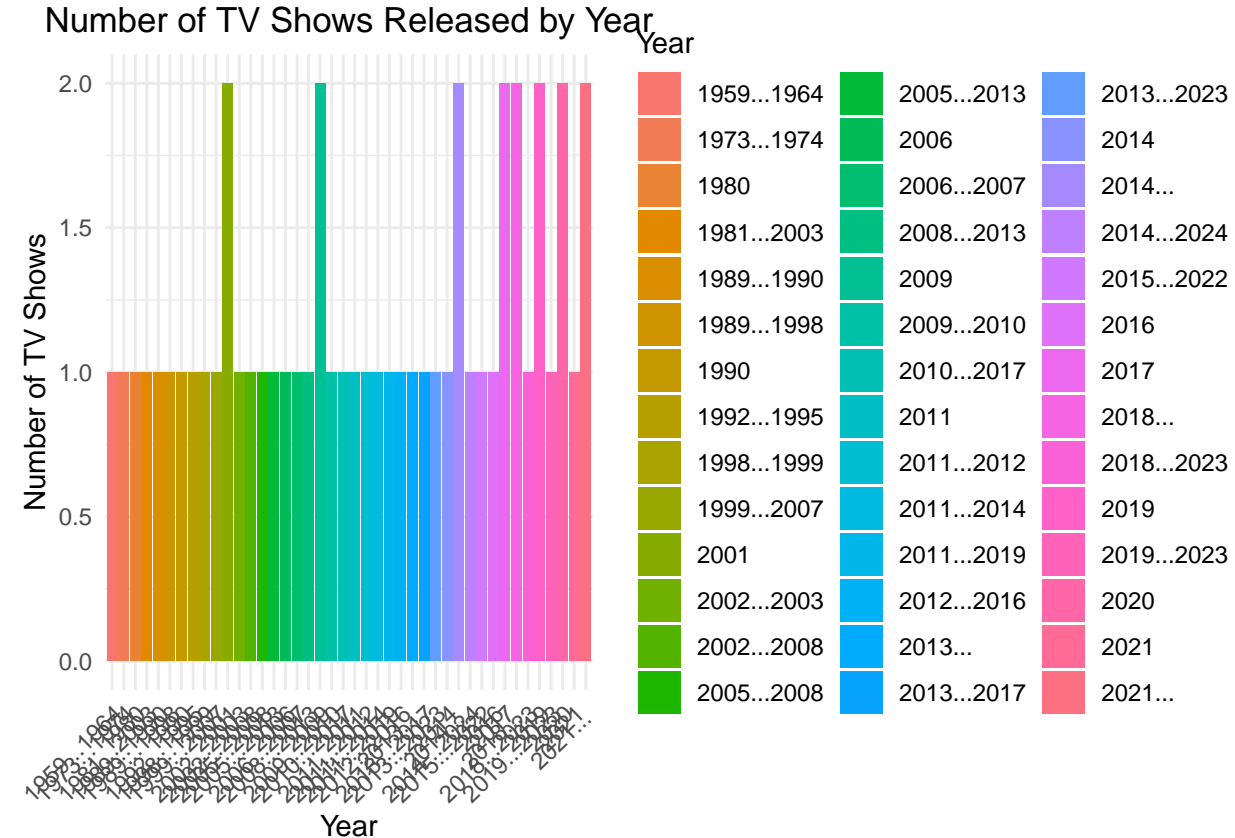
```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <93>  
  
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## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <80>  
  
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## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <80>  
  
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## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2019-2023' in 'mbcsToSbcs': dot substituted for <e2>
```

[illegible]

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <80>  
  
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## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <93>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <e2>  
  
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## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on '2021- ' in 'mbcsToSbcs': dot substituted for <80>
```

[illegible]

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '2021- ' in 'mbsToSbcs': dot substituted for <93>
```



```
cat("The year with the most number of tv shows is", topTv_df$Year[1])
```

```
## The year with the most number of tv shows is 2008-2013
```

4. Select 3 products from Amazon of the same category. Extract the price, description, ratings and reviews of each product.

```
install.packages("rvest") install.packages("dplyr") install.packages("polite") install.packages("tidyverse")
FIRST ITEM
```

```
library(rvest)
library(dplyr)
library(polite)
library(tidyverse)
item1 <- "www.amazon.com/dp/B09726KT4R/ref=sspa_dk_detail_4?pd_rd_i=B09726KT4R&pd_rd_w=yWjR0&content-id=
session1 <- html_session(item1, user_agent = "Educational Purposes")
```

```
## Warning: `html_session()` was deprecated in rvest 1.0.0.
## i Please use `session()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```
price1 <- session1 %>%
  html_nodes('span.a-offscreen') %>%
  html_text() %>%
  trimws()
```

```

price1[1]

## [1] "$99.99"
description1 <- session1 %>%
  html_nodes('span.a-size-large.product-title-word-break') %>%
  html_text() %>%
  trimws()
description1

## [1] "ASUS ROG Spatha X Wireless Gaming Mouse (Magnetic Charging Stand, 12 Programmable Buttons, 19,000 Clicks)"
prodrating1 <- session1 %>%
  html_nodes('.a-icon-star .a-icon-alt') %>%
  html_text() %>%
  trimws()
prodrating1[1]

## [1] "4.3 out of 5 stars"
prodreview1 <- session1 %>%
  html_nodes('#acrCustomerReviewText') %>%
  html_text() %>%
  trimws()
prodreview1[1]

## [1] "692 ratings"

```

SECOND ITEM

```

item2 <- "www.amazon.com/dp/B0BWS5SC27/ref=sspa_dk_detail_3?psc=1&pd_rd_i=B0BWS5SC27&pd_rd_w=TSdv4&cont
session2 <- html_session(item2, user_agent = "Educational Purposes")

price2 <- session2 %>%
  html_nodes('span.a-offscreen') %>%
  html_text() %>%
  trimws()
price2[1]

## [1] "$188.99"
description2 <- session2 %>%
  html_nodes('span.a-size-large.product-title-word-break') %>%
  html_text() %>%
  trimws()
description2

## [1] "ASUS ROG Claymore II 100% / 80% TKL Wireless RGB Modular Gaming Keyboard, ROG RX Red Switches, 100% Anti-Ghosting, 10-Key Roll-Over, 100% Anti-Ghosting, 100% Anti-Ghosting"
prodrating2 <- session2 %>%
  html_nodes('.a-icon-star .a-icon-alt') %>%
  html_text() %>%
  trimws()
prodrating2[1]

## [1] "4.5 out of 5 stars"

```



```

prodreview2 <- session2 %>%
  html_nodes('#acrCustomerReviewText') %>%
  html_text() %>%
  trimws()
prodreview2[1]

```

```
## [1] "15 ratings"
```

THIRD ITEM

```

item3 <- "www.amazon.com/ASUS-ROG-Qi-Micro-Textured-Pass-Through/dp/B07P9GHDQ3/ref=pd_bxgy_img_d_sccl_2"
session3 <- html_session(item3, user_agent = "Educational Purposes")

```

```

price3 <- session3 %>%
  html_nodes('span.a-offscreen') %>%
  html_text() %>%
  trimws()
price3[1]

```

```
## [1] "$69.99"
```

```

description3 <- session3 %>%
  html_nodes('span.a-size-large.product-title-word-break') %>%
  html_text() %>%
  trimws()
description3

```

```
## [1] "ASUS ROG Balteus Qi Vertical Gaming Mouse Pad with Wireless Qi Charging Zone, Hard Micro-Textured Surface"
```

```

prodrating3 <- session3 %>%
  html_nodes('.a-icon-star .a-icon-alt') %>%
  html_text() %>%
  trimws()
prodrating3[1]

```

```
## [1] "4.5 out of 5 stars"
```

```

prodreview3 <- session3 %>%
  html_nodes('#acrCustomerReviewText') %>%
  html_text() %>%
  trimws()
prodreview3[1]

```

```
## [1] "639 ratings"
```