



Data Gathering (Web Scraping)

Kuliah 2 STA1381 – Pengantar Sains Data

Septian Rahardiantoro

Outline

- Review: Web Scraping
- Ilustrasi Web Scraping
- Pembagian Topik Proyek Kelompok

Review: Web Scraping

Review: Web Scraping

- Web scraping adalah proses pengambilan data dari suatu website
- Web scraper adalah program (perangkat lunak) yang secara otomatis dapat mengekstrak data-data yang diperlukan dari satu atau lebih laman web (web pages) yang dijadikan target, kemudian menyimpan data-data tersebut kedalam suatu sistem database untuk dimanipulasi sesuai kebutuhan.
- Terdapat 2 metode web scraping :
 - Manual : metode dengan menyalin data dengan cara copy-paste dari sebuah website
 - Otomatis : metode yang menggunakan koding, aplikasi, atau extension browser

Cara Kerja Web Scraper

- Masukkan satu atau lebih URL untuk dilakukan scraping
- Scraper akan memuat seluruh kode HTML untuk halaman tersebut. Web Scraper yang lebih canggih akan memberikan lebih banyak data termasuk elemen CSS dan Javascript.
- Setelah itu, scraper akan mulai mengekstrak data pada halaman atau data tertentu yang dipilih pengguna untuk dijalankan. Jadi pengguna harus memilih data spesifik yang ingin diperoleh dari suatu halaman.
 - Contoh : data produk dan harga dari suatu halaman e-commerce.
- Web Scraper akan mengekstraksi semua data yang sudah dikumpulkan ke dalam format yang lebih mudah dipahami oleh pengguna, seperti format csv atau excel.

Manfaat Web Scraping

1. Memantau harga suatu produk yang ada di pasaran.
2. Mencari informasi dari perusahaan lain
3. Mendapatkan Leads
4. Membandingkan Ulasan dalam Jumlah Besar

Teknik-teknik Web Scraping

1. Menyalin data secara manual
2. Menggunakan regular expression
3. Parsing HTML
4. Menganalisa DOM
5. Menggunakan Xpath
6. Menggunakan Google Sheet

Ilustrasi Web Scraping

1. Penerapan Web Scraper Untuk Mengambil Data Mobil Bekas

<https://www.carsome.id/beli-mobil-bekas>

CARSOME Beli Mobil ▾ Jual Mobil ▾ FAQ Tentang CARSOME ▾ Lainnya ▾

Dapatkan Aplikasi ID ☎ (021) 5099 8890 🧑 Daftar/Masuk

Beli Mobil 📍 Semua Kota ▾

🔍 Cari mobil menurut Merek, Model, atau Kata Kunci

Promosi Merek & Model Tipe Anggaran Tahun Transmisi Jarak Tempuh Filter ▾

Bandingkan ☐

AGUSTUS BANYAK PROMO! BUNGA CICILAN 0% DISKON ANGSURAN BERJENJANG CILIKAN RINGAN [CEK PROMO](#)

Tukar-Tambah Mobil Lamamu & Dapatkan Tambahan Diskon Hingga Rp 6,5 Jt. [CEK MOBIL](#)

GAS MOBIL IMPIANMU SEKARANG! TDP RENDAH MULAI DARI **RP 5 JT-an** [CEK MOBIL](#)

Cara baru jual beli mobil yang terpercaya. Cari tahu kenapa Eric Cantona mempercayai CARSOME. [CEK MOBIL](#)

759 Hasil Direkomendasikan ▾

Rp 46.000.000 OFF

FLASH SALE s/d 31 Agustus 2023 [CARSOME Certified](#)

Rp 38.000.000 OFF

FLASH SALE s/d 31 Agustus 2023 [CARSOME Certified](#)

Rp 32.000.000 OFF

FLASH SALE s/d 31 Agustus 2023 [CARSOME Certified](#)

Menggunakan R

```
library(rvest)

url <- "https://www.carsome.id/beli-mobil-bekas"
card <- read_html(url) %>% html_elements('.mod-card')
card %>%
  html_element('.mod-card__high-tag-list') %>%
  html_elements('span') %>%
  html_text() %>%
  paste(collapse = ',')
```

```
[1] "Plat Genap,Panoramic Sun Roof,Paddle Shift,Plat Genap,360 Camera View,Sun
Roof,Plat Ganjil,Panoramic Sun Roof,Electric Parking Brake,Plat Genap,Sports
Mode,Map Navigator,Plat Genap,Sun Roof,Electric Parking Brake,Plat Ganjil,Jarak
Tempuh Rendah,Electric Parking Brake,Plat Ganjil,Retract Mirror,Kamera
Mundur,Plat Ganjil,Retract Mirror,Kamera Mundur,Plat Ganjil,Retract Mirror,Auto
Cruise Control,Plat Ganjil,Retract Mirror,Sports Mode,Plat Genap,Jarak Tempuh
Rendah,360 Camera View,Plat Genap,Jarak Tempuh Rendah,Retract Mirror,Plat
Genap,Auto Retract Mirror,Auto Cruise Control,Plat Ganjil,Auto Retract
Mirror,Panoramic Sun Roof,Plat Ganjil,Jarak Tempuh Rendah,Electric Parking
Brake,Plat Ganjil,Jarak Tempuh Rendah,Paddle Shift,Plat Ganjil,Sports
Mode,Kamera Mundur,Plat Ganjil,Auto Cruise Control,Paddle Shift"
```

```
sapply(card,
  function(card) {
    card %>%
      html_element('.mod-card__high-tag-list') %>%
      html_elements('span') %>%
      html_text() %>%
      paste(collapse = ',')
  })
```

```
[1] "Plat Genap,Panoramic Sun Roof,Paddle Shift"
[2] "Plat Genap,360 Camera View,Sun Roof"
[3] "Plat Ganjil,Panoramic Sun Roof,Electric Parking Brake"
[4] "Plat Genap,Sports Mode,Map Navigator"
[5] "Plat Genap,Sun Roof,Electric Parking Brake"
[6] "Plat Ganjil,Jarak Tempuh Rendah,Electric Parking Brake"
[7] "Plat Ganjil,Retract Mirror,Kamera Mundur"
[8] "Plat Ganjil,Retract Mirror,Kamera Mundur"
[9] "Plat Ganjil,Retract Mirror,Auto Cruise Control"
[10] "Plat Ganjil,Retract Mirror,Sports Mode"
[11] "Plat Genap,Jarak Tempuh Rendah,360 Camera View"
[12] "Plat Genap,Jarak Tempuh Rendah,Retract Mirror"
[13] "Plat Genap,Auto Retract Mirror,Auto Cruise Control"
[14] "Plat Ganjil,Auto Retract Mirror,Panoramic Sun Roof"
[15] "Plat Ganjil,Jarak Tempuh Rendah,Electric Parking Brake"
[16] "Plat Ganjil,Jarak Tempuh Rendah,Paddle Shift"
[17] "Plat Ganjil,Sports Mode,Kamera Mundur"
[18] "Plat Ganjil,Auto Cruise Control,Paddle Shift"
```

Dan seterusnya ...

2. Penerapan Web Scraper Untuk Mengambil Data Harga HP di ecommerce

Dengan menggunakan **Web Scraper** (ekstensi pada google chrome)

The image shows a screenshot of the Chrome Web Store interface. At the top, there's a search bar with 'web scraping' entered. Below the search bar, the 'Extensions' section is active. The 'Web Scraper - Free Web Scraping' extension is prominently displayed. It features a blue and white icon, a 'Featured' badge, and a description: 'Web data extraction tool with an easy point-and-click interface for modern web'. The extension has a 4.5-star rating from 808 reviews and is categorized under 'Productivity'. A red box highlights the 'Tambahkan ke Chrome' button. Below the extension card, there's a breadcrumb trail: 'Beranda > Ekstensi > Web Scraper - Free Web Scraping'. The extension's details section shows the icon, the name 'Web Scraper - Free Web Scraping', the developer 'Ditawarkan oleh: webscraper.io', a 4.5-star rating from 725 reviews, the category 'Produktivitas', and the number of users '400.000+ pengguna'.

chrome web store

Sign in

web scraping

Extensions

More extensions

« Home

Extensions

Themes

Ratings

★★★★★

★★★★★ & up

★★★★★ & up

★★★★★ & up

Privacy Policy

Terms of Service **Updated**

About Chrome Web Store

Web Scraper - Free Web Scraping

Featured

Web data extraction tool with an easy point-and-click interface for modern web

★★★★★ 808 Productivity

chrome web store

Beranda > Ekstensi > Web Scraper - Free Web Scraping

Web Scraper - Free Web Scraping

Ditawarkan oleh: webscraper.io

★★★★★ 725 | Produktivitas | 400.000+ pengguna

Tambahkan ke Chrome

Jarak & Lokasi Toko

Lokasi toko

☐ Kota Bandung

☐ DKI Jakarta

☐ Jabodetabek

☐ Kota Surabaya

☐ Kota Tangerang

Lihat Semua

Jarak

Promo

☐ Hadiah gratis

☐ Flash Sale

☐ Cicilan 0% (13-31 August 2023)

Jarak

Disediakan Blibli

Tipe seller

Promo

Peng


Harga:

Minimum


 -

Maksimum


Ini hasil yang paling relevan.
Lihat selengkapnya di [semua kategori](#).



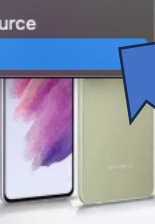
Xiaomi Redmi 9C Smartphone
[4GB/ 64GB]
Rp1.589.000




Asus Zenfone 3 ZE520KL
Smartphone [32GB/ 4GB]
Rp1.299.000



Xiaomi Poco M3 Pro 5G
Smartphone [4GB/64GB]
Rp2.250.000



Samsung Galaxy S21 FE
8/256GB RAM 8 ROM 256
Handphone Hp Smartphone...
Rp7.000.000



Vivo Y15s 3/64 GB RAM 3
ROM 64GB Handphone Hp
Smartphone Android Origin...
Rp1.480.000

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

Recorder

Performance insights

Web Scraper

Sitemaps

Sitemap

Create new sitemap

Search Sitemaps

Create Sitemap

Import Sitemap

ID

Domain

Create Sitemap

Isikan: Sitemap name dan Start URL 1

Sitemaps

Sitemap

Create new sitemap

Sitemap name

Sitemap name

Start URL 1

URL

-

+

Create Sitemap

Add new selector (pada parent root)

Sitemaps

Sitemap hpand

Create new sitemap

Id

pagination

Type

Element click

Selector

Select

Element preview

Data preview

div.product

Click selector

Select

Element preview

a.blu-paging__link

Click type

Click once (pagination, tabs)

Click element uniqueness

Unique Text

Multiple

☒

Discard initial elements

Discard when click element exists

Delay (ms)

2000

Parent Selectors

_root

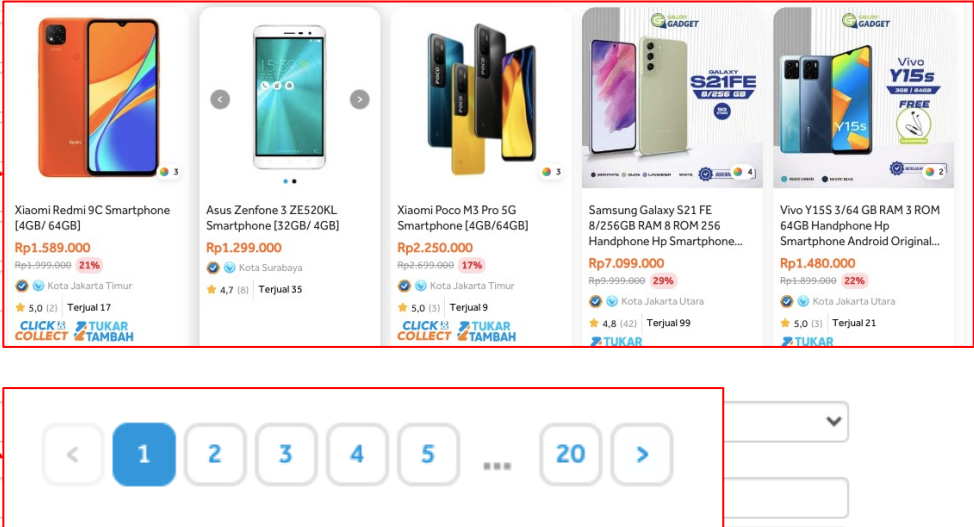
pagination

hp_list

Save selector

Cancel

Parent Selectors



Add new selector (pada parent pagination)

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

Recorder

Performance insights

Web Scraper

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Sitemaps

Sitemap hpand

Create new sitemap

Id

hp_list

Type

Element

Selector

Select

Element preview

Data preview

div.product__description

Multiple

☒

Parent Selectors


_root

pagination

hp_list

Save selector

Cancel



Xiaomi Redmi 9C Smartphone

[4GB/ 64GB]

Rp1.589.000

Rp1.999.000 21%

Kota Jakarta Timur

5,0 (2) Terjual 17

CLICK COLLECT

TUKAR TAMBAH

Add 2 buah new selector (pada parent hp_list)

Elements

Console

Sources

Network

Performance

Memory

Appli

SitemapsSitemap hpandCreate new sitemap

Id

nama_hp

Type

Text

Selector

Select

Element preview

Data preview

div.product__title

☐ Multiple

Regex

Parent Selectors

_root

pagination

hp_list

Save selector

Cancel



Elements

Console

Sources

Network

Performance

Memory

Appli

SitemapsSitemap hpandCreate new sitemap

Id

harga_hp

Type

Text

Selector

Select

Element preview

Data preview

strong

☐ Multiple

Regex

Parent Selectors

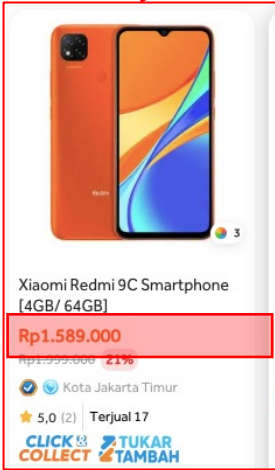
_root

pagination

hp_list

Save selector

Cancel



Elements Console Sources Netw

Sitemaps Sitemap hpand Create new siter

_root / pagina

| ID | Selector |
|----------|-------------|
| nama_hp | div.product |
| harga_hp | strong |

Add new selector

- Selectors
- Selector graph
- Edit metadata
- Scrape
- Browse
- Export Sitemap
- Export data

Elements Console Sources Network Performance Memory Application Security

Sitemaps Sitemap hpand Create new sitemap



Elements Console Sources Netw

Sitemaps Sitemap hpand Create new siter

_root / pagina

| ID | Selector |
|----------|-------------|
| nama_hp | div.product |
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Add new selector

- Selectors
- Selector graph
- Edit metadata
- Scrape
- Browse
- Export Sitemap
- Export data

Promo

☐ Hadiah gratis


☐ Flash Sale

☐ Cicilan 0% (13-31 August 2023)

☐ Grosir

☐ Tukar Tambah

☐ Voucher seller



Xiaomi Redmi 9C Smartphone
[4GB/ 64GB]

Rp1.589.000

Rp1.999.000

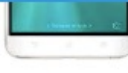
21%

Kota Jakarta Timur

5,0 (2) Terjual 17

CLICK COLLECT

TUKAR TAMBAH



Asus Zenfone 3 ZE520KL
Smartphone [32GB/ 4GB]

Rp1.299.000

Kota Surabaya


4,7 (8) Terjual 35

Kota Jakarta Timur

5,0 (3) Terjual 9

CLICK COLLECT

TUKAR TAMBAH



Xiaomi Poco M3 Pro 5G
Smartphone [4GB/64GB]

Rp2.250.000

Rp2.699.000


17%

Kota Jakarta Timur

5,0 (3) Terjual 9

CLICK COLLECT

TUKAR TAMBAH



Samsung Galaxy S21 FE
8/256GB RAM 8 ROM 256
Handphone Hp Smartphone...

Rp7.099.000


Rp9.999.000

29%

Kota Jakarta Utara

4,8 (42) Terjual 99

TUKAR TAMBAH



Vivo Y15S 3/64 GB RAM 3 ROM
64GB Handphone Hp
Smartphone Android Original...

Rp1.480.000

Rp1.899.000

22%

Kota Jakarta Utara

5,0 (3) Terjual 21

TUKAR TAMBAH

Elements

Console

Sources

Network

Performance

Memory

Application

Security

Lighthouse

Recorder

Performance insights

Web Scraper

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1

Sitemaps

Sitemap hpand

Create new sitemap

Refresh Data

Experienced any problems with web scraping? Help us understand!

Sure!

| web-scraper-order | web-scraper-start-url | nama_hp | harga_hp |
|-------------------|---|---|-------------------|
| 1692063197-1 | https://www.blibli.com/cari/handphone%20android | Xiaomi Redmi 9C Smartphone [4GB/ 64GB] | Rp1.589.000 |
| 1692063197-2 | https://www.blibli.com/cari/handphone%20android | Asus Zenfone 3 ZE520KL Smartphone [32GB/ 4GB] | Rp1.299.000 |
| 1692063197-3 | https://www.blibli.com/cari/handphone%20android | Xiaomi Poco M3 Pro 5G Smartphone [4GB/64GB] | Rp2.250.000 |
| 1692063197-4 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy S21 FE 8/256GB RAM 8 ROM 256 Handphone Hp Smartphone Android Garansi Resmi | Rp7.099.000 |
| 1692063197-5 | https://www.blibli.com/cari/handphone%20android | Vivo Y15S 3/64 GB RAM 3 ROM 64GB Handphone Hp Smartphone Android Original Murah Garansi Resmi | Rp1.480.000 |
| 1692063197-6 | https://www.blibli.com/cari/handphone%20android | OPPO A31 Handphone Android - Black [4/128] | Rp2.547.902 |
| 1692063197-7 | https://www.blibli.com/cari/handphone%20android | Advan NasaPlus 2GB 16GB Smartphone Android10 Garansi Resmi | Rp845.000 |
| 1692063197-8 | https://www.blibli.com/cari/handphone%20android | OPPO A57 4/64 GB Smartphone Android Original Garansi Resmi | Mulai Rp2.399.000 |

Elements

Console

Sources

Netw

Sitemaps

Sitemap hpand

Create new siter

_root / pagina

ID

nama_hp

harga_hp

Add new selecto

Selectors

Selector graph

Edit metadata

Scrape

Browse

Export Sitemap

Export data

| web-scraper-order | web-scraper-start-url | nama_hp | harga_hp | | |
|-------------------|---|--|-------------|--|-------------|
| 1692063197-1 | https://www.blibli.com/cari/handphone%20android | Xiaomi Redmi 9C Smartphone [4GB/ 64GB] | Rp1.589.000 | | |
| 1692063197-2 | https://www.blibli.com/cari/handphone%20android | Asus Zenfone 3 ZE520KL Smartphone [32GB/ 4GB] | Rp1.299.000 | | |
| 1692063197-3 | https://www.blibli.com/cari/handphone%20android | Xiaomi Poco M3 Pro 5G Smartphone [4GB/64GB] | Rp2.250.000 | | |
| 1692063197-4 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy S21 FE 8/256GB RAM 8 ROM 256 Handphone Hp Smartphone Android Garansi Resmi | Rp7.099.000 | | |
| 1692063197-5 | https://www.blibli.com/cari/handphone%20android | Vivo Y15S 3/64 GB RAM 3 ROM 64GB Handphone Hp Smartphone Android Original Murah Garansi Resmi | Rp1.480.000 | | |
| 1692063197-6 | https://www.blibli.com/cari/handphone%20android | OPPO A31 Handphone Android - Black [4/128] | Rp2.547.902 | | |
| 1692063197-7 | https://www.blibli.com/cari/handphone%20android | Advan NasaPlus 2GB 16GB Smartphone Android10 Garansi Resmi | Rp845.000 | | |
| 1692063197-8 | https://www.blibli.com/cari/handphone%20android | OPPO A57 4/64 GB Smartphone Android Original Garansi Resmi | Mulai | | Rp2.399.000 |
| 1692063197-9 | https://www.blibli.com/cari/handphone%20android | Advan NasaPlus 2GB 16GB Smartphone Android10 Garansi Resmi Deep Blue | Rp845.000 | | |
| 1692063197-10 | https://www.blibli.com/cari/handphone%20android | Hp xiami not 9 | Rp2.100.000 | | |
| 1692063197-11 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A04e 3/32 GB RAM 3GB 32GB Smartphone Android | Rp1.137.000 | | |
| 1692063197-12 | https://www.blibli.com/cari/handphone%20android | Infinix Hot 30i 8/128 RAM 8GB ROM 128GB 8 128 GB HP Android | Rp1.475.000 | | |
| 1692063197-13 | https://www.blibli.com/cari/handphone%20android | POCO C40 3/32 GB - Resmi | Rp1.258.000 | | |
| 1692063197-14 | https://www.blibli.com/cari/handphone%20android | Handphone OPPO A37 | Rp700.000 | | |
| 1692063197-15 | https://www.blibli.com/cari/handphone%20android | XIAOMI REDMI 10A RAM 3GB - 64GB GARANSI RESMI | Mulai | | Rp1.149.000 |
| 1692063197-16 | https://www.blibli.com/cari/handphone%20android | Xiaomi MI 11T Pro 12/256 GB RAM 12 ROM 256GB Handphone Smartphone Android Original Garansi Resmi | Rp7.899.000 | | |
| 1692063197-17 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A13 4/128 6/128 4GB 6GB 128GB RAM 4 6 ROM 128 GB HP Smartphone Android | Mulai | | Rp2.500.000 |
| 1692063197-18 | https://www.blibli.com/cari/handphone%20android | handphone samsung A12 6/128 resmi sein | Rp2.750.000 | | |
| 1692063197-19 | https://www.blibli.com/cari/handphone%20android | Advan Nasa Pro 2 GB 32 GB Smartphone Android 11 | Rp799.000 | | |
| 1692063197-20 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A73 5G 8/256 8GB 256GB RAM 8 ROM 256 GB Smartphone Android | Rp8.518.000 | | |
| 1692063197-21 | https://www.blibli.com/cari/handphone%20android | ALDO A9 SMARTPHONE RAM 3GB INTERNAL 16GB ANDROID | Rp680.000 | | |
| 1692063197-22 | https://www.blibli.com/cari/handphone%20android | HP Oppo A53S murah terbaru 2022 OPPO A53 S 5G RAM 8 + 256 GB Original New Baru Smartphone Android 6.52in HP OPPO Murah garansi 1 tahun | Rp2.459.000 | | |
| 1692063197-23 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy S21 FE 8/256 GB RAM 8 ROM 256 Handphone Hp Smartphone Android Garansi Resmi | Rp7.149.000 | | |
| 1692063197-24 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A04e Smartphone [3/32GB] | Rp1.500.000 | | |
| 1692063197-25 | https://www.blibli.com/cari/handphone%20android | Samsung A14 4/128 | Rp2.399.000 | | |
| 1692063197-26 | https://www.blibli.com/cari/handphone%20android | Oppo Reno 8T 5G 8/256GB | Rp6.199.000 | | |
| 1692063197-27 | https://www.blibli.com/cari/handphone%20android | OPPO A96 8GB/256GB Garansi Resmi 1 Tahun | Rp3.231.000 | | |
| 1692063197-28 | https://www.blibli.com/cari/handphone%20android | Vivo V25E 8/128 Garansi resmi vivo | Rp3.699.000 | | |
| 1692063197-29 | https://www.blibli.com/cari/handphone%20android | Huawei Y6 II LTE Smartphone - Black [16GB/ 2GB] | Rp3.849.000 | | |
| 1692063197-30 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A54 8/128GB | Rp5.599.000 | | |
| 1692063197-31 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A54 8/256GB | Rp5.999.000 | | |
| 1692063197-32 | https://www.blibli.com/cari/handphone%20android | SAMSUNG A03 CORE 2/32 GB [GARANSI RESMI] | Rp1.199.000 | | |
| 1692063197-33 | https://www.blibli.com/cari/handphone%20android | Xiaomi Redmi 9C Smartphone [4GB/ 64GB] | Rp1.625.000 | | |
| 1692063197-34 | https://www.blibli.com/cari/handphone%20android | Vivo Y16 - 3GB/32GB | Rp1.799.000 | | |
| 1692063197-35 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A04s Smartphone [4/64GB] | Mulai | | Rp1.799.000 |
| 1692063197-36 | https://www.blibli.com/cari/handphone%20android | Tecno Pova 4 (8GB + 128GB) Garansi Resmi | Rp2.269.000 | | |
| 1692063197-37 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A13 6/128GB | Rp2.487.500 | | |
| 1692063197-38 | https://www.blibli.com/cari/handphone%20android | Samsung Galaxy A23 5G 6/128GB | Mulai | | Rp3.799.000 |
| 1692063197-39 | https://www.blibli.com/cari/handphone%20android | Xiaomi Redmi 9A Smartphone [32 GB/ 2 GB] | Rp1.110.000 | | |
| 1692063197-40 | https://www.blibli.com/cari/handphone%20android | Vivo Y16 Smartphone [4GB/128GB] | Rp1.899.000 | | |
| 1692063197-41 | https://www.blibli.com/cari/handphone%20android | REALME C31 RAM 3/32 GB GARANSI RESMI | Rp1.470.000 | | |
| 1692063197-42 | https://www.blibli.com/cari/handphone%20android | Redmi 9A 2/32GB | Rp1.500.500 | | |
| 1692063197-43 | https://www.blibli.com/cari/handphone%20android | Infinix Note 7 Lite Smartphone [4GB- 64GB] | Rp2.100.000 | | |
| 1692063197-44 | https://www.blibli.com/cari/handphone%20android | Xiaomi redmi 9T RAM 4/64 GB garansi resmi | Rp2.475.000 | | |
| 1692063197-45 | https://www.blibli.com/cari/handphone%20android | Samsung M23 5G 6/128 garansi resmi | Rp3.309.800 | | |

Pembagian Topik Projek Kelompok

Projek

- Dikerjakan secara berkelompok
- Setiap kelompok akan mendapatkan topik projek tertentu secara acak, dengan pilihan topiknya
 1. Topik 1: Harga rumah dan spesifikasinya
 2. Topik 2: Harga leptop dan spesifikasinya
 3. Topik 3: Harga mobil bekas dan spesifikasinya
 4. Topik 4: Harga handphone dan spesifikasinya
- Spesifikasi yang diambil meliputi jenis objek, dan beberapa karakteristiknya (minimal 5 peubah)

- Lakukan web scraping sesuai dengan topik terpilih dengan minimal objek yang diambil adalah 500 buah objek

| Topik | P1 | P2 |
|---|----|----|
| Topik 1: Harga rumah dan spesifikasinya | K4 | K2 |
| Topik 2: Harga laptop dan spesifikasinya | K2 | K3 |
| Topik 3: Harga mobil bekas dan spesifikasinya | K1 | K1 |
| Topik 4: Harga handphone dan spesifikasinya | K3 | K4 |

- Diskusikanlah peubah-peubah yang akan digunakan

Terima kasih 😊