

mini project 01 - IMDB web scraping

```
library(tidyverse)
library(rvest)
```

```
url <- "https://www.imdb.com/search/title/?groups=top_100&sort=user_rating,desc"
```

```
print(url)
```

```
[1] "https://www.imdb.com/search/title/?groups=top_100&sort=user_rating,desc"
```

```
#read html
imdb <- read_html(url)
```

```
imdb
```

```
{html_document}
<html xmlns:og="http://ogp.me/ns#" xmlns:fb="http://www.facebook.com/2008/fbml"
[1] <head>\n<meta http-equiv="Content-Type" content="text/html; charset=UTF-8 .
[2] <body id="styleguide-v2" class="fixed">\n          <img height="1" width .
```

```
#movie title
#node =1 nodes=all text2=ลนอักขระพิเศษ
titles <- imdb %>%
  html_nodes("h3.lister-item-header") %>%
  html_text2()
```

titles

'1. The Shawshank Redemption (1994)' · '2. The Godfather (1972)' · '3. The Dark Knight (2008)' ·
 '4. Schindler's List (1993)' · '5. The Lord of the Rings: The Return of the King (2003)' ·
 '6. The Godfather Part II (1974)' · '7. 12 Angry Men (1957)' · '8. Pulp Fiction (1994)' ·
 '9. The Lord of the Rings: The Fellowship of the Ring (2001)' · '10. Inception (2010)' · '11. Fight Club (1999)' ·
 '12. Forrest Gump (1994)' · '13. The Lord of the Rings: The Two Towers (2002)' ·
 '14. Il buono, il brutto, il cattivo (1966)' · '15. GoodFellas (1990)' · '16. The Matrix (1999)' ·
 '17. One Flew Over the Cuckoo's Nest (1975)' · '18. The Empire Strikes Back (1980)' · '19. Interstellar (2014)' ·
 '20. The Silence of the Lambs (1991)' · '21. Se7en (1995)' · '22. The Green Mile (1999)' ·
 '23. Saving Private Ryan (1998)' · '24. Star Wars (1977)' · '25. Terminator 2: Judgment Day (1991)' ·
 '26. Sen to Chihiro no kamikakushi (2001)' · '27. Cidade de Deus (2002)' · '28. La vita è bella (1997)' ·
 '29. It's a Wonderful Life (1946)' · '30. Shichinin no samurai (1954)' · '31. Seppuku (1962)' · '32. Whiplash (2014)' ·
 '33. Gisaengchung (2019)' · '34. Back to the Future (1985)' · '35. Gladiator (2000)' · '36. The Departed (2006)' ·
 '37. The Prestige (2006)' · '38. Apocalypse Now (1979)' · '39. Léon (1994)' · '40. Alien (1979)' ·
 '41. The Usual Suspects (1995)' · '42. The Lion King (1994)' · '43. American History X (1998)' · '44. The Pianist (2002)' ·
 '45. The Intouchables (2011)' · '46. Once Upon a Time in the West (1968)' · '47. Casablanca (1942)' ·
 '48. Psycho (1960)' · '49. Hotaru no haka (1988)' · '50. Nuovo Cinema Paradiso (1988)'

```
#rating
imdb %>%
  html_nodes("div.ratings-bar") %>%
  html_text2()
```

'9.3\nRate this\n1 2 3 4 5 6 7 8 9 10 9.3/10 X \n81 Metascore' ·
'9.2\nRate this\n1 2 3 4 5 6 7 8 9 10 9.2/10 X \n100 Metascore' ·
'9.0\nRate this\n1 2 3 4 5 6 7 8 9 10 9/10 X \n84 Metascore' ·
'9.0\nRate this\n1 2 3 4 5 6 7 8 9 10 9/10 X \n95 Metascore' ·
'9.0\nRate this\n1 2 3 4 5 6 7 8 9 10 9/10 X \n94 Metascore' ·
'9.0\nRate this\n1 2 3 4 5 6 7 8 9 10 9/10 X \n90 Metascore' ·
'9.0\nRate this\n1 2 3 4 5 6 7 8 9 10 9/10 X \n97 Metascore' ·
'8.9\nRate this\n1 2 3 4 5 6 7 8 9 10 8.9/10 X \n94 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n92 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n74 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n66 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n82 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n87 Metascore' ·
'8.8\nRate this\n1 2 3 4 5 6 7 8 9 10 8.8/10 X \n90 Metascore' ·
'8.7\nRate this\n1 2 3 4 5 6 7 8 9 10 8.7/10 X \n91 Metascore' ·
'8.7\nRate this\n1 2 3 4 5 6 7 8 9 10 8.7/10 X \n73 Metascore' ·
'8.7\nRate this\n1 2 3 4 5 6 7 8 9 10 8.7/10 X \n84 Metascore' ·
'8.7\nRate this\n1 2 3 4 5 6 7 8 9 10 8.7/10 X \n82 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n74 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n85 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n65 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n61 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n91 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n90 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n75 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n96 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n79 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n59 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n89 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n98 Metascore' ·
'8.6\nRate this\n1 2 3 4 5 6 7 8 9 10 8.6/10 X \n85 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n89 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n96 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n87 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n67 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n85 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n66 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n94 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n64 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n89 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n77 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n88 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n62 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n85 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n57 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n82 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n100 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n97 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n94 Metascore' ·
'8.5\nRate this\n1 2 3 4 5 6 7 8 9 10 8.5/10 X \n80 Metascore'

```
ratings <- imdb %>%
  html_nodes("div.ratings-imdb-rating") %>%
  html_text2() %>%
  as.numeric()
```

```
ratings[1:10]
```

```
9.3 · 9.2 · 9 · 9 · 9 · 9 · 9 · 8.9 · 8.8 · 8.8
```

```
#number of votes
num_votes <- imdb %>%
  html_nodes("p.sort-num_votes-visible") %>%
  html_text2()
```

```
num_votes
```

```
'Votes: 2,707,591 | Gross: $28.34M | Top 250: #1' · 'Votes: 1,880,325 | Gross: $134.97M | Top 250: #2' ·
'Votes: 2,680,874 | Gross: $534.86M | Top 250: #3' · 'Votes: 1,368,226 | Gross: $96.90M | Top 250: #6' ·
'Votes: 1,863,750 | Gross: $377.85M | Top 250: #7' · 'Votes: 1,283,876 | Gross: $57.30M | Top 250: #4' ·
'Votes: 799,858 | Gross: $4.36M | Top 250: #5' · 'Votes: 2,078,696 | Gross: $107.93M | Top 250: #8' ·
'Votes: 1,893,230 | Gross: $315.54M | Top 250: #9' · 'Votes: 2,378,876 | Gross: $292.58M | Top 250: #14' ·
'Votes: 2,151,861 | Gross: $37.03M | Top 250: #12' · 'Votes: 2,103,723 | Gross: $330.25M | Top 250: #11' ·
'Votes: 1,682,873 | Gross: $342.55M | Top 250: #13' · 'Votes: 768,658 | Gross: $6.10M | Top 250: #10' ·
'Votes: 1,174,391 | Gross: $46.84M | Top 250: #17' · 'Votes: 1,931,858 | Gross: $171.48M | Top 250: #16' ·
'Votes: 1,016,383 | Gross: $112.00M | Top 250: #18' · 'Votes: 1,304,403 | Gross: $290.48M | Top 250: #15' ·
'Votes: 1,866,083 | Gross: $188.02M | Top 250: #25' · 'Votes: 1,447,594 | Gross: $130.74M | Top 250: #22' ·
'Votes: 1,671,857 | Gross: $100.13M | Top 250: #19' · 'Votes: 1,316,188 | Gross: $136.80M | Top 250: #27' ·
'Votes: 1,405,192 | Gross: $216.54M | Top 250: #23' · 'Votes: 1,376,785 | Gross: $322.74M | Top 250: #28' ·
'Votes: 1,109,856 | Gross: $204.84M | Top 250: #29' · 'Votes: 774,850 | Gross: $10.06M | Top 250: #31' ·
'Votes: 763,132 | Gross: $7.56M | Top 250: #24' · 'Votes: 702,721 | Gross: $57.60M | Top 250: #26' ·
'Votes: 467,309 | Top 250: #21' · 'Votes: 349,176 | Gross: $0.27M | Top 250: #20' · 'Votes: 59,203 | Top 250: #44' ·
'Votes: 881,703 | Gross: $13.09M | Top 250: #42' · 'Votes: 826,289 | Gross: $53.37M | Top 250: #34' ·
'Votes: 1,219,798 | Gross: $210.61M | Top 250: #30' · 'Votes: 1,515,610 | Gross: $187.71M | Top 250: #37' ·
'Votes: 1,338,342 | Gross: $132.38M | Top 250: #39' · 'Votes: 1,346,955 | Gross: $53.09M | Top 250: #41' ·
'Votes: 674,597 | Gross: $83.47M | Top 250: #53' · 'Votes: 1,173,834 | Gross: $19.50M | Top 250: #35' ·
'Votes: 892,036 | Gross: $78.90M | Top 250: #51' · 'Votes: 1,094,156 | Gross: $23.34M | Top 250: #40' ·
'Votes: 1,070,100 | Gross: $422.78M | Top 250: #36' · 'Votes: 1,131,990 | Gross: $6.72M | Top 250: #38' ·
'Votes: 842,625 | Gross: $32.57M | Top 250: #32' · 'Votes: 869,184 | Gross: $13.18M | Top 250: #46' ·
'Votes: 333,480 | Gross: $5.32M | Top 250: #48' · 'Votes: 577,140 | Gross: $1.02M | Top 250: #43' ·
'Votes: 678,754 | Gross: $32.00M | Top 250: #33' · 'Votes: 282,032 | Top 250: #45' ·
'Votes: 264,640 | Gross: $11.99M | Top 250: #50'
```

```
#build a dataset
df <- data.frame(
  title = titles,
  rating = ratings,
  num_vote = num_votes
)

head(df)
```

A data.frame: 6 × 3

	title	rating	num_vote
	<chr>	<dbl>	<chr>
1	1. The Shawshank Redemption (1994)	9.3	Votes: 2,707,591 Gross: \$28.34M Top 250: #1
2	2. The Godfather (1972)	9.2	Votes: 1,880,325 Gross: \$134.97M Top 250: #2
3	3. The Dark Knight (2008)	9.0	Votes: 2,680,874 Gross: \$534.86M Top 250: #3
4	4. Schindler's List (1993)	9.0	Votes: 1,368,226 Gross: \$96.90M Top 250: #6
5	5. The Lord of the Rings: The Return of the King (2003)	9.0	Votes: 1,863,750 Gross: \$377.85M Top 250: #7
6	6. The Godfather Part II (1974)	9.0	Votes: 1,283,876 Gross: \$57.30M Top 250: #4

Mini Project 02 - SpecPhone

```
ctrl + m # convert to markdown cell
```

```
library(tidyverse)
library(rvest)
```

```
url <- read_html("https://specphone.com/Samsung-Galaxy-A04.html")
```

```
att <- url %>%  
  html_nodes("div.topic") %>%  
  html_text2()  
  
value <- url %>%  
  html_nodes("div.detail") %>%  
  html_text2()
```

```
data.frame(attribute = att, value = value)
```

A data.frame: 31 × 2

attribute	value
<chr>	<chr>
วันเปิดตัว	ตุลาคม 2565
วันวางจำหน่าย	ยังไม่วางจำหน่าย
ขนาด	164.40 x 76.30 x 9.10 มม.
น้ำหนัก	192 กรัม
วัสดุ	Glass front, plastic back, plastic frame
SIM	รองรับ 2 ซิมการ์ด (nano sim, nano sim)
Technology	HSPA 42.2/5.76 Mbps, LTE-A
2G	850/900/1800/1900
3G	850/900/1900/2100
4G	850/900/1900/2100/2600
5G	-
ความเร็ว	HSPA 42.2/5.76 Mbps, LTE-A
ประเภท	PLS LCD
ขนาดหน้าจอ	6.50 นิ้ว
ความละเอียด	720 x 1600 pixels
ระบบปฏิบัติการ	Android 12
ชิปประมวลผล	Spreadtrum Unisoc SC9863A 1.6 GHz
ชิปกราฟิก	PowerVR GE8322
หน่วยความจำ	3 GB
ความจุ	32 GB
Memory Card	microSD (1)
กล้องหลัก	ตัวที่ 1: 50 MP, f/1.8, (wide), AF ตัวที่ 2: 2 MP, f/2.4, (depth)
ความละเอียดวิดีโอ	1080p@30fps
กล้องหน้า	ตัวที่ 1: 5 MP, f/2.2
Bluetooth	5.0, A2DP, LE
Wi-Fi	802.11 a/b/g/n/ac, dual-b
USB	Type-C
GPS	GLONASS, GALILEO, BDS
NFC	ไม่รองรับ
ความจุ	5,000 mAh
ประเภท	Non-removable Li-Po Batt

```
# All samsung smart phone
```

```
samsung_url <- read_html("https://specphone.com/brand/Samsung")
```

```
samsung_url %>%
  html_node("li.mobile-brand-item")
```

```
{html_node}
<li class="mobile-brand-item col-4 col-sm-4 col-md-3 col-xl-2">
[1] <a href="/Samsung-Galaxy-A14.html">\n
```

```
links <- samsung_url %>%
  html_nodes("li.mobile-brand-item a") %>% # a คือตัวลูก
  html_attr("href")
```

```
links
```

```

'/Samsung-Galaxy-A14.html' · '/Samsung-Galaxy-M13.html' · '/Samsung-Galaxy-A23.html' ·
'/Samsung-Galaxy-A13.html' · '/Samsung-Galaxy-M32-5G.html' · '/Samsung-Galaxy-A12-Nacho.html' ·
'/Samsung-Galaxy-Pocket-Neo.html' · '/Samsung-Galaxy-Young.html' · '/Samsung-Galaxy-J1-Mini.html' ·
'/Samsung-Galaxy-A01-Core-1-16GB.html' · '/Samsung-Galaxy-V-PLUS.html' · '/Samsung-Galaxy-Young-2.html' ·
'/Samsung-Galaxy-A11.html' · '/Samsung-Galaxy-J2-Pro-2018.html' · '/Samsung-Galaxy-A12-2021.html' ·
'/Samsung-Galaxy-A21s-3-32GB.html' · '/Samsung-Galaxy-J5.html' · '/Samsung-Galaxy-J4.html' ·
'/Samsung-Galaxy-Core-2-Duos.html' · '/Samsung-Galaxy-Ace-Plus.html' · '/Samsung-Galaxy-A20.html' ·
'/Samsung-Galaxy-Chat.html' · '/Samsung-Galaxy-Gio.html' · '/Samsung-Galaxy-Tab-A7-Lite-LTE.html' ·
'/Samsung-Galaxy-Tab-A-10.5WIFI.html' · '/Samsung-Galaxy-Alpha.html' · '/Samsung-Galaxy-S3-Slim.html' ·
'/Samsung-Galaxy-S4-zoom.html' · '/Samsung-Galaxy-Xcover-2.html' · '/Samsung-Galaxy-Tab-8.9-3G-16GB.html' ·
'/Samsung-Galaxy-Tab-A8-LTE-2021.html' · '/Samsung-Galaxy-A8-2018.html' ·
'/Samsung-Galaxy-Tab4-8.0-wifi.html' · '/Samsung-Galaxy-M33-5G.html' · '/Samsung-Galaxy-A50.html' ·
'/Samsung-Galaxy-E7.html' · '/Samsung-Galaxy-S6.html' · '/Samsung-Galaxy-S20-FE.html' ·
'/Samsung-Galaxy-Tab-S4-WIFI.html' · '/Samsung-Galaxy-S7.html' · '/Samsung-Galaxy-Note-5-Exynos.html' ·
'/Samsung-Galaxy-TabPRO-12.2-LTE.html' · '/Samsung-Galaxy-S4-Active.html' ·
'/Samsung-Galaxy-Tab-Active-3.html' · '/Samsung-Galaxy-Tab-S3-9.7.html' · '/Samsung-Galaxy-S6-edge.html' ·
'/Samsung-Galaxy-Note-4-Exynos.html' · '/Samsung-Galaxy-Round.html' ·
'/Samsung-Galaxy-Note-20-Ultra-5G.html' · '/Samsung-ATIV-Q.html' · '/Samsung-ATIV-Smart-PC-PRO.html' ·
'/Samsung-Galaxy-S23-Ultra-5G8-256GB.html' · '/Samsung-Galaxy-S22-Ultra12-128GB.html' ·
'/Samsung-Galaxy-Z-Flip-5G.html' · '/Samsung-Galaxy-Z-Flip.html' · '/Samsung-Galaxy-Tab-S8-Ultra-5G.html' ·
'/Samsung-Galaxy-S21-Ultra-16-512GB.html' · '/Samsung-Galaxy-S23-Ultra-5G.html' ·
'/Samsung-Galaxy-S10-Plus-Ram-12GB.html' · '/Samsung-Galaxy-Z-Fold-3.html'
```

```
full_links <- paste0("https://specphone.com", links)
```

```
full_links
```


'https://specphone.com/Samsung-Galaxy-A14.html' · 'https://specphone.com/Samsung-Galaxy-M13.html' ·
'https://specphone.com/Samsung-Galaxy-A23.html' · 'https://specphone.com/Samsung-Galaxy-A13.html' ·
'https://specphone.com/Samsung-Galaxy-M32-5G.html' ·
'https://specphone.com/Samsung-Galaxy-A12-Nacho.html' ·
'https://specphone.com/Samsung-Galaxy-Pocket-Neo.html' ·
'https://specphone.com/Samsung-Galaxy-Young.html' · 'https://specphone.com/Samsung-Galaxy-J1-Mini.html' ·
'https://specphone.com/Samsung-Galaxy-A01-Core-1-16GB.html' ·
'https://specphone.com/Samsung-Galaxy-V-PLUS.html' · 'https://specphone.com/Samsung-Galaxy-Young-2.html' ·
'https://specphone.com/Samsung-Galaxy-A11.html' · 'https://specphone.com/Samsung-Galaxy-J2-Pro-2018.html' ·
'https://specphone.com/Samsung-Galaxy-A12-2021.html' ·
'https://specphone.com/Samsung-Galaxy-A21s-3-32GB.html' · 'https://specphone.com/Samsung-Galaxy-J5.html' ·
'https://specphone.com/Samsung-Galaxy-J4.html' · 'https://specphone.com/Samsung-Galaxy-Core-2-Duos.html' ·
'https://specphone.com/Samsung-Galaxy-Ace-Plus.html' · 'https://specphone.com/Samsung-Galaxy-A20.html' ·
'https://specphone.com/Samsung-Galaxy-Chat.html' · 'https://specphone.com/Samsung-Galaxy-Gio.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-A7-Lite-LTE.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-A-10.5WIFI.html' ·
'https://specphone.com/Samsung-Galaxy-Alpha.html' · 'https://specphone.com/Samsung-Galaxy-S3-Slim.html' ·
'https://specphone.com/Samsung-Galaxy-S4-zoom.html' ·
'https://specphone.com/Samsung-Galaxy-Xcover-2.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-8.9-3G-16GB.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-A8-LTE-2021.html' ·
'https://specphone.com/Samsung-Galaxy-A8-2018.html' ·
'https://specphone.com/Samsung-Galaxy-Tab4-8.0-wifi.html' ·
'https://specphone.com/Samsung-Galaxy-M33-5G.html' · 'https://specphone.com/Samsung-Galaxy-A50.html' ·
'https://specphone.com/Samsung-Galaxy-E7.html' · 'https://specphone.com/Samsung-Galaxy-S6.html' ·
'https://specphone.com/Samsung-Galaxy-S20-FE.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-S4-WIFI.html' · 'https://specphone.com/Samsung-Galaxy-S7.html' ·
'https://specphone.com/Samsung-Galaxy-Note-5-Exynos.html' ·
'https://specphone.com/Samsung-Galaxy-TabPRO-12.2-LTE.html' ·
'https://specphone.com/Samsung-Galaxy-S4-Active.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-Active-3.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-S3-9.7.html' ·
'https://specphone.com/Samsung-Galaxy-S6-edge.html' ·
'https://specphone.com/Samsung-Galaxy-Note-4-Exynos.html' ·
'https://specphone.com/Samsung-Galaxy-Round.html' ·
'https://specphone.com/Samsung-Galaxy-Note-20-Ultra-5G.html' · 'https://specphone.com/Samsung-ATIV-Q.html' ·
'https://specphone.com/Samsung-ATIV-Smart-PC-PRO.html' ·
'https://specphone.com/Samsung-Galaxy-S23-Ultra-5G8-256GB.html' ·
'https://specphone.com/Samsung-Galaxy-S22-Ultra12-128GB.html' ·
'https://specphone.com/Samsung-Galaxy-Z-Flip-5G.html' · 'https://specphone.com/Samsung-Galaxy-Z-Flip.html' ·
'https://specphone.com/Samsung-Galaxy-Tab-S8-Ultra-5G.html' ·
'https://specphone.com/Samsung-Galaxy-S21-Ultra-16-512GB.html' ·
'https://specphone.com/Samsung-Galaxy-S23-Ultra-5G.html' ·
'https://specphone.com/Samsung-Galaxy-S10-Plus-Ram-12GB.html' ·
'https://specphone.com/Samsung-Galaxy-Z-Fold-3.html'

```

result <- data.frame()

for (link in full_links[1:10]){
  ss_topic <- link %>%
    read_html() %>%
    html_nodes("div.topic") %>%
    html_text2()

  ss_detail <- link %>%
    read_html() %>%
    html_nodes("div.detail") %>%
    html_text2()

  tmp <- data.frame(attribute = ss_topic,
                    value = ss_detail)

  result <- bind_rows(result, tmp)
  print("Progress ...")
}

print(result)

```

```

[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
[1] "Progress ..."
      attribute
1   วันเปิดตัว
2   วันวางจำหน่าย
3       ขนาด
4   น้ำหนัก
5       วัสดุ
6       SIM
7   Technology
8         2G
9         3G

```

```
print(head(result),3)
```

	attribute	value
1	วันเปิดตัว	กุมภาพันธ์ 2566
2	วันวางจำหน่าย	วางจำหน่ายแล้ว

3	ขนาด	167.70 x 78.00 x 9.00 มม.
4	น้ำหนัก	202 กรัม
5	วัสดุ	Glass front (Gorilla Glass 5), plastic frame, plastic back
6	SIM	รองรับ 2 ซิมการ์ด (nano sim, nano sim)

```
#write csv  
write_csv(result, "result_ss_phone.csv")
```

อาจจะเพิ่มชื่อโมเดลเข้าไปให้หาชื่อรุ่นได้ด้วย