RWorksheet#5_group(Leysa,Calambro)

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Loading needed libraries:

```r
library(rvest)
```

```
## Warning: package 'rvest' was built under R version 4.4.2
```

```r
library(polite)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
library(httr)
```

```
## Warning: package 'httr' was built under R version 4.4.2
```

```r
library(stringr)
library(ggplot2)
library(tibble)
```

```r
polite::use_manners(save_as = "polite_scrape_tvshows.R")
```

```
## v Setting active project to "C:/Worksheet_#5/Worksheet_#5".
```

```r
url <- "https://www.imdb.com/chart/toptv/?ref_=nv_tvv_250"
session <- bow(url, user_agent = "Educational")
session
```

```
## <polite session> https://www.imdb.com/chart/toptv/?ref_=nv_tvv_250
##     User-agent: Educational
##     robots.txt: 35 rules are defined for 3 bots
##     Crawl delay: 5 sec
##   The path is scrapable for this user-agent
```

  1.

Getting the TV Show title.

```r
#Title
title_lists <- scrape(session) %>% html_nodes("h3.ipc-title__text") %>% html_text(trim = TRUE)
```

```r
#filter unwanted
title_lists <- title_lists[!grepl("Recently viewed", title_lists)]
title_lists
```

```
##  [1] "IMDb Charts"                          "1. Breaking Bad"
##  [3] "2. Planet Earth II"                   "3. Planet Earth"
##  [5] "4. Band of Brothers"                  "5. Chernobyl"
##  [7] "6. The Wire"                          "7. Avatar: The Last Airbender"
##  [9] "8. Blue Planet II"                    "9. The Sopranos"
## [11] "10. Cosmos: A Spacetime Odyssey"      "11. Cosmos"
## [13] "12. Our Planet"                       "13. Game of Thrones"
## [15] "14. Bluey"                            "15. The World at War"
## [17] "16. Fullmetal Alchemist Brotherhood"  "17. Rick and Morty"
## [19] "18. Life"                             "19. The Last Dance"
## [21] "20. The Twilight Zone"                "21. The Vietnam War"
## [23] "22. Sherlock"                         "23. Attack on Titan"
## [25] "24. Batman: The Animated Series"      "25. Arcane"
```

List of top 50 TV Shows

```r
class(title_lists)
```

```
## [1] "character"
```

```r
title_List <- as.data.frame(title_lists[2:51])
title_List
```

```
##                      title_lists[2:51]
## 1                        1. Breaking Bad
## 2                     2. Planet Earth II
## 3                        3. Planet Earth
## 4                     4. Band of Brothers
## 5                           5. Chernobyl
## 6                            6. The Wire
## 7        7. Avatar: The Last Airbender
## 8                       8. Blue Planet II
## 9                         9. The Sopranos
## 10     10. Cosmos: A Spacetime Odyssey
## 11                           11. Cosmos
## 12                       12. Our Planet
## 13                 13. Game of Thrones
## 14                           14. Bluey
## 15                 15. The World at War
## 16 16. Fullmetal Alchemist Brotherhood
## 17                   17. Rick and Morty
## 18                             18. Life
## 19                   19. The Last Dance
## 20             20. The Twilight Zone
## 21               21. The Vietnam War
## 22                        22. Sherlock
## 23              23. Attack on Titan
## 24     24. Batman: The Animated Series
## 25                          25. Arcane
## 26                                <NA>
## 27                                <NA>
## 28                                <NA>
```

```
## 29                                                    <NA>
## 30                                                    <NA>
## 31                                                    <NA>
## 32                                                    <NA>
## 33                                                    <NA>
## 34                                                    <NA>
## 35                                                    <NA>
## 36                                                    <NA>
## 37                                                    <NA>
## 38                                                    <NA>
## 39                                                    <NA>
## 40                                                    <NA>
## 41                                                    <NA>
## 42                                                    <NA>
## 43                                                    <NA>
## 44                                                    <NA>
## 45                                                    <NA>
## 46                                                    <NA>
## 47                                                    <NA>
## 48                                                    <NA>
## 49                                                    <NA>
## 50                                                    <NA>
```

Seperating the rank number and the TV Show title.

```r
colnames(title_List) <- "ranks"
split_df <- strsplit(as.character(title_List$ranks),".",fixed = TRUE)
split_df <- data.frame(do.call(rbind,split_df))
split_df <- split_df[-c(3:4)]
colnames(split_df) <- c("Ranks","Title")
str(split_df)
```

```
## 'data.frame':    50 obs. of  2 variables:
##  $ Ranks: chr  "1" "2" "3" "4" ...
##  $ Title: chr  " Breaking Bad" " Planet Earth II" " Planet Earth" " Band of Brothers" ...
```

The Rank and the Title of the TV Shows

```r
class(split_df)
```

```
## [1] "data.frame"
```

```r
split_df
```

```
##    Ranks                        Title
## 1      1                  Breaking Bad
## 2      2               Planet Earth II
## 3      3                  Planet Earth
## 4      4               Band of Brothers
## 5      5                     Chernobyl
## 6      6                      The Wire
## 7      7      Avatar: The Last Airbender
## 8      8                  Blue Planet II
## 9      9                   The Sopranos
## 10    10      Cosmos: A Spacetime Odyssey
## 11    11                        Cosmos
## 12    12                     Our Planet
```

```
## 13    13                  Game of Thrones
## 14    14                             Bluey
## 15    15                 The World at War
## 16    16  Fullmetal Alchemist Brotherhood
## 17    17                    Rick and Morty
## 18    18                              Life
## 19    19                    The Last Dance
## 20    20                 The Twilight Zone
## 21    21                   The Vietnam War
## 22    22                          Sherlock
## 23    23                   Attack on Titan
## 24    24       Batman: The Animated Series
## 25    25                            Arcane
## 26  <NA>                              <NA>
## 27  <NA>                              <NA>
## 28  <NA>                              <NA>
## 29  <NA>                              <NA>
## 30  <NA>                              <NA>
## 31  <NA>                              <NA>
## 32  <NA>                              <NA>
## 33  <NA>                              <NA>
## 34  <NA>                              <NA>
## 35  <NA>                              <NA>
## 36  <NA>                              <NA>
## 37  <NA>                              <NA>
## 38  <NA>                              <NA>
## 39  <NA>                              <NA>
## 40  <NA>                              <NA>
## 41  <NA>                              <NA>
## 42  <NA>                              <NA>
## 43  <NA>                              <NA>
## 44  <NA>                              <NA>
## 45  <NA>                              <NA>
## 46  <NA>                              <NA>
## 47  <NA>                              <NA>
## 48  <NA>                              <NA>
## 49  <NA>                              <NA>
## 50  <NA>                              <NA>
```

Top 50 TV Show Rating

```r
rating <- scrape(session) %>% html_nodes("span.ipc-rating-star--rating") %>% html_text
tv_rating <- as.data.frame(rating [1:50])
tv_rating
```

```
##    rating[1:50]
## 1           9.5
## 2           9.5
## 3           9.4
## 4           9.4
## 5           9.3
## 6           9.3
## 7           9.3
## 8           9.3
## 9           9.2
```

```
## 10           9.2
## 11           9.3
## 12           9.2
## 13           9.2
## 14           9.3
## 15           9.2
## 16           9.1
## 17           9.1
## 18           9.1
## 19           9.0
## 20           9.0
## 21           9.1
## 22           9.1
## 23           9.1
## 24           9.0
## 25           9.1
## 26          <NA>
## 27          <NA>
## 28          <NA>
## 29          <NA>
## 30          <NA>
## 31          <NA>
## 32          <NA>
## 33          <NA>
## 34          <NA>
## 35          <NA>
## 36          <NA>
## 37          <NA>
## 38          <NA>
## 39          <NA>
## 40          <NA>
## 41          <NA>
## 42          <NA>
## 43          <NA>
## 44          <NA>
## 45          <NA>
## 46          <NA>
## 47          <NA>
## 48          <NA>
## 49          <NA>
## 50          <NA>
```

Number of People who Voted

```r
tv_votes <- scrape(session) %>% html_nodes("span.ipc-rating-star--voteCount") %>% html_text
total_tv_votes <- as.data.frame(tv_votes[1:50])
total_tv_votes
```

```
##     tv_votes[1:50]
## 1          (2.2M)
## 2          (163K)
## 3          (225K)
## 4          (548K)
## 5          (913K)
## 6          (393K)
```

```
## 7            (392K)
## 8             (50K)
## 9            (502K)
## 10           (132K)
## 11            (47K)
## 12            (55K)
## 13           (2.4M)
## 14            (35K)
## 15            (32K)
## 16           (211K)
## 17           (630K)
## 18            (45K)
## 19           (161K)
## 20            (98K)
## 21            (30K)
## 22             (1M)
## 23           (569K)
## 24           (123K)
## 25           (348K)
## 26            <NA>
## 27            <NA>
## 28            <NA>
## 29            <NA>
## 30            <NA>
## 31            <NA>
## 32            <NA>
## 33            <NA>
## 34            <NA>
## 35            <NA>
## 36            <NA>
## 37            <NA>
## 38            <NA>
## 39            <NA>
## 40            <NA>
## 41            <NA>
## 42            <NA>
## 43            <NA>
## 44            <NA>
## 45            <NA>
## 46            <NA>
## 47            <NA>
## 48            <NA>
## 49            <NA>
## 50            <NA>
```

Number of Episodes of each TV Shows

```r
episodes <- scrape(session) %>% html_nodes("span.sc-300a8231-7.eaXxft.cli-title-metadata-item") %>% html
cl_episodes <- gsub("\\D", "", episodes)
cleaned_ep <- str_extract(episodes, "\\d+(?=\\s*eps)")
cleaned_ep <- as.numeric(cleaned_ep)
cleaned_ep <- cleaned_ep[!is.na(cleaned_ep)]
cleaned_episodes <- as.data.frame(cleaned_ep[1:25])
cleaned_episodes
```

```
##    cleaned_ep[1:25]
## 1                62
## 2                 6
## 3                11
## 4                10
## 5                 5
## 6                60
## 7                62
## 8                 7
## 9                86
## 10               13
## 11               13
## 12               12
## 13               74
## 14              194
## 15               26
## 16               68
## 17               78
## 18               11
## 19               10
## 20              156
## 21               10
## 22               15
## 23               98
## 24               85
## 25               18
```

Year of TV Shows released

```
tv_years <- scrape(session) %>% html_nodes("span.sc-300a8231-7.eaXxft.cli-title-metadata-item") %>% html
clyear <- gsub(".*?(\\d{4}(-\\d{4})?).*", "\\1", tv_years)
yeartv <- str_extract(tv_years, "\\b\\d{4}(-\\d{4})?\\b")
yeartv <- as.numeric(yeartv)
yeartv <- yeartv[!is.na(yeartv)]
tv_year_of_air <- as.data.frame(yeartv[1:50])
tv_year_of_air
```

```
##    yeartv[1:50]
## 1          2008
## 2          2016
## 3          2006
## 4          2001
## 5          2019
## 6          2002
## 7          2005
## 8          2017
## 9          1999
## 10         2014
## 11         1980
## 12         2019
## 13         2011
## 14         2018
## 15         1973
## 16         2009
## 17         2013
```

```
## 18           2009
## 19           2020
## 20           1959
## 21           2017
## 22           2010
## 23           2013
## 24           1992
## 25           2021
## 26             NA
## 27             NA
## 28             NA
## 29             NA
## 30             NA
## 31             NA
## 32             NA
## 33             NA
## 34             NA
## 35             NA
## 36             NA
## 37             NA
## 38             NA
## 39             NA
## 40             NA
## 41             NA
## 42             NA
## 43             NA
## 44             NA
## 45             NA
## 46             NA
## 47             NA
## 48             NA
## 49             NA
## 50             NA
```

Number of User Reviews

```r
review <- scrape(session) %>% html_nodes("ul.ipc-inline-list.sc-b782214c-0.bllRjU.baseAlt") %>% html_te
reviews <- as.data.frame(review[1:50])
reviews
```

```
##     review[1:50]
## 1           <NA>
## 2           <NA>
## 3           <NA>
## 4           <NA>
## 5           <NA>
## 6           <NA>
## 7           <NA>
## 8           <NA>
## 9           <NA>
## 10          <NA>
## 11          <NA>
## 12          <NA>
## 13          <NA>
## 14          <NA>
```

```
## 15           <NA>
## 16           <NA>
## 17           <NA>
## 18           <NA>
## 19           <NA>
## 20           <NA>
## 21           <NA>
## 22           <NA>
## 23           <NA>
## 24           <NA>
## 25           <NA>
## 26           <NA>
## 27           <NA>
## 28           <NA>
## 29           <NA>
## 30           <NA>
## 31           <NA>
## 32           <NA>
## 33           <NA>
## 34           <NA>
## 35           <NA>
## 36           <NA>
## 37           <NA>
## 38           <NA>
## 39           <NA>
## 40           <NA>
## 41           <NA>
## 42           <NA>
## 43           <NA>
## 44           <NA>
## 45           <NA>
## 46           <NA>
## 47           <NA>
## 48           <NA>
## 49           <NA>
## 50           <NA>
```

```r
#tried several links but still getting NA's.
```

Getting the number of Critic Reviews

```r
critic <- scrape(session) %>% html_nodes("ul.ipc-inline-list.sc-b782214c-0.bllRjU.baseAlt") %>% html_te
critic_rev <- as.data.frame(critic [1:50])
critic_rev
```

```
##    critic[1:50]
## 1          <NA>
## 2          <NA>
## 3          <NA>
## 4          <NA>
## 5          <NA>
## 6          <NA>
## 7          <NA>
## 8          <NA>
## 9          <NA>
```

```
## 10          <NA>
## 11          <NA>
## 12          <NA>
## 13          <NA>
## 14          <NA>
## 15          <NA>
## 16          <NA>
## 17          <NA>
## 18          <NA>
## 19          <NA>
## 20          <NA>
## 21          <NA>
## 22          <NA>
## 23          <NA>
## 24          <NA>
## 25          <NA>
## 26          <NA>
## 27          <NA>
## 28          <NA>
## 29          <NA>
## 30          <NA>
## 31          <NA>
## 32          <NA>
## 33          <NA>
## 34          <NA>
## 35          <NA>
## 36          <NA>
## 37          <NA>
## 38          <NA>
## 39          <NA>
## 40          <NA>
## 41          <NA>
## 42          <NA>
## 43          <NA>
## 44          <NA>
## 45          <NA>
## 46          <NA>
## 47          <NA>
## 48          <NA>
## 49          <NA>
## 50          <NA>
```

```
#tried several links but still getting NA's.
```

Getting the popularity Review

```
popularity_review <- scrape(session) %>% html_nodes("div.hero-rating-bar__popularity__down") %>% html_te
pop <- as.data.frame(popularity_review [1:50])
pop
```

```
##    popularity_review[1:50]
## 1                     <NA>
## 2                     <NA>
## 3                     <NA>
## 4                     <NA>
```

```
## 5                          <NA>
## 6                          <NA>
## 7                          <NA>
## 8                          <NA>
## 9                          <NA>
## 10                         <NA>
## 11                         <NA>
## 12                         <NA>
## 13                         <NA>
## 14                         <NA>
## 15                         <NA>
## 16                         <NA>
## 17                         <NA>
## 18                         <NA>
## 19                         <NA>
## 20                         <NA>
## 21                         <NA>
## 22                         <NA>
## 23                         <NA>
## 24                         <NA>
## 25                         <NA>
## 26                         <NA>
## 27                         <NA>
## 28                         <NA>
## 29                         <NA>
## 30                         <NA>
## 31                         <NA>
## 32                         <NA>
## 33                         <NA>
## 34                         <NA>
## 35                         <NA>
## 36                         <NA>
## 37                         <NA>
## 38                         <NA>
## 39                         <NA>
## 40                         <NA>
## 41                         <NA>
## 42                         <NA>
## 43                         <NA>
## 44                         <NA>
## 45                         <NA>
## 46                         <NA>
## 47                         <NA>
## 48                         <NA>
## 49                         <NA>
## 50                         <NA>
#tried several links but still getting NA's.
```

Data frame of TV Shows

```
final_data <- cbind(split_df,tv_rating,total_tv_votes,cleaned_episodes,tv_year_of_air,reviews,critic_re
colnames(final_data) <- c("Ranks", "TV Show Title", "Rating", "Number of People Voted", "Number of Episo
final_data
```

```
##    Ranks             TV Show Title Rating Number of People Voted
## 1      1               Breaking Bad    9.5                 (2.2M)
## 2      2            Planet Earth II    9.5                 (163K)
## 3      3               Planet Earth    9.4                 (225K)
## 4      4            Band of Brothers    9.4                 (548K)
## 5      5                   Chernobyl    9.3                 (913K)
## 6      6                    The Wire    9.3                 (393K)
## 7      7   Avatar: The Last Airbender    9.3                 (392K)
## 8      8              Blue Planet II    9.3                  (50K)
## 9      9                The Sopranos    9.2                 (502K)
## 10    10    Cosmos: A Spacetime Odyssey    9.2                 (132K)
## 11    11                      Cosmos    9.3                  (47K)
## 12    12                  Our Planet    9.2                  (55K)
## 13    13             Game of Thrones    9.2                 (2.4M)
## 14    14                       Bluey    9.3                  (35K)
## 15    15             The World at War    9.2                  (32K)
## 16    16 Fullmetal Alchemist Brotherhood    9.1                 (211K)
## 17    17              Rick and Morty    9.1                 (630K)
## 18    18                        Life    9.1                  (45K)
## 19    19              The Last Dance    9.0                 (161K)
## 20    20            The Twilight Zone    9.0                  (98K)
## 21    21             The Vietnam War    9.1                  (30K)
## 22    22                    Sherlock    9.1                   (1M)
## 23    23              Attack on Titan    9.1                 (569K)
## 24    24   Batman: The Animated Series    9.0                 (123K)
## 25    25                      Arcane    9.1                 (348K)
## 26  <NA>                        <NA>   <NA>                  <NA>
## 27  <NA>                        <NA>   <NA>                  <NA>
## 28  <NA>                        <NA>   <NA>                  <NA>
## 29  <NA>                        <NA>   <NA>                  <NA>
## 30  <NA>                        <NA>   <NA>                  <NA>
## 31  <NA>                        <NA>   <NA>                  <NA>
## 32  <NA>                        <NA>   <NA>                  <NA>
## 33  <NA>                        <NA>   <NA>                  <NA>
## 34  <NA>                        <NA>   <NA>                  <NA>
## 35  <NA>                        <NA>   <NA>                  <NA>
## 36  <NA>                        <NA>   <NA>                  <NA>
## 37  <NA>                        <NA>   <NA>                  <NA>
## 38  <NA>                        <NA>   <NA>                  <NA>
## 39  <NA>                        <NA>   <NA>                  <NA>
## 40  <NA>                        <NA>   <NA>                  <NA>
## 41  <NA>                        <NA>   <NA>                  <NA>
## 42  <NA>                        <NA>   <NA>                  <NA>
## 43  <NA>                        <NA>   <NA>                  <NA>
## 44  <NA>                        <NA>   <NA>                  <NA>
## 45  <NA>                        <NA>   <NA>                  <NA>
## 46  <NA>                        <NA>   <NA>                  <NA>
## 47  <NA>                        <NA>   <NA>                  <NA>
## 48  <NA>                        <NA>   <NA>                  <NA>
## 49  <NA>                        <NA>   <NA>                  <NA>
## 50  <NA>                        <NA>   <NA>                  <NA>
##    Number of Episodes Year Released User Reviews Critic Reviews
## 1                 62          2008         <NA>          <NA>
## 2                  6          2016         <NA>          <NA>
```

```
## 3                 11     2006    <NA>        <NA>
## 4                 10     2001    <NA>        <NA>
## 5                  5     2019    <NA>        <NA>
## 6                 60     2002    <NA>        <NA>
## 7                 62     2005    <NA>        <NA>
## 8                  7     2017    <NA>        <NA>
## 9                 86     1999    <NA>        <NA>
## 10                13     2014    <NA>        <NA>
## 11                13     1980    <NA>        <NA>
## 12                12     2019    <NA>        <NA>
## 13                74     2011    <NA>        <NA>
## 14               194     2018    <NA>        <NA>
## 15                26     1973    <NA>        <NA>
## 16                68     2009    <NA>        <NA>
## 17                78     2013    <NA>        <NA>
## 18                11     2009    <NA>        <NA>
## 19                10     2020    <NA>        <NA>
## 20               156     1959    <NA>        <NA>
## 21                10     2017    <NA>        <NA>
## 22                15     2010    <NA>        <NA>
## 23                98     2013    <NA>        <NA>
## 24                85     1992    <NA>        <NA>
## 25                18     2021    <NA>        <NA>
## 26                62       NA    <NA>        <NA>
## 27                 6       NA    <NA>        <NA>
## 28                11       NA    <NA>        <NA>
## 29                10       NA    <NA>        <NA>
## 30                 5       NA    <NA>        <NA>
## 31                60       NA    <NA>        <NA>
## 32                62       NA    <NA>        <NA>
## 33                 7       NA    <NA>        <NA>
## 34                86       NA    <NA>        <NA>
## 35                13       NA    <NA>        <NA>
## 36                13       NA    <NA>        <NA>
## 37                12       NA    <NA>        <NA>
## 38                74       NA    <NA>        <NA>
## 39               194       NA    <NA>        <NA>
## 40                26       NA    <NA>        <NA>
## 41                68       NA    <NA>        <NA>
## 42                78       NA    <NA>        <NA>
## 43                11       NA    <NA>        <NA>
## 44                10       NA    <NA>        <NA>
## 45               156       NA    <NA>        <NA>
## 46                10       NA    <NA>        <NA>
## 47                15       NA    <NA>        <NA>
## 48                98       NA    <NA>        <NA>
## 49                85       NA    <NA>        <NA>
## 50                18       NA    <NA>        <NA>
##     Popularity Review
## 1            <NA>
## 2            <NA>
## 3            <NA>
## 4            <NA>
## 5            <NA>
```

```
## 6                     <NA>
## 7                     <NA>
## 8                     <NA>
## 9                     <NA>
## 10                    <NA>
## 11                    <NA>
## 12                    <NA>
## 13                    <NA>
## 14                    <NA>
## 15                    <NA>
## 16                    <NA>
## 17                    <NA>
## 18                    <NA>
## 19                    <NA>
## 20                    <NA>
## 21                    <NA>
## 22                    <NA>
## 23                    <NA>
## 24                    <NA>
## 25                    <NA>
## 26                    <NA>
## 27                    <NA>
## 28                    <NA>
## 29                    <NA>
## 30                    <NA>
## 31                    <NA>
## 32                    <NA>
## 33                    <NA>
## 34                    <NA>
## 35                    <NA>
## 36                    <NA>
## 37                    <NA>
## 38                    <NA>
## 39                    <NA>
## 40                    <NA>
## 41                    <NA>
## 42                    <NA>
## 43                    <NA>
## 44                    <NA>
## 45                    <NA>
## 46                    <NA>
## 47                    <NA>
## 48                    <NA>
## 49                    <NA>
## 50                    <NA>
```

```r
write.csv(final_data, "Top_50_tvshows.csv", row.names = FALSE)
```

2.

```r
# Defining a function in order to scrape IMDb reviews
rev_scrapes <- function(url) {
  page <- tryCatch(read_html(url), error = function(e) NULL)
  if (is.null(page)) {
    message("Failed to load page: ", url)
```

```r
    return(tibble())
}

# Scraping the title of the movies
movie_title <- page %>%
  html_nodes("h1[data-testid='hero-title-block__title']") %>%
  html_text(trim = TRUE)

# Checking if the title was extracted:
if (length(movie_title) == 0) {
  message("Failed to extract show title for URL: ", url)
  movie_title <- NA  # Set to NA if the title is not found
}

# Extract relevant review data
reviewer_names <- page %>%
  html_nodes("a.ipc-link.ipc-link--base") %>%
  html_text() %>%
  .[. != "Permalink"]

date_review <- page %>%
  html_nodes("li.ipc-inline-list__item.review-date") %>%
  html_text()

movie_ratings <- page %>%
  html_nodes("span.ipc-rating-star--rating") %>%
  html_text() %>%
  as.numeric()

review_titles <- page %>%
  html_nodes("h3.ipc-title__text") %>%
  html_text()

helpful_votes <- page %>%
  html_nodes("span.ipc-voting__label__count.ipc-voting__label__count--up") %>%
  html_text() %>%
  as.numeric()

review_texts <- page %>%
  html_nodes("div.ipc-html-content-inner-div") %>%
  html_text()

# Adjust lengths by padding shorter vectors with NA
max_length <- max(length(reviewer_names), length(date_review), length(movie_ratings), length(review_t

# Pad vectors with NA if they are shorter than max_length
reviewer_names <- c(reviewer_names, rep(NA, max_length - length(reviewer_names)))
date_review <- c(date_review, rep(NA, max_length - length(date_review)))
movie_ratings <- c(movie_ratings, rep(NA, max_length - length(movie_ratings)))
review_titles <- c(review_titles, rep(NA, max_length - length(review_titles)))
helpful_votes <- c(helpful_votes, rep(NA, max_length - length(helpful_votes)))
review_texts <- c(review_texts, rep(NA, max_length - length(review_texts)))
```

```r
  # Combine data into a tibble
  tibble(
    movie_title = rep(movie_title, max_length),  # Add the show title to each review
    reviewer_name = reviewer_names,
    review_date = date_review,
    rating = movie_ratings,
    review_title = review_titles,
    helpful_votes = helpful_votes,
    review_text = review_texts
  )
}

# List of IMDb links
links <- c(
  "https://www.imdb.com/title/tt0903747/reviews/?ref_=tt_ov_urv",
  "https://www.imdb.com/title/tt5491994/reviews/?ref_=tt_ov_urv",
  "https://www.imdb.com/title/tt0795176/reviews/?ref_=tt_ov_urv",
  "https://www.imdb.com/title/tt0185906/reviews/?ref_=tt_ov_urv",
  "https://www.imdb.com/title/tt0306414/reviews/?ref_=tt_ov_urv"
)

# Initialize an empty tibble to store all reviews
all_movie_reviews <- tibble()

# Loop through each link and scrape reviews
for (link in links) {
  reviews <- rev_scrapes(link)

  # Check if reviews are scraped successfully and limit to 20 reviews per link
  if (nrow(reviews) > 0) {
    reviews <- reviews %>% slice(1:20)  # Limit to the first 20 reviews per link
    all_movie_reviews <- bind_rows(all_movie_reviews, reviews)
  }
}
```

```
## Failed to extract show title for URL: https://www.imdb.com/title/tt0903747/reviews/?ref_=tt_ov_urv

## Failed to extract show title for URL: https://www.imdb.com/title/tt5491994/reviews/?ref_=tt_ov_urv

## Failed to extract show title for URL: https://www.imdb.com/title/tt0795176/reviews/?ref_=tt_ov_urv

## Failed to extract show title for URL: https://www.imdb.com/title/tt0185906/reviews/?ref_=tt_ov_urv

## Failed to extract show title for URL: https://www.imdb.com/title/tt0306414/reviews/?ref_=tt_ov_urv
```

```r
# View the first 20 reviews after scraping all links
print(all_movie_reviews)
```

```
## # A tibble: 100 x 7
##    movie_title reviewer_name    review_date   rating review_title helpful_votes
##    <lgl>       <chr>            <chr>          <dbl> <chr>                <dbl>
## 1 NA          FiRE010          Jul 3, 2021      10 Really Great             NA
## 2 NA          bruhperson       Mar 6, 2019      10 It's ok I g~            NA
## 3 NA          KinoKoopaKid     Jul 29, 2021     10 99.1% pure              NA
## 4 NA          jehuschultz      Feb 18, 2020     10 The Best                NA
## 5 NA          Supermanfan-13   Nov 8, 2021      10 Damn near p~            NA
## 6 NA          manishsingh-03299 May 30, 2019    10 Those days ~            NA
```

```
##  7 NA         Rob1331         Dec 8, 2022    10 Absolutely ~         NA
##  8 NA         xpinerhd        Nov 15, 2019   10 Best TV sho~         NA
##  9 NA         dhanushreddy-14919 Jul 17, 2021 10 ABSOLUTE PE~        NA
## 10 NA         tushv-31482     Dec 8, 2022    10 Once in a l~         NA
## # i 90 more rows
## # i 1 more variable: review_text <chr>
```
```r
# Optionally, write the reviews to a CSV file
write.csv(all_movie_reviews, "IMDb_Movie_Reviews.csv", row.names = FALSE)
```

3. Graph of each TV show releases each year

```r
str(final_data$`Year Released`)
```

```
##  num [1:50] 2008 2016 2006 2001 2019 ...
```

```r
final_data$`Year Released` <- as.numeric(as.character(final_data$`Year Released`))
fdata <- final_data %>% filter(!is.na(`Year Released`))
tv_shows_by_year <- final_data %>%
  group_by(`Year Released`) %>%
  summarise(num_shows = n()) %>%
  arrange(`Year Released`)

# Create a time series plot
ggplot(tv_shows_by_year, aes(x = `Year Released`, y = num_shows)) +
  geom_line(color = "blue", size = 1) +
  geom_point(color = "red", size = 2) +
  labs(title = "Number of TV Shows Released by Year",
       x = "Year",
       y = "Number of Shows") +
  theme_minimal()
```

```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```
## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_line()`).
```

```
## Warning: Removed 1 row containing missing values or values outside the scale range
## (`geom_point()`).
```

Number of TV Shows Released by Year
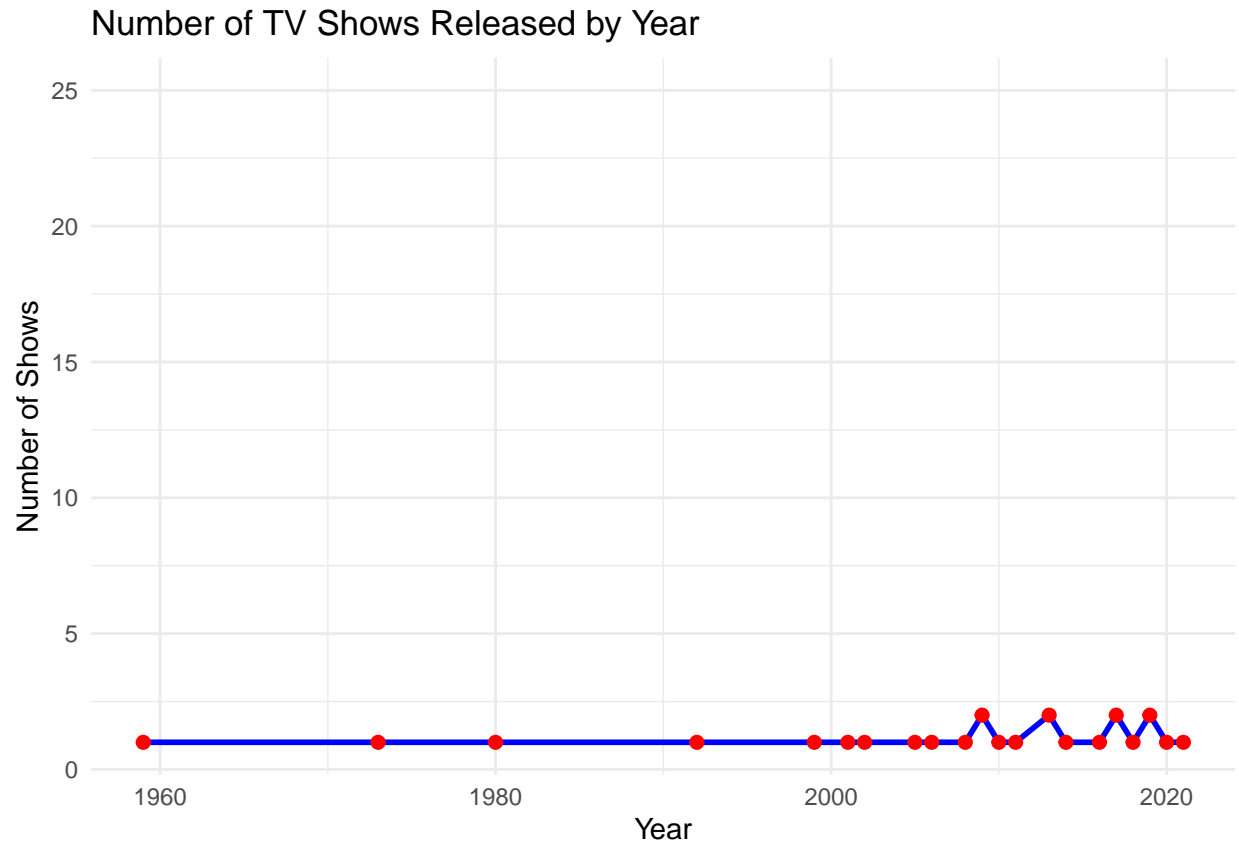
AMAZON PART

```r
polite::use_manners(save_as = 'polite_scrape.R')

url <- 'https://www.amazon.com'


session <- bow(url,
               user_agent = "Educational")
session
```

```
## <polite session> https://www.amazon.com
##      User-agent: Educational
##      robots.txt: 138 rules are defined for 5 bots
##    Crawl delay: 5 sec
##   The path is scrapable for this user-agent
```

```r
scrape_amazon_products <- function(base_url, category, num_products = 30) {
  all_data <- data.frame()
  page_number <- 1

  while (nrow(all_data) < num_products) {
    # Construct the URL for the current page
    url <- paste0(base_url, "&page=", page_number)
    message("Scraping: ", url)

    page <- read_html(url)
```

```r
    product_titles <- page %>%
      html_nodes("span.a-text-normal") %>%
      html_text(trim = TRUE)
    if (length(product_titles) == 0) product_titles <- NA


    price <- page %>%
      html_nodes('.a-price .a-offscreen') %>%
      html_text(trim = TRUE)
     if (length(price) == 0) price <- NA

    ratings <- page %>%
      html_nodes('span.a-icon-alt') %>%
      html_text(trim = TRUE) %>%
      str_extract("\\d\\.\\d") %>%
      as.numeric()
    if (length(ratings) == 0) ratings <- NA

    reviews <- page %>%
      html_nodes('.s-link-style .s-underline-text') %>%
      html_text(trim = TRUE)
    if (length(reviews) == 0) reviews <- NA

    descriptions <- page %>%
      html_nodes("span.a-text-normal") %>%
      html_text(trim = TRUE)
    if (length(reviews) == 0) reviews <- rep(NA, length(product_titles))


    min_length <- min(length(product_titles), length(price), length(ratings), length(descriptions), len
     if (length(product_titles) > 0 && length(price) > 0 && length(ratings) > 0) {
  min_length <- min(length(product_titles), length(price), length(ratings), length(descriptions), length
} else {
  break
}
  # Exit if no products are found on the page

    data <- data.frame(
      ProductTitle = head(product_titles, min_length),
      Price = head(price, min_length),
      Category = rep(category, min_length),
      Ratings = head(ratings, min_length),
      ReviewCount = head(reviews, min_length),
      Description = head(descriptions, min_length)
    )


    all_data <- bind_rows(all_data, data)

    page_number <- page_number + 1


  }
```

```r
  all_data <- head(all_data, num_products)


  all_data$ProductTitle <- paste0(seq_len(nrow(all_data)), ". ", all_data$ProductTitle)

  return(all_data)
}
```

```r
mouse_url <- "https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_
phone_url <- "https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SUO&sprefix=phone%2Caps%2C2975&ref=nb_sb_
boysclothing_url <- "https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A
babiesproducts_url <- "https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A1622500
girlsclothing_url <- "https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A
```

```r
mouseproducts <- scrape_amazon_products(mouse_url, "Mouse", 30)
```

```
## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=mouse&crid=1P0QY16XK63WD&sprefix=mouse%2Caps%2C1195&ref=nb_sb_no
```

```r
phoneproducts <- scrape_amazon_products(phone_url, "Phones", 30)
```

```
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SUO&sprefix=phone%2Caps%2C2975&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SUO&sprefix=phone%2Caps%2C2975&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SUO&sprefix=phone%2Caps%2C2975&ref=nb_sb_no

## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SUO&sprefix=phone%2Caps%2C2975&ref=nb_sb_no
```

```
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n
## Scraping: https://www.amazon.com/s?k=phone&crid=1WBAK21JA8SU0&sprefix=phone%2Caps%2C2975&ref=nb_sb_n

boysclothingproducts <- scrape_amazon_products(boysclothing_url, "Boys' Clothing", 30)

## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
```

```
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225021011&rh=n%3A16225021011%2Cn%3A1040666%
```

```r
babiessupplyproducts <- scrape_amazon_products(babiesproducts_url, "Babies Supplies", 30)
```

```
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
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## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
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## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
## Scraping: https://www.amazon.com/s?i=baby-products-intl-ship&srs=16225005011&rh=n%3A16225005011&s=po
girlsclothingproducts <- scrape_amazon_products(girlsclothing_url, "Girls' Clothing", 30)

## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
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## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
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## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
## Scraping: https://www.amazon.com/s?i=specialty-aps&bbn=16225020011&rh=n%3A7141123011%2Cn%3A162250200
all_products <- bind_rows(mouseproducts, phoneproducts, boysclothingproducts, babiessupplyproducts, girl

print(all_products)
```

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## 
## 1                                                                    1. Check each product page fo
## 2                                                                    2. Check each product page fo
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## 5                                                                    5. Check each product page fo
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## 37                                                                   7. Check each product page fo
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## 38                                                                            8. Check each product page fo
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## 41  11. Check each product page for other buying options. Price and other details may vary based on
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## 62   2. Check each product page for other buying options. Price and other details may vary based on
## 63   3. Check each product page for other buying options. Price and other details may vary based on
## 64   4. Check each product page for other buying options. Price and other details may vary based on
## 65   5. Check each product page for other buying options. Price and other details may vary based on
## 66   6. Check each product page for other buying options. Price and other details may vary based on
## 67   7. Check each product page for other buying options. Price and other details may vary based on
## 68   8. Check each product page for other buying options. Price and other details may vary based on
## 69   9. Check each product page for other buying options. Price and other details may vary based on
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## 79  19. Check each product page for other buying options. Price and other details may vary based on
## 80  20. Check each product page for other buying options. Price and other details may vary based on
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## 83  23. Check each product page for other buying options. Price and other details may vary based on
## 84  24. Check each product page for other buying options. Price and other details may vary based on
## 85  25. Check each product page for other buying options. Price and other details may vary based on
## 86  26. Check each product page for other buying options. Price and other details may vary based on
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## 89  29. Check each product page for other buying options. Price and other details may vary based on
## 90  30. Check each product page for other buying options. Price and other details may vary based on
## 91                                                                            1. Check each product page fo
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## 115 25. Check each product page for other buying options. Price and other details may vary based on
## 116 26. Check each product page for other buying options. Price and other details may vary based on
## 117 27. Check each product page for other buying options. Price and other details may vary based on
## 118 28. Check each product page for other buying options. Price and other details may vary based on
## 119 29. Check each product page for other buying options. Price and other details may vary based on
## 120 30. Check each product page for other buying options. Price and other details may vary based on
## 121  1. Check each product page for other buying options. Price and other details may vary based on
## 122  2. Check each product page for other buying options. Price and other details may vary based on
## 123  3. Check each product page for other buying options. Price and other details may vary based on
## 124  4. Check each product page for other buying options. Price and other details may vary based on
## 125  5. Check each product page for other buying options. Price and other details may vary based on
## 126  6. Check each product page for other buying options. Price and other details may vary based on
## 127  7. Check each product page for other buying options. Price and other details may vary based on
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## 131 11. Check each product page for other buying options. Price and other details may vary based on
## 132 12. Check each product page for other buying options. Price and other details may vary based on
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## 136 16. Check each product page for other buying options. Price and other details may vary based on
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## 140 20. Check each product page for other buying options. Price and other details may vary based on
## 141 21. Check each product page for other buying options. Price and other details may vary based on
## 142 22. Check each product page for other buying options. Price and other details may vary based on
## 143 23. Check each product page for other buying options. Price and other details may vary based on
## 144 24. Check each product page for other buying options. Price and other details may vary based on
## 145 25. Check each product page for other buying options. Price and other details may vary based on
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## 146 26. Check each product page for other buying options. Price and other details may vary based on
## 147 27. Check each product page for other buying options. Price and other details may vary based on
## 148 28. Check each product page for other buying options. Price and other details may vary based on
## 149 29. Check each product page for other buying options. Price and other details may vary based on
## 150 30. Check each product page for other buying options. Price and other details may vary based on
##         Price     Category Ratings ReviewCount
## 1     $19.99         Mouse     4.5       1,893
## 2     $17.99         Mouse     4.3          48
## 3     $24.99         Mouse     4.3      14,286
## 4     $39.99         Mouse     4.0          48
## 5     $18.99         Mouse     4.1         196
## 6     $18.99         Mouse     4.1         196
## 7     $19.99         Mouse     4.5          31
## 8     $13.99         Mouse     4.4          76
## 9     $16.89         Mouse     4.0         292
## 10    $32.99         Mouse     4.1         425
## 11    $18.99         Mouse     4.1         196
## 12    $37.99         Mouse     4.4       1,487
## 13    $39.99         Mouse     5.0           4
## 14    $18.99         Mouse     4.1         196
## 15    $23.99         Mouse     4.5       3,447
## 16    $18.99         Mouse     4.1         196
## 17    $27.99         Mouse     4.0         171
## 18    $17.99         Mouse     4.5       1,825
## 19    $18.99         Mouse     4.1         196
## 20    $18.38         Mouse     4.3       3,085
## 21    $12.99         Mouse     4.3          61
## 22    $18.99         Mouse     4.1         196
## 23    $17.99         Mouse     4.3          48
## 24    $19.99         Mouse     4.2         118
## 25    $25.85         Mouse     3.8          47
## 26    $18.99         Mouse     4.1         196
## 27    $18.99         Mouse     4.1         196
## 28    $15.65         Mouse     4.3         724
## 29    $18.99         Mouse     4.1         196
## 30    $56.99         Mouse     4.4           6
## 31   $149.00        Phones     4.3         739
## 32   $158.99        Phones     3.3          54
## 33   $158.99        Phones     3.3          54
## 34   $129.99        Phones     5.0           6
## 35   $158.99        Phones     3.3          54
## 36   $158.99        Phones     3.3          54
## 37    $45.00        Phones     4.1      17,767
## 38   $359.00        Phones     4.0          39
## 39    $74.95        Phones     5.0           3
## 40   $150.00        Phones     3.5          12
## 41    $84.99        Phones     4.3         320
## 42    $25.99        Phones     4.4       4,809
## 43    $14.99        Phones     5.0           3
## 44    $84.99        Phones     4.3         320
## 45    $25.99        Phones     4.4       4,809
## 46    $25.99        Phones     4.4       4,809
## 47    $25.99        Phones     4.4       4,809
## 48    $84.99        Phones     4.3         320
```

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## 49    $84.99           Phones    4.3        320
## 50    $79.99           Phones    4.6         82
## 51   $129.99           Phones    3.0          2
## 52   $899.99           Phones    3.8        242
## 53   $129.99           Phones    3.0          2
## 54    $84.99           Phones    4.3        320
## 55    $84.99           Phones    4.3        320
## 56    $84.99           Phones    4.3        320
## 57     $8.99           Phones    4.8          6
## 58   $899.99           Phones    3.8        242
## 59    $84.99           Phones    4.3        320
## 60   $129.99           Phones    3.0          2
## 61    $33.99   Boys' Clothing    4.4      9,855
## 62    $33.99   Boys' Clothing    4.4      9,855
## 63    $33.99   Boys' Clothing    4.4      9,855
## 64    $33.99   Boys' Clothing    4.4      9,855
## 65    $26.99   Boys' Clothing    4.5      4,995
## 66    $33.99   Boys' Clothing    4.4      9,855
## 67    $35.99   Boys' Clothing    4.6      3,461
## 68    $25.99   Boys' Clothing    4.5      4,995
## 69    $33.99   Boys' Clothing    4.4      9,855
## 70    $24.99   Boys' Clothing    4.5      4,995
## 71    $26.99   Boys' Clothing    4.5      4,995
## 72    $33.99   Boys' Clothing    4.4      9,855
## 73    $35.99   Boys' Clothing    4.6      3,461
## 74    $26.99   Boys' Clothing    4.5      4,995
## 75    $18.99   Boys' Clothing    4.5        723
## 76    $26.99   Boys' Clothing    4.5      4,995
## 77    $26.99   Boys' Clothing    4.4        706
## 78    $26.99   Boys' Clothing    4.5      4,995
## 79    $26.99   Boys' Clothing    4.5      4,995
## 80    $29.53   Boys' Clothing    4.3        589
## 81    $33.99   Boys' Clothing    4.4      9,855
## 82    $26.99   Boys' Clothing    4.5      4,995
## 83    $19.99   Boys' Clothing    4.7      7,784
## 84    $33.99   Boys' Clothing    4.4      9,855
## 85    $29.53   Boys' Clothing    4.3        589
## 86    $18.99   Boys' Clothing    4.8        504
## 87    $26.99   Boys' Clothing    4.5      4,995
## 88    $18.99   Boys' Clothing    4.8        504
## 89    $26.99   Boys' Clothing    4.5      4,995
## 90    $26.99   Boys' Clothing    4.5      4,995
## 91     $6.15 Babies Supplies    4.8     30,125
## 92    $39.99 Babies Supplies    4.8     94,156
## 93    $39.99 Babies Supplies    4.5      2,927
## 94     $9.99 Babies Supplies    4.6     32,173
## 95    $19.99 Babies Supplies    4.8     28,470
## 96    $10.48 Babies Supplies    4.8      7,964
## 97     $8.99 Babies Supplies    4.8      8,136
## 98    $19.99 Babies Supplies    4.8        573
## 99     $7.99 Babies Supplies    4.8     47,617
## 100   $89.99 Babies Supplies    4.8     48,776
## 101   $29.99 Babies Supplies    4.5      5,876
## 102   $52.98 Babies Supplies    4.8    118,636
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## 103  $25.17 Babies Supplies      4.7      14,553
## 104  $11.47 Babies Supplies      4.8       1,357
## 105   $6.99 Babies Supplies      4.3       5,189
## 106  $22.39 Babies Supplies      4.5          54
## 107  $19.70 Babies Supplies      4.6       4,796
## 108  $18.97 Babies Supplies      4.5         678
## 109  $26.98 Babies Supplies      4.6       2,560
## 110  $12.79 Babies Supplies      4.5         585
## 111  $11.99 Babies Supplies      4.5       6,316
## 112   $7.99 Babies Supplies      4.7         186
## 113  $27.19 Babies Supplies      4.6         586
## 114  $31.90 Babies Supplies      4.1         565
## 115   $6.99 Babies Supplies      4.4       2,562
## 116   $6.28 Babies Supplies      4.7      33,577
## 117  $14.99 Babies Supplies      4.7         230
## 118  $14.98 Babies Supplies      4.8       4,473
## 119  $45.49 Babies Supplies      4.7         636
## 120  $14.99 Babies Supplies      4.5       3,004
## 121  $19.99 Girls' Clothing      4.7         155
## 122  $19.99 Girls' Clothing      4.8          28
## 123  $19.99 Girls' Clothing      4.8          28
## 124  $28.99 Girls' Clothing      4.5         383
## 125  $19.99 Girls' Clothing      4.8          28
## 126  $19.99 Girls' Clothing      4.8          28
## 127  $19.99 Girls' Clothing      4.8          28
## 128  $19.99 Girls' Clothing      4.8          28
## 129  $19.99 Girls' Clothing      4.8          28
## 130  $19.99 Girls' Clothing      4.8          28
## 131  $24.99 Girls' Clothing      4.6         436
## 132  $19.99 Girls' Clothing      4.8          28
## 133  $19.99 Girls' Clothing      4.8          28
## 134  $24.99 Girls' Clothing      4.6         436
## 135  $24.99 Girls' Clothing      4.6         436
## 136  $22.97 Girls' Clothing      4.5       1,520
## 137  $24.99 Girls' Clothing      4.6         436
## 138  $22.97 Girls' Clothing      4.5       1,520
## 139  $22.99 Girls' Clothing      4.6       1,774
## 140  $19.99 Girls' Clothing      4.8          28
## 141  $19.99 Girls' Clothing      4.8          28
## 142  $19.99 Girls' Clothing      4.8          28
## 143  $67.95 Girls' Clothing      4.2          61
## 144  $67.95 Girls' Clothing      4.2          61
## 145  $19.99 Girls' Clothing      4.8          28
## 146  $23.99 Girls' Clothing      4.5          38
## 147  $23.99 Girls' Clothing      4.5          38
## 148  $67.95 Girls' Clothing      4.2          61
## 149  $67.95 Girls' Clothing      4.2          61
## 150  $67.95 Girls' Clothing      4.2          61
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## 149 Check each product page for other buying options. Price and other details may vary based on produ
## 150 Check each product page for other buying options. Price and other details may vary based on produ
write.csv(all_products, "Amazon_products.csv")

#6. We scraped data for 30 Amazon products from 5 different categories and created a CSV file containin

#7. The use case for this data would be market research.

#8. The graphs illustrate pricing trends, customer satisfaction, and product popularity, assisting in i

# Load the CSV file containing the products
all_products <- read.csv("Amazon_products.csv")

# Ensure the Ratings column is numeric for sorting
all_products$Ratings <- as.numeric(all_products$Ratings)

# Check the structure to make sure Ratings are correctly formatted
str(all_products)
```

```
## 'data.frame':    150 obs. of  7 variables:
##  $ X           : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ ProductTitle: chr  "1. Check each product page for other buying options." "2. Check each product p
##  $ Price       : chr  "$19.99" "$17.99" "$24.99" "$39.99" ...
##  $ Category    : chr  "Mouse" "Mouse" "Mouse" "Mouse" ...
##  $ Ratings     : num  4.5 4.3 4.3 4 4.1 4.1 4.5 4.4 4 4.1 ...
##  $ ReviewCount : chr  "1,893" "48" "14,286" "48" ...
##  $ Description : chr  "Check each product page for other buying options." "Check each product page fo
```

```r
# Rank products by Ratings in descending order
ranked_by_ratings <- all_products %>%
  arrange(desc(Ratings))

# View the top-ranked products based on ratings
head(ranked_by_ratings, 150)  # Display the top 10 highest-rated products
```

```
##        X
## 1     13
## 2     34
## 3     39
## 4     43
## 5     57
## 6     86
## 7     88
## 8     91
## 9     92
## 10    95
## 11    96
## 12    97
## 13    98
## 14    99
## 15   100
## 16   102
## 17   104
## 18   118
## 19   122
## 20   123
## 21   125
## 22   126
## 23   127
## 24   128
## 25   129
## 26   130
## 27   132
## 28   133
## 29   140
## 30   141
## 31   142
## 32   145
## 33    83
## 34   103
## 35   112
## 36   116
## 37   117
## 38   119
```

```
## 39  121
## 40   50
## 41   67
## 42   73
## 43   94
## 44  107
## 45  109
## 46  113
## 47  131
## 48  134
## 49  135
## 50  137
## 51  139
## 52    1
## 53    7
## 54   15
## 55   18
## 56   65
## 57   68
## 58   70
## 59   71
## 60   74
## 61   75
## 62   76
## 63   78
## 64   79
## 65   82
## 66   87
## 67   89
## 68   90
## 69   93
## 70  101
## 71  106
## 72  108
## 73  110
## 74  111
## 75  120
## 76  124
## 77  136
## 78  138
## 79  146
## 80  147
## 81    8
## 82   12
## 83   30
## 84   42
## 85   45
## 86   46
## 87   47
## 88   61
## 89   62
## 90   63
## 91   64
## 92   66
```

```
## 93    69
## 94    72
## 95    77
## 96    81
## 97    84
## 98   115
## 99     2
## 100    3
## 101   20
## 102   21
## 103   23
## 104   28
## 105   31
## 106   41
## 107   44
## 108   48
## 109   49
## 110   54
## 111   55
## 112   56
## 113   59
## 114   80
## 115   85
## 116  105
## 117   24
## 118  143
## 119  144
## 120  148
## 121  149
## 122  150
## 123    5
## 124    6
## 125   10
## 126   11
## 127   14
## 128   16
## 129   19
## 130   22
## 131   26
## 132   27
## 133   29
## 134   37
## 135  114
## 136    4
## 137    9
## 138   17
## 139   38
## 140   25
## 141   52
## 142   58
## 143   40
## 144   32
## 145   33
## 146   35
```

```
## 147  36
## 148  51
## 149  53
## 150  60
##
## 1
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## 7    28. Check each product page for other buying options. Price and other details may vary based on
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## 18  28. Check each product page for other buying options. Price and other details may vary based on
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## 41   7. Check each product page for other buying options. Price and other details may vary based on
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## 48  14. Check each product page for other buying options. Price and other details may vary based on
## 49  15. Check each product page for other buying options. Price and other details may vary based on
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36

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## 50   17. Check each product page for other buying options. Price and other details may vary based on p
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## 148                                                             21. Check each product page fo
## 149                                                             23. Check each product page fo
## 150                                                             30. Check each product page fo
##       Price         Category Ratings ReviewCount
## 1    $39.99            Mouse     5.0           4
## 2   $129.99           Phones     5.0           6
## 3    $74.95           Phones     5.0           3
## 4    $14.99           Phones     5.0           3
## 5     $8.99           Phones     4.8           6
## 6    $18.99   Boys' Clothing     4.8         504
```

38

```
## 7    $18.99  Boys' Clothing   4.8       504
## 8     $6.15 Babies Supplies   4.8    30,125
## 9    $39.99 Babies Supplies   4.8    94,156
## 10   $19.99 Babies Supplies   4.8    28,470
## 11   $10.48 Babies Supplies   4.8     7,964
## 12    $8.99 Babies Supplies   4.8     8,136
## 13   $19.99 Babies Supplies   4.8       573
## 14    $7.99 Babies Supplies   4.8    47,617
## 15   $89.99 Babies Supplies   4.8    48,776
## 16   $52.98 Babies Supplies   4.8   118,636
## 17   $11.47 Babies Supplies   4.8     1,357
## 18   $14.98 Babies Supplies   4.8     4,473
## 19   $19.99 Girls' Clothing   4.8        28
## 20   $19.99 Girls' Clothing   4.8        28
## 21   $19.99 Girls' Clothing   4.8        28
## 22   $19.99 Girls' Clothing   4.8        28
## 23   $19.99 Girls' Clothing   4.8        28
## 24   $19.99 Girls' Clothing   4.8        28
## 25   $19.99 Girls' Clothing   4.8        28
## 26   $19.99 Girls' Clothing   4.8        28
## 27   $19.99 Girls' Clothing   4.8        28
## 28   $19.99 Girls' Clothing   4.8        28
## 29   $19.99 Girls' Clothing   4.8        28
## 30   $19.99 Girls' Clothing   4.8        28
## 31   $19.99 Girls' Clothing   4.8        28
## 32   $19.99 Girls' Clothing   4.8        28
## 33   $19.99  Boys' Clothing   4.7     7,784
## 34   $25.17 Babies Supplies   4.7    14,553
## 35    $7.99 Babies Supplies   4.7       186
## 36    $6.28 Babies Supplies   4.7    33,577
## 37   $14.99 Babies Supplies   4.7       230
## 38   $45.49 Babies Supplies   4.7       636
## 39   $19.99 Girls' Clothing   4.7       155
## 40   $79.99          Phones   4.6        82
## 41   $35.99  Boys' Clothing   4.6     3,461
## 42   $35.99  Boys' Clothing   4.6     3,461
## 43    $9.99 Babies Supplies   4.6    32,173
## 44   $19.70 Babies Supplies   4.6     4,796
## 45   $26.98 Babies Supplies   4.6     2,560
## 46   $27.19 Babies Supplies   4.6       586
## 47   $24.99 Girls' Clothing   4.6       436
## 48   $24.99 Girls' Clothing   4.6       436
## 49   $24.99 Girls' Clothing   4.6       436
## 50   $24.99 Girls' Clothing   4.6       436
## 51   $22.99 Girls' Clothing   4.6     1,774
## 52   $19.99           Mouse   4.5     1,893
## 53   $19.99           Mouse   4.5        31
## 54   $23.99           Mouse   4.5     3,447
## 55   $17.99           Mouse   4.5     1,825
## 56   $26.99  Boys' Clothing   4.5     4,995
## 57   $25.99  Boys' Clothing   4.5     4,995
## 58   $24.99  Boys' Clothing   4.5     4,995
## 59   $26.99  Boys' Clothing   4.5     4,995
## 60   $26.99  Boys' Clothing   4.5     4,995
```

```
## 61   $18.99  Boys' Clothing    4.5        723
## 62   $26.99  Boys' Clothing    4.5      4,995
## 63   $26.99  Boys' Clothing    4.5      4,995
## 64   $26.99  Boys' Clothing    4.5      4,995
## 65   $26.99  Boys' Clothing    4.5      4,995
## 66   $26.99  Boys' Clothing    4.5      4,995
## 67   $26.99  Boys' Clothing    4.5      4,995
## 68   $26.99  Boys' Clothing    4.5      4,995
## 69   $39.99 Babies Supplies    4.5      2,927
## 70   $29.99 Babies Supplies    4.5      5,876
## 71   $22.39 Babies Supplies    4.5         54
## 72   $18.97 Babies Supplies    4.5        678
## 73   $12.79 Babies Supplies    4.5        585
## 74   $11.99 Babies Supplies    4.5      6,316
## 75   $14.99 Babies Supplies    4.5      3,004
## 76   $28.99 Girls' Clothing    4.5        383
## 77   $22.97 Girls' Clothing    4.5      1,520
## 78   $22.97 Girls' Clothing    4.5      1,520
## 79   $23.99 Girls' Clothing    4.5         38
## 80   $23.99 Girls' Clothing    4.5         38
## 81   $13.99           Mouse    4.4         76
## 82   $37.99           Mouse    4.4      1,487
## 83   $56.99           Mouse    4.4          6
## 84   $25.99          Phones    4.4      4,809
## 85   $25.99          Phones    4.4      4,809
## 86   $25.99          Phones    4.4      4,809
## 87   $25.99          Phones    4.4      4,809
## 88   $33.99  Boys' Clothing    4.4      9,855
## 89   $33.99  Boys' Clothing    4.4      9,855
## 90   $33.99  Boys' Clothing    4.4      9,855
## 91   $33.99  Boys' Clothing    4.4      9,855
## 92   $33.99  Boys' Clothing    4.4      9,855
## 93   $33.99  Boys' Clothing    4.4      9,855
## 94   $33.99  Boys' Clothing    4.4      9,855
## 95   $26.99  Boys' Clothing    4.4        706
## 96   $33.99  Boys' Clothing    4.4      9,855
## 97   $33.99  Boys' Clothing    4.4      9,855
## 98    $6.99 Babies Supplies    4.4      2,562
## 99   $17.99           Mouse    4.3         48
## 100  $24.99           Mouse    4.3     14,286
## 101  $18.38           Mouse    4.3      3,085
## 102  $12.99           Mouse    4.3         61
## 103  $17.99           Mouse    4.3         48
## 104  $15.65           Mouse    4.3        724
## 105 $149.00          Phones    4.3        739
## 106  $84.99          Phones    4.3        320
## 107  $84.99          Phones    4.3        320
## 108  $84.99          Phones    4.3        320
## 109  $84.99          Phones    4.3        320
## 110  $84.99          Phones    4.3        320
## 111  $84.99          Phones    4.3        320
## 112  $84.99          Phones    4.3        320
## 113  $84.99          Phones    4.3        320
## 114  $29.53  Boys' Clothing    4.3        589
```

```
## 115  $29.53  Boys' Clothing     4.3       589
## 116   $6.99 Babies Supplies     4.3     5,189
## 117  $19.99           Mouse     4.2       118
## 118  $67.95 Girls' Clothing     4.2        61
## 119  $67.95 Girls' Clothing     4.2        61
## 120  $67.95 Girls' Clothing     4.2        61
## 121  $67.95 Girls' Clothing     4.2        61
## 122  $67.95 Girls' Clothing     4.2        61
## 123  $18.99           Mouse     4.1       196
## 124  $18.99           Mouse     4.1       196
## 125  $32.99           Mouse     4.1       425
## 126  $18.99           Mouse     4.1       196
## 127  $18.99           Mouse     4.1       196
## 128  $18.99           Mouse     4.1       196
## 129  $18.99           Mouse     4.1       196
## 130  $18.99           Mouse     4.1       196
## 131  $18.99           Mouse     4.1       196
## 132  $18.99           Mouse     4.1       196
## 133  $18.99           Mouse     4.1       196
## 134  $45.00          Phones     4.1    17,767
## 135  $31.90 Babies Supplies     4.1       565
## 136  $39.99           Mouse     4.0        48
## 137  $16.89           Mouse     4.0       292
## 138  $27.99           Mouse     4.0       171
## 139 $359.00          Phones     4.0        39
## 140  $25.85           Mouse     3.8        47
## 141 $899.99          Phones     3.8       242
## 142 $899.99          Phones     3.8       242
## 143 $150.00          Phones     3.5        12
## 144 $158.99          Phones     3.3        54
## 145 $158.99          Phones     3.3        54
## 146 $158.99          Phones     3.3        54
## 147 $158.99          Phones     3.3        54
## 148 $129.99          Phones     3.0         2
## 149 $129.99          Phones     3.0         2
## 150 $129.99          Phones     3.0         2
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```

```r
# Load the CSV file containing the products
all_products <- read.csv("Amazon_products.csv")

# Clean and convert the Price column to numeric (if it includes "$" signs)
all_products$Price <- as.numeric(gsub("\\$", "", all_products$Price))

# Check the structure to ensure Price is correctly formatted
str(all_products)
```

```
## 'data.frame':    150 obs. of  7 variables:
##  $ X           : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ ProductTitle: chr  "1. Check each product page for other buying options." "2. Check each product p
##  $ Price       : num  20 18 25 40 19 ...
##  $ Category    : chr  "Mouse" "Mouse" "Mouse" "Mouse" ...
##  $ Ratings     : num  4.5 4.3 4.3 4 4.1 4.1 4.5 4.4 4 4.1 ...
##  $ ReviewCount : chr  "1,893" "48" "14,286" "48" ...
##  $ Description : chr  "Check each product page for other buying options." "Check each product page fo
```

```r
# Rank products by Price in ascending order (cheapest first)
ranked_by_price_ascending <- all_products %>%
  arrange(Price)

# Alternatively, rank products by Price in descending order (most expensive first)
ranked_by_price_descending <- all_products %>%
  arrange(desc(Price))

# View the top-ranked products based on price (descending order)
head(ranked_by_price_descending, 150)  # Display top 10 most expensive products
```

```
##       X
## 1     52
## 2     58
## 3     38
## 4     32
## 5     33
## 6     35
## 7     36
## 8     40
## 9     31
## 10    34
## 11    51
## 12    53
## 13    60
## 14   100
## 15    41
## 16    44
## 17    48
## 18    49
## 19    54
## 20    55
## 21    56
## 22    59
## 23    50
## 24    39
## 25   143
## 26   144
## 27   148
## 28   149
## 29   150
## 30    30
## 31   102
## 32   119
## 33    37
## 34     4
## 35    13
## 36    92
## 37    93
## 38    12
## 39    67
## 40    73
## 41    61
## 42    62
## 43    63
## 44    64
## 45    66
## 46    69
## 47    72
## 48    81
## 49    84
## 50    10
## 51   114
## 52   101
## 53    80
```

```
## 54    85
## 55   124
## 56    17
## 57   113
## 58    65
## 59    71
## 60    74
## 61    76
## 62    77
## 63    78
## 64    79
## 65    82
## 66    87
## 67    89
## 68    90
## 69   109
## 70    42
## 71    45
## 72    46
## 73    47
## 74    68
## 75    25
## 76   103
## 77     3
## 78    70
## 79   131
## 80   134
## 81   135
## 82   137
## 83    15
## 84   146
## 85   147
## 86   139
## 87   136
## 88   138
## 89   106
## 90     1
## 91     7
## 92    24
## 93    83
## 94    95
## 95    98
## 96   121
## 97   122
## 98   123
## 99   125
## 100  126
## 101  127
## 102  128
## 103  129
## 104  130
## 105  132
## 106  133
## 107  140
```

```
## 108 141
## 109 142
## 110 145
## 111 107
## 112   5
## 113   6
## 114  11
## 115  14
## 116  16
## 117  19
## 118  22
## 119  26
## 120  27
## 121  29
## 122  75
## 123  86
## 124  88
## 125 108
## 126  20
## 127   2
## 128  18
## 129  23
## 130   9
## 131  28
## 132  43
## 133 117
## 134 120
## 135 118
## 136   8
## 137  21
## 138 110
## 139 111
## 140 104
## 141  96
## 142  94
## 143  57
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## 145  99
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## 148 115
## 149 116
## 150  91
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## 149 26. Check each product page for other buying options. Price and other details may vary based on p
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##       Price        Category Ratings ReviewCount
## 1   899.99          Phones     3.8         242
## 2   899.99          Phones     3.8         242
## 3   359.00          Phones     4.0          39
## 4   158.99          Phones     3.3          54
## 5   158.99          Phones     3.3          54
## 6   158.99          Phones     3.3          54
## 7   158.99          Phones     3.3          54
## 8   150.00          Phones     3.5          12
## 9   149.00          Phones     4.3         739
## 10  129.99          Phones     5.0           6
## 11  129.99          Phones     3.0           2
## 12  129.99          Phones     3.0           2
## 13  129.99          Phones     3.0           2
## 14   89.99 Babies Supplies     4.8      48,776
## 15   84.99          Phones     4.3         320
## 16   84.99          Phones     4.3         320
## 17   84.99          Phones     4.3         320
## 18   84.99          Phones     4.3         320
## 19   84.99          Phones     4.3         320
## 20   84.99          Phones     4.3         320
## 21   84.99          Phones     4.3         320
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## 22   84.99          Phones  4.3        320
## 23   79.99          Phones  4.6         82
## 24   74.95          Phones  5.0          3
## 25   67.95 Girls' Clothing  4.2         61
## 26   67.95 Girls' Clothing  4.2         61
## 27   67.95 Girls' Clothing  4.2         61
## 28   67.95 Girls' Clothing  4.2         61
## 29   67.95 Girls' Clothing  4.2         61
## 30   56.99           Mouse  4.4          6
## 31   52.98 Babies Supplies  4.8    118,636
## 32   45.49 Babies Supplies  4.7        636
## 33   45.00          Phones  4.1     17,767
## 34   39.99           Mouse  4.0         48
## 35   39.99           Mouse  5.0          4
## 36   39.99 Babies Supplies  4.8     94,156
## 37   39.99 Babies Supplies  4.5      2,927
## 38   37.99           Mouse  4.4      1,487
## 39   35.99  Boys' Clothing  4.6      3,461
## 40   35.99  Boys' Clothing  4.6      3,461
## 41   33.99  Boys' Clothing  4.4      9,855
## 42   33.99  Boys' Clothing  4.4      9,855
## 43   33.99  Boys' Clothing  4.4      9,855
## 44   33.99  Boys' Clothing  4.4      9,855
## 45   33.99  Boys' Clothing  4.4      9,855
## 46   33.99  Boys' Clothing  4.4      9,855
## 47   33.99  Boys' Clothing  4.4      9,855
## 48   33.99  Boys' Clothing  4.4      9,855
## 49   33.99  Boys' Clothing  4.4      9,855
## 50   32.99           Mouse  4.1        425
## 51   31.90 Babies Supplies  4.1        565
## 52   29.99 Babies Supplies  4.5      5,876
## 53   29.53  Boys' Clothing  4.3        589
## 54   29.53  Boys' Clothing  4.3        589
## 55   28.99 Girls' Clothing  4.5        383
## 56   27.99           Mouse  4.0        171
## 57   27.19 Babies Supplies  4.6        586
## 58   26.99  Boys' Clothing  4.5      4,995
## 59   26.99  Boys' Clothing  4.5      4,995
## 60   26.99  Boys' Clothing  4.5      4,995
## 61   26.99  Boys' Clothing  4.5      4,995
## 62   26.99  Boys' Clothing  4.4        706
## 63   26.99  Boys' Clothing  4.5      4,995
## 64   26.99  Boys' Clothing  4.5      4,995
## 65   26.99  Boys' Clothing  4.5      4,995
## 66   26.99  Boys' Clothing  4.5      4,995
## 67   26.99  Boys' Clothing  4.5      4,995
## 68   26.99  Boys' Clothing  4.5      4,995
## 69   26.98 Babies Supplies  4.6      2,560
## 70   25.99          Phones  4.4      4,809
## 71   25.99          Phones  4.4      4,809
## 72   25.99          Phones  4.4      4,809
## 73   25.99          Phones  4.4      4,809
## 74   25.99  Boys' Clothing  4.5      4,995
## 75   25.85           Mouse  3.8         47
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## 76   25.17 Babies Supplies    4.7    14,553
## 77   24.99           Mouse    4.3    14,286
## 78   24.99  Boys' Clothing    4.5     4,995
## 79   24.99 Girls' Clothing    4.6       436
## 80   24.99 Girls' Clothing    4.6       436
## 81   24.99 Girls' Clothing    4.6       436
## 82   24.99 Girls' Clothing    4.6       436
## 83   23.99           Mouse    4.5     3,447
## 84   23.99 Girls' Clothing    4.5        38
## 85   23.99 Girls' Clothing    4.5        38
## 86   22.99 Girls' Clothing    4.6     1,774
## 87   22.97 Girls' Clothing    4.5     1,520
## 88   22.97 Girls' Clothing    4.5     1,520
## 89   22.39 Babies Supplies    4.5        54
## 90   19.99           Mouse    4.5     1,893
## 91   19.99           Mouse    4.5        31
## 92   19.99           Mouse    4.2       118
## 93   19.99  Boys' Clothing    4.7     7,784
## 94   19.99 Babies Supplies    4.8    28,470
## 95   19.99 Babies Supplies    4.8       573
## 96   19.99 Girls' Clothing    4.7       155
## 97   19.99 Girls' Clothing    4.8        28
## 98   19.99 Girls' Clothing    4.8        28
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## 109  19.99 Girls' Clothing    4.8        28
## 110  19.99 Girls' Clothing    4.8        28
## 111  19.70 Babies Supplies    4.6     4,796
## 112  18.99           Mouse    4.1       196
## 113  18.99           Mouse    4.1       196
## 114  18.99           Mouse    4.1       196
## 115  18.99           Mouse    4.1       196
## 116  18.99           Mouse    4.1       196
## 117  18.99           Mouse    4.1       196
## 118  18.99           Mouse    4.1       196
## 119  18.99           Mouse    4.1       196
## 120  18.99           Mouse    4.1       196
## 121  18.99           Mouse    4.1       196
## 122  18.99  Boys' Clothing    4.5       723
## 123  18.99  Boys' Clothing    4.8       504
## 124  18.99  Boys' Clothing    4.8       504
## 125  18.97 Babies Supplies    4.5       678
## 126  18.38           Mouse    4.3     3,085
## 127  17.99           Mouse    4.3        48
## 128  17.99           Mouse    4.5     1,825
## 129  17.99           Mouse    4.3        48
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## 130  16.89          Mouse   4.0       292
## 131  15.65          Mouse   4.3       724
## 132  14.99         Phones   5.0         3
## 133  14.99 Babies Supplies  4.7       230
## 134  14.99 Babies Supplies  4.5     3,004
## 135  14.98 Babies Supplies  4.8     4,473
## 136  13.99          Mouse   4.4        76
## 137  12.99          Mouse   4.3        61
## 138  12.79 Babies Supplies  4.5       585
## 139  11.99 Babies Supplies  4.5     6,316
## 140  11.47 Babies Supplies  4.8     1,357
## 141  10.48 Babies Supplies  4.8     7,964
## 142   9.99 Babies Supplies  4.6    32,173
## 143   8.99         Phones   4.8         6
## 144   8.99 Babies Supplies  4.8     8,136
## 145   7.99 Babies Supplies  4.8    47,617
## 146   7.99 Babies Supplies  4.7       186
## 147   6.99 Babies Supplies  4.3     5,189
## 148   6.99 Babies Supplies  4.4     2,562
## 149   6.28 Babies Supplies  4.7    33,577
## 150   6.15 Babies Supplies  4.8    30,125
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