

TUGAS 4 WEB SCRAPING MENGGUNAKAN RSTUDIO

Mata Kuliah Data Science

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PROGRAM STUDI INFORMATIKA

JURUSAN TEKNIK INFORMATIKA

FAKULTAS TEKNIK INDUSTRI

UNIVERSITAS PEMBANGUNAN NASIONAL "VETERAN"

YOGYAKARTA

2020

Tokopedia

Alivi Milova

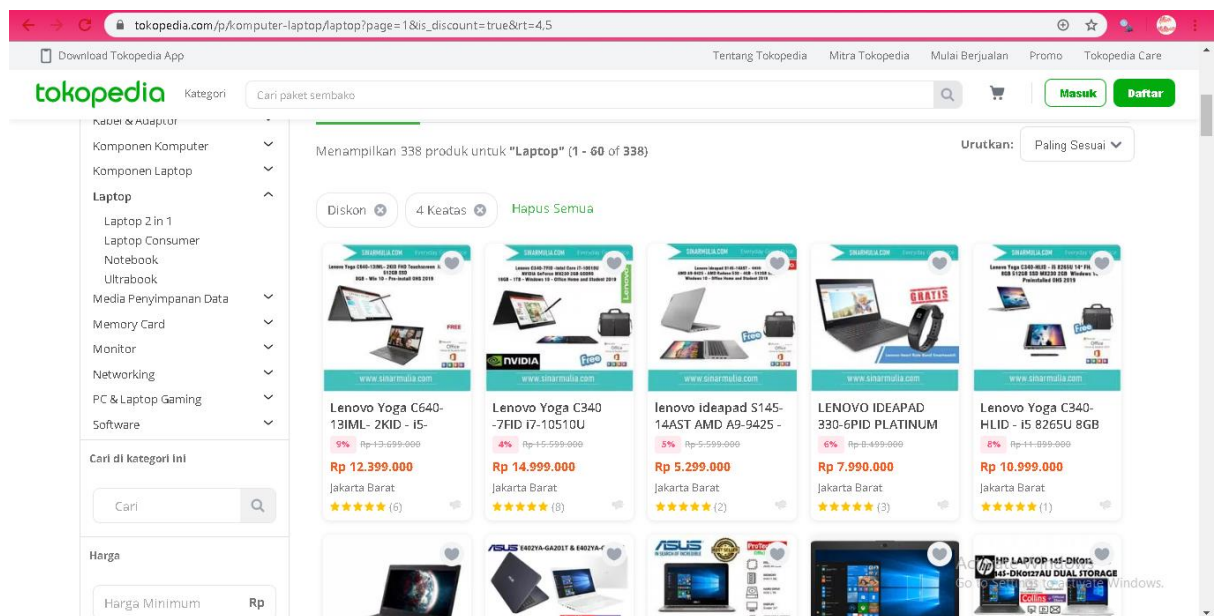
4/9/2020

Sumber script : <https://www.nurandi.id/blog/web-scraping-dengan-r-dan-rvest/>

Alamat web : https://www.tokopedia.com/p/komputer-laptop/laptop?page=1&is_discount=true&rt=4,5

TAMPILAN WEB untuk pemilihan barang kategori komputer dan akan di dapatkan beberapa data berikut :

1. Nama barang
2. Harga barang
3. Diskon barang
4. Rating barang



1. Script berikut merupakan fungsi untuk web scraping.

`install.packages("rvest")`

`library(rvest)`

kemudian copy link yang ada pada laman website .

```
library(rvest)
```

```
## Warning: package 'rvest' was built under R version 3.6.3
```

```
## Loading required package: xml2
```

```
## Warning: package 'xml2' was built under R version 3.6.3
```

```
url<-"https://www.tokopedia.com/p/komputer-laptop/laptop?page=1&is_discount=true&rt=4,5"
```

2. Untuk membaca halaman dari website yang akan di scraping di setiap halaman websitenya maka digunakan fungsi `read_html`

```
web <- read_html(url)
web

## {html_document}
## <html lang="id">
## [1] <head>\n<meta http-equiv="Content-Type" content="text/html; charset=UTF-8 ...
## [2] <body>\n      <noscript><div>Website tokopedia memerlukan javascript untuk ...
```

3. Mengekstrak informasi judul buku dengan fungsi `html_nodes` dari syntax html pada web, untuk mengetahui kodingan atau syntax html nya bisa dengan klik kanan pada baris yang dituju di web kemudian pilih inspect atau bisa dengan mendownload selectorgadget dan pasangkan pada crome. Gunakan juga `html_text` untuk mengambil textnya lalu agar datanya terbaca dengan tanpa space sebelum atau sesudah teks

```
nama_barang <-web %>% html_nodes(".css-1bjwylw") %>% html_text(trim = TRUE)
nama_barang

## [1] "Lenovo Yoga C640-13IML- 2KID - i5-10510U - 512GB SSD - 8GB - Win 10"
## [2] "Lenovo Yoga C340 -7FID i7-10510U NVIDIA GeForce MX230 - 1TB - 16GB"
## [3] "lenovo ideapad S145-14AST AMD A9-9425 - 4GB - 512GB SSD - AMD Radeon 5"
## [4] "LENOVO IDEAPAD 330-6PID PLATINUM GREY"
## [5] "Lenovo Yoga C340-HLID - i5 8265U 8GB 512GB SSD MX230 2GB - Platinum"
## [6] "Laptop Lenovo Ideapad 130 Amd A4 9125 4GB 500GB Radeon 14 W10"
## [7] "LAPTOP MURAH ASUS E402YA-GA202T - AMD E2-7015U RAM 4GB 1TB 14\" W IN10"
## [8] "LAPTOP ASUS X441BA - AMD A4 9125 4GB 1TB VGA AMD R3 14\" WIN10 RE SMI"
## [9] "LAPTOP HP 14 AMD A9 RAM 8GB 1TB HDD RADEON R5 WINDOWS 10"
## [10] "HP 14S DK0126AU DK0127AU - RYZEN 3 3200U 8GB 1TB+256GB SSD 14\" F HD W10"
## [11] "Dell Inspiron 3180 [A9-9420e-4-500-AMD-W10-GRY] DELL INDONESIA"
## [12] "LAPTOP HP 14S-DK0073AU AMD A4-9125 4GB 1TB RADEN R3 14\"' WINDOWS 10"
## [13] "LAPTOP HP 14-DK0023AU/DK0024AU - AMD A9-9425 4GB 1TB RADEON R5 14\" W10"
## [14] "LAPTOP ACER ASPIRE 3 A314-21 - AMD A4-9120 DDR4 4GB 256GB SSD 14\" W10"
```

[15] "LAPTOP ASUS A420UA - INTEL PENTIUM 4417U DDR4 4GB SSD 256GB 14\" W10"

[16] "ACER NITRO 5 AN515-R1BL - RYZEN 5-3550H 8GB SSD 512GB RX 560X 4GB W10"

[17] "ACER PREDATOR NITRO 5 AN515-43 - RYZEN 5-3550H 8GB 1TB RX 560X 4GB W10"

[18] "LAPTOP HP 14S-CF1046TU/CF1047TU-N4205U 4GB 1TB 14\" W10 BACKLIT KEYBOARD"

[19] "LAPTOP ASUS X441BA - AMD A4 9125 4GB 1TB VGA AMD R3 14\" WIN10 RESMI"

[20] "LAPTOP LENOVO IDEAPAD S340-14API AMD RYZEN 5-3500U 8GB 512GB VEGA 8"

[21] "ASUS M409DA EK501T |Ryzen 5 3500U 8GB 1TB Vega 8 W10 14FHD"

[22] "ACER PREDATOR NITRO 5 - I7-9750H 256GB GTX1650 4GB 15.6\" IPS 144 HZ W10"

[23] "Dell Inspiron 3180 [A9-9420e-4-500-AMD-W10-WHT] DELL INDONESIA"

[24] "PROMO LAPTOP ASUS E402YA - AMD E2-7015 4GB 1TB VGA AMD R2 14\" WIN10"

[25] "Laptop HP 14S (14\" inch / A4-9125 / 4GB / 1TB / Silver) dk0073 AU"

[26] "LAPTOP ASUS E402YA - AMD E2-7015 SSD 256GB RAM 4GB AMD R2 14\" W10"

[27] "Lenovo Yoga C640-13IML- 2KID - i5-10510U - 512GB SSD - 8GB - Win 10"

[28] "LAPTOP ACER SWIFT 3 SF314-41 - ATHLON 300U/4GB/256GB SSD/14\"FHD/WIN10"

[29] "ASUS A412FL - i5 8265U 8GB SSD 512GB MX250 2GB 14\" FHD WIN10 RESMI"

[30] "Laptop HP x360 (N4000 / 11.6\" inch / 4GB / 500GB) ab128tu / ab129tu"

[31] "LAPTOP ASUS VIVOBBOOK A409UA - I3 7020 DDR4 4GB 512 SSD 14\" WIN10"

[32] "ASUS VIVOBBOOK S14 S430FN-i7-8565U|SSD 512GB|8GB|MX150 2GB|14\"|FHD|W10"

[33] "ASUS VIVOBBOOK S14 S430FN - i5-8265U|8GB|SSD512GB|MX150 2GB|14\" FHD"

[34] "LAPTOP ASUS X441BA - AMD A9 9425|4GB|1TB|AMD RADEON R5|14\"|WIN 10|"

[35] "Lenovo Yoga C340 -7FID i7-10510U NVIDIA GeForce MX230 - 1TB - 16GB"

[36] "HP Pavilion 13-an1034tu 13.3\" i5-1035G1 - 8 GB DDR4 - 512 GB WIN10"

[37] "HP 14s-dk0024au Silver"

[38] "Lenovo Ideapad S145 TAID i7-8565U Nvidia MX110 8GB DDR4 512GB"

[39] "Lenovo Intel core i5-8250U-1TB-4GB+1Slot AMD Radeon 530-win 10 14\" hd"

[40] "Lenovo 130 - 00id Black"

[41] "LAPTOP ACER SWIFT 3 SF314-41 RYZEN 5-3500U 4GB 512GB RADEON VEGA 8 W10"

[42] "LAPTOP LENOVO IP330 - AMD A9 9425 RAM 4GB 1TB ATI RADEON R5 14\" DOS"

[43] "LAPTOP ASUS K403FA - i5 8265U 8GB SSD 512GB INTEL HD 14\" FHD W10 RESMI"

[44] "LAPTOP ASUS A420UA - INTEL PENTIUM 4417U 4GB SSD 256GB 14\" W10 R

ESMI"
[45] "Dell Inspiron 3476 [Ci3-7020U-4-1T-AMD-W10-BLK] DELL INDONESIA"
[46] "LAPTOP ASUS X441UA-GA311T/312T - I3-7020U 4GB 1TB DVD 14\" W10"
[47] "LAPTOP ASUS A409FJ-EK551T EK552T - i5 8265U 4GB 512GB MX230 2GB W 10"
[48] "LAPTOP ASUS X441MA-GA011T - N4000|RAM 4GB|HDD 1TB|DVD|14\"|W10|BL ACK"
[49] "ACER SWIFT 3 AIR SF313-51 - I5-8250U DDR4 8GB SSD 256GB 13.3\" FHD W10"
[50] "LAPTOP ASUS A412FA - i3 8145U 4GB SSD 512GB INTEL HD 14\" FHD W10 RESMI"
[51] "LAPTOP ASUS A407MA - N4000|HDD 1TB|RAM 4GB|INTEL HD|14\"|W10|SLIM !!!"
[52] "PROMO LAPTOP ACER SWIFT 3 SF314-41 ATHLON 300U 8GB 256GB 14\" FHD WIN10"
[53] "LAPTOP ACER ASPIRE 5 A514-52G - I5 10210U 4GB 1TB MX250 2GB 14\" WIN10"
[54] "LAPTOP ASUS M409DA AMD RYZEN 3-3200U 8GB 1TB VEGA3 14\" FHD WINDO WS 10"
[55] "LENOVO IP130 AMD A4-9125 4GB 500GB 14\" DVD WIN 10"
[56] "PROMO LAPTOP ACER SWIFT 3 SF314-41 ATHLON 300U 8GB 512GB 14\" FHD WIN10"
[57] "LAPTOP LENOVO AMD A9 RAM 8GB HDD 1TB RADEON R5 DOS"
[58] "LAPTOP ASUS E402YA - AMD E2-7015 4GB 256GB SSD VGA AMD R2 14\" W1 0"
[59] "LAPTOP ASUS A412FA - i5 8265U 8GB SSD 512GB INTEL HD 14\" FHD W10 RESMI"
[60] "LAPTOP ASUS A412FL - i7 8565U 8G SSD 512GB MX250 2GB 14\" FHD W10 RESMI"
[61] "LAPTOP ASUS K403FA - i3 8145U 4GB SSD 512GB INTEL HD 14\" FHD W10 RESMI"
[62] "ACER SWIFT 3 AIR SF313-51 - I3-8130U DDR4 4GB SSD 256GB 13.3\" FH D W10"
[63] "ACER SWIFT 3 SF313-51 i5 8250U 8GB 256GB SSD 13.3\" FHD WIN10 RES MI"
[64] "LAPTOP LENOVO IDEAPAD S145-14API Athlon 300U 8GB 512GB-SSD Vega3 W 10"
[65] "LAPTOP LENOVO IP330-14IGM 5BID - N4000 4GB 1TB DVD WIN 10 14\" BL ACK"
[66] "ASUS A407MA SLIM 1TB HDD (N4000, 4GB,14.0\",WINDOWS 10) NERROW B EZEL"
[67] "HP Pavilion Gaming15 ec0001AX | Ryzen5 3550H 8GB 512SSD GTX1050 3 GB"
[68] "Lenovo Yoga C340 - 7GID i7-10510U NVIDIA GeForce MX230 - 16GB - 1 TB"
[69] "ASUS X441BA - AMD A9 9425 4GB 1TB VGA AMD R5 14\" WIN 10 ORIGINAL RESMI"
[70] "Acer Aspire 3 A314-32-C3X0 Notebook - Black"
[71] "HP Pavilion 13-an1036tu Core i7-1065G7 - 8 GB - 512 GB SSD - Win 10"
[72] "Lenovo Ideapad 330-B9ID Onyx Black"
[73] "HP ENVY - 13-aq1018tx silver"
[74] "HP 14s-dk0076au Gold"
[75] "HP ENVY - 13-aq1017tx Gold"

4. Ulangi langkah 3 untuk setiap kelas sesuai data yang dibutuhkan yaitu pengarang, detail buku, harga, harga diskon, diskon, dan status buku. Hasilnya sebagai berikut

```
harga_barang <-web %>% html_nodes(".css-o5uqvq") %>% html_text(trim = TRUE)
)
harga_barang

## [1] "Rp 12.399.000" "Rp 14.999.000" "Rp 5.299.000" "Rp 7.990.000"
## [5] "Rp 10.999.000" "Rp 3.250.000" "Rp 3.435.000" "Rp 3.799.000"
## [9] "Rp 4.990.000" "Rp 6.275.000" "Rp 3.699.000" "Rp 3.949.000"
## [13] "Rp 4.225.000" "Rp 3.650.000" "Rp 5.099.000" "Rp 9.599.000"
## [17] "Rp 9.099.000" "Rp 3.899.000" "Rp 3.699.000" "Rp 8.299.000"
## [21] "Rp 7.250.000" "Rp 13.699.000" "Rp 3.699.000" "Rp 3.435.000"
## [25] "Rp 3.839.000" "Rp 3.525.000" "Rp 12.399.000" "Rp 5.699.000"
## [29] "Rp 9.499.000" "Rp 3.779.000" "Rp 6.125.000" "Rp 11.999.000"
## [33] "Rp 9.599.000" "Rp 4.750.000" "Rp 14.999.000" "Rp 10.999.000"
## [37] "Rp 4.299.000" "Rp 10.059.000" "Rp 8.399.000" "Rp 3.415.000"
## [41] "Rp 7.649.000" "Rp 4.125.000" "Rp 9.549.000" "Rp 5.099.000"
## [45] "Rp 6.749.000" "Rp 5.675.000" "Rp 8.399.000" "Rp 3.750.000"
## [49] "Rp 7.999.000" "Rp 6.749.000" "Rp 3.750.000" "Rp 6.099.000"
## [53] "Rp 8.099.000" "Rp 6.149.000" "Rp 3.340.000" "Rp 6.375.000"
## [57] "Rp 4.850.000" "Rp 3.525.000" "Rp 8.599.000" "Rp 11.499.000"
## [61] "Rp 7.599.000" "Rp 6.949.000" "Rp 7.999.000" "Rp 5.425.000"
## [65] "Rp 3.475.000" "Rp 3.675.000" "Rp 9.450.000" "Rp 14.999.000"
## [69] "Rp 4.699.000" "Rp 3.699.000" "Rp 13.988.000" "Rp 3.859.000"
## [73] "Rp 19.599.000" "Rp 8.299.000" "Rp 19.599.000"

rating <-web %>% html_nodes(".css-153qjw7") %>% html_text(trim = TRUE)
rating

## [1] ".css-177n1u3{height:12px;width:12px;margin:0.5px;}(6)"
## [2] "(8)"
## [3] "(2)"
## [4] "(3)"
## [5] "(1)"
## [6] "(262)"
## [7] "(77)"
## [8] "(444)"
## [9] "(63)"
## [10] "(79)"
## [11] "(55)"
## [12] "(71)"
## [13] "(129)"
## [14] "(67)"
## [15] "(53)"
## [16] "(22)"
## [17] "(45)"
## [18] "(45)"
## [19] "(173)"
## [20] "(78)"
## [21] "(12)"
## [22] "(32)"
```

```
## [23] "(24)"
## [24] "(98)"
## [25] "(40)"
## [26] "(24)"
## [27] "(6)"
## [28] "(38)"
## [29] "(76)"
## [30] "(25)"
## [31] "(28)"
## [32] "(46)"
## [33] "(31)"
## [34] "(21)"
## [35] "(8)"
## [36] "(1)"
## [37] "(1)"
## [38] "(3)"
## [39] "(2)"
## [40] "(1)"
## [41] "(67)"
## [42] "(35)"
## [43] "(49)"
## [44] "(57)"
## [45] "(20)"
## [46] "(36)"
## [47] "(21)"
## [48] "(33)"
## [49] "(7)"
## [50] "(65)"
## [51] "(28)"
## [52] "(24)"
## [53] "(9)"
## [54] "(25)"
## [55] "(28)"
## [56] "(16)"
## [57] "(18)"
## [58] "(12)"
## [59] "(42)"
## [60] "(25)"
## [61] "(32)"
## [62] "(20)"
## [63] "(29)"
## [64] "(6)"
## [65] "(7)"
## [66] "(12)"
## [67] "(4)"
## [68] "(6)"
## [69] "(45)"
## [70] "(15)"
## [71] "(2)"
## [72] "(4)"
## [73] "(2)"
## [74] "(1)"
## [75] "(1)"
```

```

harga_diskon_barang <-web %>% html_nodes(".css-1djbxkr") %>% html_text(trim = TRUE)
harga_diskon_barang

## [1] "9%Rp 13.699.000" "4%Rp 15.599.000" "5%Rp 5.599.000" "6%Rp 8.499.000"
## [5] "8%Rp 11.899.000" "7%Rp 3.499.000" "7%Rp 3.699.000" "5%Rp 3.999.000"
## [9] "9%Rp 5.499.000" "10%Rp 7.000.000" "10%Rp 4.099.000" "1%Rp 3.999.000"
## [13] "13%Rp 4.850.000" "4%Rp 3.799.000" "2%Rp 5.199.000" "9%Rp 10.600.000"
## [17] "9%Rp 9.999.000" "7%Rp 4.199.000" "8%Rp 3.999.000" "2%Rp 8.499.000"
## [21] "6%Rp 7.700.000" "17%Rp 16.499.000" "10%Rp 4.099.000" "5%Rp 3.599.000"
## [25] "16%Rp 4.569.000" "5%Rp 3.699.000" "9%Rp 13.699.000" "19%Rp 6.999.000"
## [29] "17%Rp 11.499.000" "8%Rp 4.090.000" "3%Rp 6.299.000" "11%Rp 13.550.000"
## [33] "23%Rp 12.499.000" "1%Rp 4.799.000" "4%Rp 15.599.000" "2%Rp 11.199.000"
## [37] "12%Rp 4.899.000" "11%Rp 11.299.000" "1%Rp 8.499.000" "9%Rp 3.749.000"
## [41] "10%Rp 8.499.000" "1%Rp 4.175.000" "9%Rp 10.499.000" "6%Rp 5.399.000"
## [45] "5%Rp 7.099.000" "7%Rp 6.099.000" "3%Rp 8.699.000" "6%Rp 3.999.000"
## [49] "11%Rp 8.999.000" "10%Rp 7.499.000" "3%Rp 3.880.000" "24%Rp 7.999.000"
## [53] "7%Rp 8.699.000" "12%Rp 6.999.000" "9%Rp 3.675.000" "15%Rp 7.499.000"
## [57] "10%Rp 5.399.000" "5%Rp 3.699.000" "13%Rp 9.899.000" "12%Rp 12.999.000"
## [61] "11%Rp 8.499.000" "3%Rp 7.199.000" "7%Rp 8.599.000" "6%Rp 5.800.000"
## [65] "6%Rp 3.699.000" "8%Rp 3.999.000" "5%Rp 9.999.000" "4%Rp 15.599.000"
## [69] "6%Rp 4.999.000" "4%Rp 3.849.000" "2%Rp 14.299.000" "2%Rp 3.949.000"
## [73] "3%Rp 20.299.000" "2%Rp 8.449.000" "3%Rp 20.299.000"

```

5. langkah terakhir gunakan `data.frame` untuk menggabungkan beberapa data yang diperoleh dilangkah sebelumnya sehingga menjadi satu kesatuan data yang utuh

```

tokopedia <- data.frame>Nama = nama_barang, Harga = harga_barang, Diskon = harga_diskon_barang, Peringkat = rating)

```

6. untuk melihat data frame yang sudah dibuat bisa dengan `str()`


```
## 'data.frame':    75 obs. of  4 variables:
## $ Nama      : Factor w/ 72 levels "Acer Aspire 3 A314-32-C3X0 Notebook
- Black",...: 69 68 62 60 66 53 58 42 47 19 ...
## $ Harga     : Factor w/ 58 levels "Rp 10.059.000",...: 5 8 34 48 2 10 13
21 32 41 ...
## $ Diskon    : Factor w/ 68 levels "1%Rp 3.999.000",...: 64 37 43 52 59 5
3 54 42 67 7 ...
## $ Peringkat: Factor w/ 47 levels "(1)","(12)","(129)",...: 47 44 8 17 1
14 41 27 35 43 ...
```

7. selanjutnya untuk melihat isi dari data frame yang sudah dibuat bisa dengan memanggil nama dari data frame tersebut

tokopedia

```
##
##                                     Na
ma
## 1      Lenovo Yoga C640-13IML- 2KID - i5-10510U - 512GB SSD - 8GB - Win
10
## 2      Lenovo Yoga C340 -7FID i7-10510U NVIDIA GeForce MX230 - 1TB - 16
GB
## 3      lenovo ideapad S145-14AST AMD A9-9425 - 4GB - 512GB SSD - AMD Radeon
5
## 4                                     LENOVO IDEAPAD 330-6PID PLATINUM GR
EY
## 5      Lenovo Yoga C340-HLID - i5 8265U 8GB 512GB SSD MX230 2GB - Platin
um
## 6      Laptop Lenovo Ideapad 130 Amd A4 9125 4GB 500GB Radeon 14 W
10
## 7      LAPTOP MURAH ASUS E402YA-GA202T - AMD E2-7015U RAM 4GB 1TB 14" WIN
10
## 8      LAPTOP ASUS X441BA - AMD A4 9125 4GB 1TB VGA AMD R3 14" WIN10 RES
MI
## 9      LAPTOP HP 14 AMD A9 RAM 8GB 1TB HDD RADEON R5 WINDOWS
10
## 10     HP 14S DK0126AU DK0127AU - RYZEN 3 3200U 8GB 1TB+256GB SSD 14" FHD W
10
## 11     Dell Inspiron 3180 [A9-9420e-4-500-AMD-W10-GRY] DELL INDONES
IA
## 12     LAPTOP HP 14S-DK0073AU AMD A4-9125 4GB 1TB RADEN R3 14'' WINDOWS
10
## 13     LAPTOP HP 14-DK0023AU/DK0024AU - AMD A9-9425 4GB 1TB RADEON R5 14" W
10
## 14     LAPTOP ACER ASPIRE 3 A314-21 - AMD A4-9120 DDR4 4GB 256GB SSD 14" W
10
## 15     LAPTOP ASUS A420UA - INTEL PENTIUM 4417U DDR4 4GB SSD 256GB 14" W
10
## 16     ACER NITRO 5 AN515-R1BL - RYZEN 5-3550H 8GB SSD 512GB RX 560X 4GB W
10
## 17     ACER PREDATOR NITRO 5 AN515-43 - RYZEN 5-3550H 8GB 1TB RX 560X 4GB W
10
## 18     LAPTOP HP 14S-CF1046TU/CF1047TU-N4205U 4GB 1TB 14" W10 BACKLIT KYBOA
```

RD

19 LAPTOP ASUS X441BA - AMD A4 9125 4GB 1TB VGA AMD R3 14" WIN10 RES MI

20 LAPTOP LENOVO IDEAPAD S340-14API AMD RYZEN 5-3500U 8GB 512GB VEGA 8

21 ASUS M409DA EK501T |Ryzen 5 3500U 8GB 1TB Vega 8 W10 14F HD

22 ACER PREDATOR NITRO 5 - I7-9750H 256GB GTX1650 4GB 15.6" IPS 144HZ W 10

23 Dell Inspiron 3180 [A9-9420e-4-500-AMD-W10-WHT] DELL INDONES IA

24 PROMO LAPTOP ASUS E402YA - AMD E2-7015 4GB 1TB VGA AMD R2 14" WIN 10

25 Laptop HP 14S (14" inch / A4-9125 / 4GB / 1TB / Silver) dk0073 AU

26 LAPTOP ASUS E402YA - AMD E2-7015 SSD 256GB RAM 4GB AMD R2 14" W 10

27 Lenovo Yoga C640-13IML- 2KID - i5-10510U - 512GB SSD - 8GB - Win 10

28 LAPTOP ACER SWIFT 3 SF314-41 - ATHLON 300U/4GB/256GB SSD/14"FHD/WIN 10

29 ASUS A412FL - i5 8265U 8GB SSD 512GB MX250 2GB 14" FHD WIN10 RES MI

30 Laptop HP x360 (N4000 / 11.6" inch / 4GB / 500GB) ab128tu / ab129 tu

31 LAPTOP ASUS VIVOBBOOK A409UA - I3 7020 DDR4 4GB 512 SSD 14" WIN 10

32 ASUS VIVOBBOOK S14 S430FN-i7-8565U|SSD 512GB|8GB|MX150 2GB|14"|FHD|W 10

33 ASUS VIVOBBOOK S14 S430FN - i5-8265U|8GB|SSD512GB|MX150 2GB|14" F HD

34 LAPTOP ASUS X441BA - AMD A9 9425|4GB|1TB|AMD RADEON R5|14"|WIN 1 0|

35 Lenovo Yoga C340 -7FID i7-10510U NVIDIA GeForce MX230 - 1TB - 16 GB

36 HP Pavilion 13-an1034tu 13.3" i5-1035G1 - 8 GB DDR4 - 512 GB WIN 10

37 HP 14s-dk0024au Silv er

38 Lenovo Ideapad S145 TAID i7-8565U Nvidia MX110 8GB DDR4 512 GB

39 Lenovo Intel core i5-8250U-1TB-4GB+1Slot AMD Radeon 530-win 10 14" hd

40 Lenovo 130 - 00id Bla ck

41 LAPTOP ACER SWIFT 3 SF314-41 RYZEN 5-3500U 4GB 512GB RADEON VEGA 8 W 10

42 LAPTOP LENOVO IP330 - AMD A9 9425 RAM 4GB 1TB ATI RADEON R5 14" D OS

43 LAPTOP ASUS K403FA - i5 8265U 8GB SSD 512GB INTEL HD 14" FHD W10 RES MI

44 LAPTOP ASUS A420UA - INTEL PENTIUM 4417U 4GB SSD 256GB 14" W10 RES MI

45 Dell Inspiron 3476 [Ci3-7020U-4-1T-AMD-W10-BLK] DELL INDONES

IA

46 LAPTOP ASUS X441UA-GA311T/312T - I3-7020U 4GB 1TB DVD 14" W10

47 LAPTOP ASUS A409FJ-EK551T EK552T - i5 8265U 4GB 512GB MX230 2GB W10

48 LAPTOP ASUS X441MA-GA011T - N4000|RAM 4GB|HDD 1TB|DVD|14"|W10|BLACK

49 ACER SWIFT 3 AIR SF313-51 - I5-8250U DDR4 8GB SSD 256GB 13.3" FHD W10

50 LAPTOP ASUS A412FA - i3 8145U 4GB SSD 512GB INTEL HD 14" FHD W10 RES MI

51 LAPTOP ASUS A407MA - N4000|HDD 1TB|RAM 4GB|INTEL HD|14"|W10|SLIM!!!

52 PROMO LAPTOP ACER SWIFT 3 SF314-41 ATHLON 300U 8GB 256GB 14" FHD WIN10

53 LAPTOP ACER ASPIRE 5 A514-52G - I5 10210U 4GB 1TB MX250 2GB 14" WIN10

54 LAPTOP ASUS M409DA AMD RYZEN 3-3200U 8GB 1TB VEGA3 14" FHD WINDOWS10

55 LENOVO IP130 AMD A4-9125 4GB 500GB 14'' DVD WIN10

56 PROMO LAPTOP ACER SWIFT 3 SF314-41 ATHLON 300U 8GB 512GB 14" FHD WIN10

57 LAPTOP LENOVO AMD A9 RAM 8GB HDD 1TB RADEON R5 DOS

58 LAPTOP ASUS E402YA - AMD E2-7015 4GB 256GB SSD VGA AMD R2 14" W10

59 LAPTOP ASUS A412FA - i5 8265U 8GB SSD 512GB INTEL HD 14" FHD W10 RES MI

60 LAPTOP ASUS A412FL - i7 8565U 8G SSD 512GB MX250 2GB 14" FHD W10 RES MI

61 LAPTOP ASUS K403FA - i3 8145U 4GB SSD 512GB INTEL HD 14" FHD W10 RES MI

62 ACER SWIFT 3 AIR SF313-51 - I3-8130U DDR4 4GB SSD 256GB 13.3" FHD W10

63 ACER SWIFT 3 SF313-51 i5 8250U 8GB 256GB SSD 13.3" FHD WIN10 RES MI

64 LAPTOP LENOVO IDEAPAD S145-14API Athlon 300U 8GB 512GB-SSD Vega3 W10

65 LAPTOP LENOVO IP330-14IGM 5BID - N4000 4GB 1TB DVD WIN 10 14" BLACK

66 ASUS A407MA SLIM 1TB HDD (N4000, 4GB,14.0",WINDOWS 10) NERROW BEZEL

67 HP Pavilion Gaming15 ec0001AX | Ryzen5 3550H 8GB 512SSD GTX1050 3GB

68 Lenovo Yoga C340 - 7GID i7-10510U NVIDIA GeForce MX230 - 16GB - 1TB

69 ASUS X441BA - AMD A9 9425 4GB 1TB VGA AMD R5 14" WIN 10 ORIGINAL RES MI

70 Acer Aspire 3 A314-32-C3X0 Notebook - Black

71 HP Pavilion 13-an1036tu Core i7-1065G7 - 8 GB - 512 GB SSD - Win10

72 Lenovo Ideapad 330-B9ID Onyx Black

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Harga

Diskon

1 Rp 12.399.000 9%Rp 13.699.000

2 Rp 14.999.000 4%Rp 15.599.000

3 Rp 5.299.000 5%Rp 5.599.000

4 Rp 7.990.000 6%Rp 8.499.000

5 Rp 10.999.000 8%Rp 11.899.000

6 Rp 3.250.000 7%Rp 3.499.000

7 Rp 3.435.000 7%Rp 3.699.000

8 Rp 3.799.000 5%Rp 3.999.000

9 Rp 4.990.000 9%Rp 5.499.000

10 Rp 6.275.000 10%Rp 7.000.000

11 Rp 3.699.000 10%Rp 4.099.000

12 Rp 3.949.000 1%Rp 3.999.000

13 Rp 4.225.000 13%Rp 4.850.000

14 Rp 3.650.000 4%Rp 3.799.000

15 Rp 5.099.000 2%Rp 5.199.000

16 Rp 9.599.000 9%Rp 10.600.000

17 Rp 9.099.000 9%Rp 9.999.000

18 Rp 3.899.000 7%Rp 4.199.000

19 Rp 3.699.000 8%Rp 3.999.000

20 Rp 8.299.000 2%Rp 8.499.000

21 Rp 7.250.000 6%Rp 7.700.000

22 Rp 13.699.000 17%Rp 16.499.000

23 Rp 3.699.000 10%Rp 4.099.000

24 Rp 3.435.000 5%Rp 3.599.000

25 Rp 3.839.000 16%Rp 4.569.000

26 Rp 3.525.000 5%Rp 3.699.000

27 Rp 12.399.000 9%Rp 13.699.000

28 Rp 5.699.000 19%Rp 6.999.000

29 Rp 9.499.000 17%Rp 11.499.000

30 Rp 3.779.000 8%Rp 4.090.000

31 Rp 6.125.000 3%Rp 6.299.000

32 Rp 11.999.000 11%Rp 13.550.000

33 Rp 9.599.000 23%Rp 12.499.000

34 Rp 4.750.000 1%Rp 4.799.000

35 Rp 14.999.000 4%Rp 15.599.000

36 Rp 10.999.000 2%Rp 11.199.000

37 Rp 4.299.000 12%Rp 4.899.000

38 Rp 10.059.000 11%Rp 11.299.000

39 Rp 8.399.000 1%Rp 8.499.000

40 Rp 3.415.000 9%Rp 3.749.000

41 Rp 7.649.000 10%Rp 8.499.000

42 Rp 4.125.000 1%Rp 4.175.000

43 Rp 9.549.000 9%Rp 10.499.000

44 Rp 5.099.000 6%Rp 5.399.000

45 Rp 6.749.000 5%Rp 7.099.000

46 Rp 5.675.000 7%Rp 6.099.000

HP ENVY - 13-aq1018tx silv

HP 14s-dk0076au Go

HP ENVY - 13-aq1017tx Go

47 Rp 8.399.000 3%Rp 8.699.000
 ## 48 Rp 3.750.000 6%Rp 3.999.000
 ## 49 Rp 7.999.000 11%Rp 8.999.000
 ## 50 Rp 6.749.000 10%Rp 7.499.000
 ## 51 Rp 3.750.000 3%Rp 3.880.000
 ## 52 Rp 6.099.000 24%Rp 7.999.000
 ## 53 Rp 8.099.000 7%Rp 8.699.000
 ## 54 Rp 6.149.000 12%Rp 6.999.000
 ## 55 Rp 3.340.000 9%Rp 3.675.000
 ## 56 Rp 6.375.000 15%Rp 7.499.000
 ## 57 Rp 4.850.000 10%Rp 5.399.000
 ## 58 Rp 3.525.000 5%Rp 3.699.000
 ## 59 Rp 8.599.000 13%Rp 9.899.000
 ## 60 Rp 11.499.000 12%Rp 12.999.000
 ## 61 Rp 7.599.000 11%Rp 8.499.000
 ## 62 Rp 6.949.000 3%Rp 7.199.000
 ## 63 Rp 7.999.000 7%Rp 8.599.000
 ## 64 Rp 5.425.000 6%Rp 5.800.000
 ## 65 Rp 3.475.000 6%Rp 3.699.000
 ## 66 Rp 3.675.000 8%Rp 3.999.000
 ## 67 Rp 9.450.000 5%Rp 9.999.000
 ## 68 Rp 14.999.000 4%Rp 15.599.000
 ## 69 Rp 4.699.000 6%Rp 4.999.000
 ## 70 Rp 3.699.000 4%Rp 3.849.000
 ## 71 Rp 13.988.000 2%Rp 14.299.000
 ## 72 Rp 3.859.000 2%Rp 3.949.000
 ## 73 Rp 19.599.000 3%Rp 20.299.000
 ## 74 Rp 8.299.000 2%Rp 8.449.000
 ## 75 Rp 19.599.000 3%Rp 20.299.000

Peringkat
 ## 1 .css-177n1u3{height:12px;width:12px;margin:0.5px;}(6)
 ## 2 (8)
 ## 3 (2)
 ## 4 (3)
 ## 5 (1)
 ## 6 (262)
 ## 7 (77)
 ## 8 (444)
 ## 9 (63)
 ## 10 (79)
 ## 11 (55)
 ## 12 (71)
 ## 13 (129)
 ## 14 (67)
 ## 15 (53)
 ## 16 (22)
 ## 17 (45)
 ## 18 (45)
 ## 19 (173)
 ## 20 (78)
 ## 21 (12)
 ## 22 (32)
 ## 23 (24)
 ## 24 (98)

## 25	(40)
## 26	(24)
## 27	(6)
## 28	(38)
## 29	(76)
## 30	(25)
## 31	(28)
## 32	(46)
## 33	(31)
## 34	(21)
## 35	(8)
## 36	(1)
## 37	(1)
## 38	(3)
## 39	(2)
## 40	(1)
## 41	(67)
## 42	(35)
## 43	(49)
## 44	(57)
## 45	(20)
## 46	(36)
## 47	(21)
## 48	(33)
## 49	(7)
## 50	(65)
## 51	(28)
## 52	(24)
## 53	(9)
## 54	(25)
## 55	(28)
## 56	(16)
## 57	(18)
## 58	(12)
## 59	(42)
## 60	(25)
## 61	(32)
## 62	(20)
## 63	(29)
## 64	(6)
## 65	(7)
## 66	(12)
## 67	(4)
## 68	(6)
## 69	(45)
## 70	(15)
## 71	(2)
## 72	(4)
## 73	(2)
## 74	(1)
## 75	(1)

8. membuat data frame telah selesai dan untuk kedepannya data frame bisa dikelola lebih lanjut semisal mencari rata-rata atau harga tertinggi dan lain sebagainya
9. untuk membuat file dataset adari data frame dalam bentuk .csv maka menggunakan berikut ini

```
write.csv(nama_dataframe,"alamat_tempat_disimpannya_dataframe", row.names = FALSE)
```