

# 김민성

## Amazon 데이터셋 기반 추천 시스템 설계 프로젝트

```
--추천 시스템 1
--추천 시스템 이름: 품질까지 1등! 가성비가 최고다!
--추천 시스템 테마: 구매자의 경제적 이득을 목표로 가장 높은 할인율을 가지는 제품
추천한다.
    --할인율만 높은 것이 아닌, 일정 수준 이상의 평점, 리뷰수를 가진 제품 선정하여 품
질도 보장할 수 있다.
    --즉, 높은 품질의 제품을 가장 저렴하게 구매할 수 있는 기회 제공

--구현 로직
WITH ProcessedData AS (
    SELECT
        product_name,
        category,
        discounted_price,
        actual_price,
        --할인율 % 제외, 숫자 변환
        ROUND(CAST(REPLACE(CAST(discount_percentage AS STRING), '%',
        '')) AS FLOAT64)) AS discount_percent,
        --평점 숫자 변환
        SAFE_CAST(rating AS FLOAT64) AS rating_value,
        CAST(REPLACE(CAST(rating_count AS STRING), ',', '')) AS INT64) AS rev
        iew_count,
        product_link
    FROM
        `modulabs-project-465602.250715_project.amazon`)
SELECT
    product_name AS product_name,
    category AS category,
    discounted_price AS discounted_price,
    actual_price AS actual_price,
    discount_percent AS discount_percent,
    rating_value AS rating,
    review_count AS review_count,
```

```

product_link AS product_link
FROM
  ProcessedData
WHERE --평점 4.0 이상, 리뷰 100개 이상
  rating_value >= 4.0
  AND review_count >= 100
ORDER BY --할인율 높은 순서로 정렬
  discount_percent DESC
LIMIT 100;

```

rank	product_name	category	discounted_price	actual_price	discount_percent	rating	review_count	product_link
1	Iselle Remote Compatible for Samsung LED/LCD Remote Control Works with All Samsung LED/LCD TV Model No > BN59-607A (Please	Electronics>HomeTheater>TV&V...	299.0	899.0	1.0	4.0	1588	https://www.amazon.in/Iselle-Remote-Compatible-Samsung-Control/dp/B07DL1K03H/ref=sr_1_114?gclid=1672909129&s=electronics&sr=1-114
2	PrettyKrafts Laundry Basket for clothes with Lid & Handles, Toys Organizer, 75 Ltr Black & Grey	Home&Kitchen>HomeStorage&Organization>LaundryOrganization>LaundryBaskets	351.0	999.0	1.0	4.0	5380	https://www.amazon.in/PrettyKrafts-Laundry-Basket-Clothes-Handles/dp/B0914P4L96/ref=sr_1_45?gclid=1672939928&s=kitchen&sr=1-45
3	Wayona 3in1 Nylon Braided 66W USB Fast Charging Cable with Type C, Lightning and Micro USB Port, Compatible with iPhone, iPad, Samsung	Computers&Accessories>Accessories>Peripherals>Cables&Accessories>Cables>USBCables	449.0	1099.0	1.0	4.0	242	https://www.amazon.in/Wayona-Braided-Charging-Lightning-Cable/dp/B08B9FXYZY4/ref=sr_1_239?gclid=1672909136&s=electronics&sr=1-239
4	Ambrane 60W / 3A Fast Charging Output Cable with Type-C to USB for Mobile, Neckband, True Wireless Earphone Charging, 480Mbps	Computers&Accessories>Accessories>Peripherals>Cables&Accessories>Cables>USBCables	179.0	399.0	1.0	4.0	1423	https://www.amazon.in/Ambrane-Charging-Neckband-Wireless-AC/dp/B09YLXVP7Y/ref=sr_1_442?gclid=1672895879&s=electronics&sr=1-442
5	Callas Multipurpose Foldable Laptop Table with Cup Holder	Computers&Accessories>Accessories>Peripherals>Laptop&C...	849.0	4999.0	1.0	4.0	20457	https://www.amazon.in/Callas-Multipurpose-Breakfast-Ergo

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rank	product_name	category	discounted_price	actual_price	discount_percent	rating	review_count	product_link
6	FLIX (Beetle) USB to Micro USB PVC Data Sync & 2A Fast Charging Cable, Made in India, 480Mbps Data Sync, Solid Cable, 1 Meter Long USB	Computers&Accessories>Accessories>Peripherals>Cables&Accessories>Cables>USBCables	59.0	199.0	1.0	4.0	9378	https://www.amazon.in/FLIX-Charging-480Mbps-Devices-X-CD-M11/dp/B094JNBL25/ref=sr_1_48?gclid=1672909125&s=electronics&sr=1-48
7	Eureka Forbes Active Clean 700 Watts Powerful Suction & Blower Vacuum Cleaner with Washable HEPA Filter & 6 Accessories, 1 Year	Home&Kitchen>Kitchen&HomeAppliances>Vacuum,Cleaning&Ironing>Vacuums&FloorCare>Vacuums>HandheldVacuums	3179.0	6999.0	1.0	4.0	743	https://www.amazon.in/Eureka-Forbes-Active-Cleaner-washable/dp/B08HCCWDXD/ref=sr_1_273?gclid=167293806&s=kitchen&sr=1-273
8	WwCool C1 Car Mobile Holder with One Click Technology, 360° Rotational, Strong Suction Cup, Compatible with 4 to 6	Electronics>Mobiles>Accessories>MobileAccessories>AutomobileAccessories>Cradles	489.0	1999.0	1.0	4.0	3626	https://www.amazon.in/WwCool-C1-Technology-Windshield-Extendable/dp/B09P85DK63/ref=sr_1_104?gclid=1672895777&s=electronics&sr=1-104
9	JIALTO Mini Waffle Maker 4 Inch-350 Watts Stainless Steel Non-Stick Electric Iron Machine for Individual Belgian	Home&Kitchen>Kitchen&HomeAppliances>SmallKitchenAppliances>WaffleMakers>Irons	899.0	1999.0	1.0	4.0	832	https://www.amazon.in/BONIRY-Waffle-Maker-4inch-Watts/dp/B09LH2678/ref=sr_1_390?gclid=1672938611&s=kitchen&

페이지당 결과 수: 50 ▼ 1 ~ 50 (전체 100행) |< > |

-위 상품들은 평점 4.0 이상, 리뷰 수 100개 이상의 상품 중 할인율이 가장 높은 순서로 정렬된 상품 중 상위 9개로 아마존 플랫폼 안에서 가장 가성비가 좋은 상품이라고 할 수 있다.

--추천 시스템 2

--추천 시스템 이름: 카테고리별 인기 상품 추천

--추천 시스템 테마: 전체 인기 상품 추천이 아닌, 각 카테고리별 인기 상품 상위 3개를 추천한다

--소비자는 관심 있는 카테고리에서 인기 상품만 빠르게 찾을 수 있어 시간을 줄여주고 신뢰감을 준다

```

--인기도 점수 = 평점 * 리뷰 수
--ROW_NUMBER()로 인기도 점수가 높은 순으로 순위 매겨서 상위 3개 추천

--구현 로직
WITH ProcessedData AS (
  SELECT
    product_name,
    category,
    SAFE_CAST(rating AS FLOAT64) AS rating_value,
    CAST(REPLACE(CAST(rating_count AS STRING), ',' , '' ) AS INT64) AS review_count,
    product_link,
    -- 인기도 점수= 평점 * log(리뷰 수)
    SAFE_CAST(rating AS FLOAT64) * LOG(CAST(REPLACE(CAST(rating_count AS STRING), ',' , '' ) AS INT64)) AS popularity_score
  FROM
    `modulabs-project-465602.250715_project.amazon`
), RankedProducts AS (
  SELECT *,
    ROW_NUMBER() OVER(PARTITION BY category ORDER BY popularity_score DESC) AS category_rank
  FROM
    ProcessedData)
SELECT
  category AS category,
  category_rank AS category_rank,
  product_name AS product_name,
  rating_value AS rating,
  review_count AS review_count,
  product_link AS product_link
FROM
  RankedProducts
WHERE
  category_rank <= 3
ORDER BY
  category, category_rank;

```

row	category	category_rank	product_name	rating	review_count	product_link
1	Car&Motorbikes&CarAccessories&InteriorAccessories&AirPurifiers&Ionizers	1	Reffar AX30 [MAX] Portable Air Purifier for Car, Home & Office   Smart Ionizer Function   H13 Grade True HEPA Filter [Internationally Tested]	3.8	1118	https://www.amazon.in/Reffar-AX30-MAX-Internationally-Air-purifier/dp/B0912WJ87V/ref=sr_1_164?pd_rd_g=1672923558&pf_rd_p=1672923558&pf_rd_t=3&pf_rd_i=164
2	Computers&Accessories&Accessories&Peripherals&Adapters&USB&USBAdapters	1	Kanget [2 Pack] Mini USB C Type C Adapter Plug, Type C Female to USB A Male Charger Charging Cable Adapter Converter compatible for	4.3	4426	https://www.amazon.in/Kanget-Adapter-Plug-Type-C-Female-to-USB-A-Male-Charger-Charging-Cable-Adapter-Converter-compatible-for/dp/B097C564GC/ref=sr_1_121?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=121
3	Computers&Accessories&Accessories&Peripherals&Adapters&USB&USBAdapters	2	Kanget [2 Pack] Type C Female to USB A Male Charger   Charging Cable Adapter Converter compatible for iPhone 14, 13, 12, 11 Pro	4.0	1540	https://www.amazon.in/Kanget-Female-to-USB-A-Male-Charger-Charging-Cable-Adapter-Converter-compatible-for-iPhone-14-13-12-11-Pro/dp/B094QWY9B9/ref=sr_1_171?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=171
4	Computers&Accessories&Accessories&Peripherals&Audio&VideoAccessories&PCHeadsets	1	Hp Wired On Ear Headphones With Mic With 3.5 Mm Drivers, In-Built Noise Cancelling, Foldable And Adjustable For Laptop/PC/Office/Home/ 1	3.5	7222	https://www.amazon.in/HP-B4-B09PA-Headphones-with-Mic/dp/B09PAJ2BXA/ref=sr_1_361?pd_rd_g=1672903013&pf_rd_p=1672903013&pf_rd_t=3&pf_rd_i=361
5	Computers&Accessories&Accessories&Peripherals&Audio&Video	1	JBL Commercial CSLM20B Auxiliary Omnidirectional	3.9	14969	https://www.amazon.in/JBL-Commercial-Omnidirectional-Microphone/dp/B088888888/ref=sr_1_1?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=1

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row	category	category_rank	product_name	rating	review_count	product_link
6	Computers&Accessories&Accessories&Peripherals&Audio&VideoAccessories&PCMicrophones	2	HUMBLE Dynamic Lapel Collar Mic Voice Recording Filter Microphone for Singing Youtube SmartPhones, Black	3.3	2804	https://www.amazon.in/HUMBLE-Dynamic-Recording-Microphone-SmartPhones/dp/B08H07JQHJ/ref=sr_1_203?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=203
7	Computers&Accessories&Accessories&Peripherals&Audio&VideoAccessories&PCSpeakers	1	Zabtronics Zab Wonderbar 10 USB Powered 2.0 Computer Speaker with RGB Lights	4.0	7352	https://www.amazon.in/Zabtronics-Zab-Wonderbar-Powered-Computer-Speaker/dp/B088888888/ref=sr_1_285?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=285
8	Computers&Accessories&Accessories&Peripherals&Audio&VideoAccessories&PCSpeakers	2	ZEBRONICS Zab-Warrior II 10 watts 2.0 Multimedia Speaker with RGB Lights, USB Powered, AUX Input, Volume Control Pod for PC, Laptops,	4.1	5195	https://www.amazon.in/ZEBRONICS-Zab-Warrior-Speaker-Laptops-Desktop/dp/B088888888/ref=sr_1_394?pd_rd_g=1672903014&pf_rd_p=1672903014&pf_rd_t=3&pf_rd_i=394
9	Computers&Accessories&Accessories&Peripherals&Audio&VideoAccessories&Webcams&VideoEquipment&Webcams	1	Logitech C270 Digital HD Webcam with Widescreen HD Video Calling, HD Light Correction, Noise-Reducing	4.3	20398	https://www.amazon.in/Logitech-C270-HD-Webcam-Black/dp/B008Q9J6YV/ref=sr_1_2307?pd_rd_g=1672903004&pf_rd_p=1672903004&pf_rd_t=3&pf_rd_i=2307

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-각 category\_rank를 기준으로 해당 상품이 카테고리에 몇 번째로 인기가 있는 상품인지 알 수 있다.

-예를 들어, 3행 'USB-to-USB 어댑터' 카테고리에서 두 번째로 인기 있는(2위) 제품은 'Kanget [2 Pack] Type C Female to USB A Male Charger'이다.

--추천 시스템 3

--추천 시스템 이름: 얼리어답터에게 신상!!! 추천

--추천 시스템 테마: 최신 기술 반영이 중요한 'Computers & Accessories', 'Electronics' 카테고리에서 상대적으로 리뷰 수는 적지만 높은 평점을 받아 초기 구매자에게 높은 평점을 받는 신상 제품 추천

--특히 'Computers & Accessories', 'Electronics'에 많을 얼리어답터 특성의 구매자 타겟팅

--좋은 신상 > 적은 리뷰 수, 높은 평점

--구현 로직

WITH ProcessedData AS (

```
SELECT
    product_name,
    category,
```

```

--평점 숫자 변환
SAFE_CAST(rating AS FLOAT64) AS rating_value,
--심표 제거
SAFE_CAST(REPLACE(CAST(rating_count AS STRING), ',', '' ) AS INT64)
AS review_count,
    about_product,
    product_link
FROM
    `modulabs-project-465602.250715_project.amazon`
)
SELECT
    product_name,
    category,
    rating_value AS rating,
    review_count,
    about_product,
    product_link
FROM
    ProcessedData
WHERE
--해당 카테고리 선별
    (category LIKE '%Computers&Accessories%' OR category LIKE '%Electro
    nics%')
--평점 4.4 이상
    AND rating_value >= 4.4
--리뷰 수 50개 이상 1000개 이하 제품
    AND review_count BETWEEN 50 AND 1000
ORDER BY
--평점 높은 순 > 리뷰 많은 순 정렬
    rating_value DESC, review_count DESC
LIMIT 50;

```

rank	product_name	category	rating	review_count	about_product	product_link
1	WeCool 55 Long Selfie Stick, with Large Reinforced Tripod Stand up to 61 inch / 156 Cms, Ultra Long Multi Function Bluetooth Selfie	Electronics/Mobiles/Accessories/MobileAccessories/Photo&VideoAccessories/SelfieSticks	4.6	245	64" Tall Cell Phone Tripods with 7 section adjustable telescopic poles, the phone selfie stick tripod stand is tall enough, can be adjusted from	https://www.amazon.in/WeCool-Reinforced-Function-Bluetooth-Compatible/dp/B08B9XKBC7/ref=sr_1_44?pgid=1672895878&s=electronics&sr=1-44
2	WeCool 55 Long Selfie Stick, with Large Reinforced Tripod Stand up to 61 inch / 156 Cms, Ultra Long Multi Function Bluetooth Selfie	Electronics/Mobiles/Accessories/MobileAccessories/Photo&VideoAccessories/SelfieSticks	4.6	245	64" Tall Cell Phone Tripods with 7 section adjustable telescopic poles, the phone selfie stick tripod stand is tall enough, can be adjusted from	https://www.amazon.in/WeCool-Reinforced-Function-Bluetooth-Compatible/dp/B08B9XKBC7/ref=sr_1_44?pgid=1672895878&s=electronics&sr=1-44
3	Duracell USB Lightning Apple Certified (MFi) Braided Sync & Charge Cable For Iphone, Ipad And Ipod. Fast Charging Lightning Cable, 3.9 Feet	Computers&Accessories/Accessories/Peripherals/Cables&Accessories/Cables/USB/Cables	4.5	815	Supports Ios Devices With Max Output Up To 2.4A Up To 10,000+ Bend And 10,000+ Plugging And Unplugging Test Ensure This Cable A Longer	https://www.amazon.in/DURACELL-Lightning-Certified-braided-Devices/dp/B09C5H9FC1/ref=sr_1_138?pgid=1672895784&s=electronics&sr=1-138
4	Duracell USB Lightning Apple Certified (MFi) Braided Sync & Charge Cable For Iphone, Ipad And Ipod. Fast Charging Lightning Cable, 3.9 Feet	Computers&Accessories/Accessories/Peripherals/Cables&Accessories/Cables/USB/Cables	4.5	815	Supports Ios Devices With Max Output Up To 2.4A Up To 10,000+ Bend And 10,000+ Plugging And Unplugging Test Ensure This Cable A Longer	https://www.amazon.in/DURACELL-Lightning-Certified-braided-Devices/dp/B09C5H9FC1/ref=sr_1_126?pgid=1672903001&s=computers&sr=1-126
5	Duracell USB Lightning Apple Certified (MFi) Braided Sync &	Computers&Accessories/Accessories/Peripherals/Cables&A	4.5	815	Supports Ios Devices With Max Output Up To 2.4A Up To	https://www.amazon.in/DURACELL-Lightning-Certified-braid

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rank	product_name	category	rating	review_count	about_product	product_link
	Charge Cable For Iphone, Ipad And Ipod. Fast Charging Lightning Cable, 3.9 Feet	ccssories/Cables/USB/Cables			10,000+ Bend And 10,000+ Plugging And Unplugging Test Ensure This Cable A Longer	ed-Devices/dp/B09C5H9FC1/ref=sr_1_22?pgid=1672909124&s=electronics&sr=1-22
6	Kyosai Advanced Tempered Glass Compatible with Google Pixel 6a with Military-Grade Anti-Explosion Edges-to-Edge Coverage Screen Protector	Electronics/Mobiles/Accessories/MobileAccessories/Maintenance/Upkeep&Repairs/ScreenProtectors	4.5	596	Kyosai Provide perfect fit, high quality materials and craftsmanship/Anti-Shatter: If broken, the glass will break into small parts but stay in	https://www.amazon.in/Compatible-Pixel-6a-Military-Grade-Anti-Explosion/dp/B08BCHJLWU/ref=sr_1_24?pgid=1672895821&s=electronics&sr=1-24?pgid=1672909133&s=electronics&sr=1-184
7	Belkin USB-C to USB-C Fast Charging Type C Cable, 60W PD, 3.3 feet (1 meter) for Laptop, Personal Computer, Tablet, Smartphone - Black	Computers&Accessories/Accessories/Peripherals/Cables&Accessories/Cables/USB/Cables	4.5	577	2-Year Manufacturing Warranty/Job-If Certified So You Can Count On A Great Experience On Any Device/Use Them At Home, In Your Car, Or	https://www.amazon.in/Belkin-USB-C-Charging-USB-IF-Certified/dp/B084N19QZY/ref=sr_1_184?pgid=1672909133&s=electronics&sr=1-184
8	Corboi Silicone Protective Case Cover for LG an MR21GA Magic Remote Shockproof for LG Smart TV Remote 2021 Protective Skin Waterproof	Electronics/HomeTheater/TV&VCR	4.5	505	Silicone protective cover is specially designed for LG Smart TV magic remotes of LG AN-MR21GA / LG AN-MR21GC [NOTE:	https://www.amazon.in/Corboi-Silicone-Protective-Shockproof-Waterproof/dp/B09TT68FDX/ref=sr_1_127?pgid=1672909130&s=electronics&sr=1-127
9	Belkin USB-C to USB-C Fast Charging Type C Cable, 60W PD, 3.3 feet (1 meter) for Laptop, Personal Computer	Computers&Accessories/Accessories/Peripherals/Cables&Accessories/Cables/USB/Cables	4.5	474	2-Year Manufacturing Warranty/Job-If Certified So You Can Count On A Great Experience On Any Device/Use	https://www.amazon.in/Belkin-USB-C-Charging-USB-IF-Certified/dp/B084MZ9BTV/ref=sr_1_257?pgid=1672909136&s=electronics&sr=1-257

페이지당 결과 수: 50 1 ~ 24 (전체 24명) < > >>

-해당 제품들은 리뷰 수가 50개 이상 1000개 이하이면서, 평점은 4.4 이상의 상품들로, 대중적인 상품은 아니지만 초기 사용자들에게 좋은 후기를 받은 상품들이다.

-신뢰도 순(평점이 높은 순)으로 정렬, 평점이 같다면 리뷰 수가 많은 순서로 정렬하여 신뢰도를 더했다.

-해당 결과는, 기술 제품군에서 높은 평가를 받는 신제품 결과이다.

--추천 시스템 4

--추천 시스템 이름: 숨은 맛집 추천

--추천 시스템 테마: 리뷰 수는 적어 상대적으로 많은 사람이 이용하는 상품은 아니지만 리뷰 내용에 긍정적 키워드가 많이 포함된 제품 추천

--대중적인 제품보다는 소수만 아는 제품을 이용하고자 하는 구매자 타겟팅

--리뷰 수가 50개 미만인 제품 중, 긍정 키워드 횟수 계산

--구현 로직

--1. 리뷰 수 숫자로 변환

WITH ProcessedData AS (

SELECT

product\_id,

```

    product_name,
    category,
    review_content,
    CAST(REPLACE(CAST(rating_count AS STRING), ',', '')) AS INT64) AS rating_count,
    product_link
FROM
`modulabs-project-465602.250715_project.amazon`
WHERE
    rating_count IS NOT NULL
    AND review_content IS NOT NULL
),

```

--2. 긍정 키워드 계산

PositiveKeywordCount AS (

```

SELECT
    product_id,
    --긍정단어가 몇개 나왔는지 횟수 세기
    --(본 문장) - (해당 긍정 단어를 제외한 문장) = 나온 길이 / 단어 길이 > 몇번 단어가 나왔는지 알 수 있다
    (
        (LENGTH(LOWER(review_content)) - LENGTH(REPLACE(LOWER(review_content), 'great', ''))) / LENGTH('great') +
        (LENGTH(LOWER(review_content)) - LENGTH(REPLACE(LOWER(review_content), 'love', ''))) / LENGTH('love') +
        (LENGTH(LOWER(review_content)) - LENGTH(REPLACE(LOWER(review_content), 'perfect', ''))) / LENGTH('perfect') +
        (LENGTH(LOWER(review_content)) - LENGTH(REPLACE(LOWER(review_content), 'excellent', ''))) / LENGTH('excellent')
    ) AS keyword_score
FROM
    ProcessedData
WHERE
    rating_count > 0 AND rating_count < 50
), AggScores AS (
SELECT
    product_id,
    --total score: 긍정 키워드가 몇번 나왔는가

```

```

SUM(keyword_score) AS total_score
FROM
    PositiveKeywordCount
GROUP BY
    product_id
)
--3. 점수가 있는 정보만 출력
SELECT
    p.product_name,
    p.category,
    p.rating_count,
    agg.total_score,
    p.product_link
FROM
    ProcessedData AS p
JOIN
    AggScores AS agg
ON p.product_id = agg.product_id
WHERE
    agg.total_score > 0
GROUP BY
    p.product_name,
    p.category,
    p.rating_count,
    agg.total_score,
    p.product_link
ORDER BY
    agg.total_score DESC, p.rating_count DESC

```

일	product_name	category	rating_count	total_score	product_link
1	Oratech Coffee Frother electric, milk frother electric, coffee beater, cappuccino maker, Coffee Frother, Mocktail Mixer, Coffee Foam	Home&Kitchen>Kitchen&Home Appliances>Small Kitchen Appliances>Hand Blenders	28	5.0	<a href="https://www.amazon.in/Oratech-electric-cappuccino-Mocktail-Multicolour/dp/B0BQ3K23Y1/ref=sr_1_216?gclid=1672923601&amp;pf_rd_p=1216">https://www.amazon.in/Oratech-electric-cappuccino-Mocktail-Multicolour/dp/B0BQ3K23Y1/ref=sr_1_216?gclid=1672923601&amp;pf_rd_p=1216</a>
2	Amazon Basics Wireless Mouse 1.2.4 GHz Connection, 1600 DPI   Type - C Adapter   Upto 12 Months of Battery Life   Ambidextrous Design	Computers>Accessories>Accessories>Peripherals>Keyboard & Mouse>Input Devices>Mice	23	4.0	<a href="https://www.amazon.in/Wireless-Connection-Battery-Ambidextrous-Suitable/dp/B09Z4CJ1DP1/ref=sr_1_209?gclid=1672903005&amp;pf_rd_p=120">https://www.amazon.in/Wireless-Connection-Battery-Ambidextrous-Suitable/dp/B09Z4CJ1DP1/ref=sr_1_209?gclid=1672903005&amp;pf_rd_p=120</a>
3	Noise, Colorfit Smart Watch Charger 2 Pin USB Fast Charging Magnetic Charging Cable Adapter (Smart Watch Charger 2 pin)	Electronics>Wearable Technology>	38	3.0	<a href="https://www.amazon.in/Noise-Colorfit-Charger-Magnetic-Charging-Adapter/dp/B0BMM7R92G/ref=sr_1_354?gclid=1672895850&amp;pf_rd_p=135">https://www.amazon.in/Noise-Colorfit-Charger-Magnetic-Charging-Adapter/dp/B0BMM7R92G/ref=sr_1_354?gclid=1672895850&amp;pf_rd_p=135</a>
4	Technotech High Speed HDMI Cable 5 Meter V1.4 - Supports Full HD 1080p (Color May Vary)	Electronics>Home Theater>TV & Video>Accessories>Cables>HDMI Cables	25	3.0	<a href="https://www.amazon.in/Technotech-High-Speed-Cable-Meter/dp/B016MDK4F4/ref=sr_1_469?gclid=1672909147&amp;pf_rd_p=1469">https://www.amazon.in/Technotech-High-Speed-Cable-Meter/dp/B016MDK4F4/ref=sr_1_469?gclid=1672909147&amp;pf_rd_p=1469</a>
5	Homeistic Appliance™ Instant Electric Water Heater Faucet	Home&Kitchen>Heating,Cooling&Air Quality>Water Heaters&G	19	3.0	<a href="https://www.amazon.in/Homeistic-Appliance-Electric-bathro">https://www.amazon.in/Homeistic-Appliance-Electric-bathro</a>

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일	product_name	category	rating_count	total_score	product_link
	Tap For Kitchen And Bathroom Sink Digital Water Heating Tap with Shower Head ABS Body	Home&Kitchen(Kitchen&HomeAppliances)			om-Tankless/dp/B08QW937WV/ref=sr_1_173?pd=167292359&sr=1-173
6	Green Ties Heat Seal Mini Food Sealer Impulse Machine for Sealing Plastic Bags Packaging	Home&Kitchen(Kitchen&HomeAppliances)	24	2.0	https://www.amazon.in/Green-Ties-Sealer-Impulse-Machine-Packaging/dp/B087L86VCB/ref=sr_1_383?pd=1672923611&sr=1-383
7	Hilton Quartz Heater 400/800-Watt ISI 2 Rods Multi Mode Heater Long Lasting Quick Heating Extremely Warm (Grey)	Home&Kitchen(HeatingCooling&Quality(RoomHeatersElectricHeaters))	24	2.0	https://www.amazon.in/Hilton-Quartz-Heater-Watt-Certified/dp/B09NFSQJ2W/ref=sr_1_485?pd=1672923617&sr=1-485
8	ZEBRONICS HAA3021 HDMI version 2.1 cable with 8K @ 60Hz, 4K @ 120Hz, eARC & CEC support, 3D compatible, 2 meters length, 48Gbps max	Electronics(HomeTheaterTV&VideoAccessoriesCablesHDMI Cables)	24	2.0	https://www.amazon.in/Zeb-HAA3021-HDMI-Meter-Cable/dp/B07V5055KZ/ref=sr_1_177?pd=1672923613&sr=1-177
9	VAPJAA® Portable Mini Juicer Cup Blender USB Rechargeable with 4 Blades for Shakes and Smoothies	Home&Kitchen(Kitchen&HomeAppliances)	4	2.0	https://www.amazon.in/Portable-Rechargeable-Smoothies-Vegetables-BOTTLE/dp/B08L384855/ref=sr_1_415?pd=16

-리뷰에 'great', 'love', 'perfect', 'excellent' 같은 긍정 키워드가 얼마나 들어갔는지 여부를 확인하여 total\_score를 산출하였다.

-total\_score가 높은 순서대로, 점수가 같다면 리뷰 순서가 많은 순대로 정렬하였다

-아직 리뷰 수는 적어 널리 알려지지 않았지만, 소수 구매자들로부터 긍정적인 피드백(높은 긍정키워드 점수)을 가진 상품을 추출해낼 수 있었음.

--추천 시스템 5

--추천 시스템 이름: 사용자 기반 협업 필터링

--추천 시스템 테마: 특정 제품을 좋아하는 구매자는 다른 제품도 좋아하는가를 분석한다

--내가 좋게 평가한 제품과 같은 평가를 내린 타 구매자의 다른 구매 상품에는 어떤 것이 있는지 추천하는 시스템이다

--구매자에게 비슷한 구매자의 선택을 보여줌으로 좀더 개인화된 선택과 직관적인 추천 가능하다

--개별 제품의 속성이 아닌, 사용자와 사용자 간의 관계를 분석

--구현 로직

--기준 제품: B07JW9H4J1

--SimilarUsers: 기준 제품을 좋아하는 사용자 목록

WITH SimilarUsers AS (

SELECT DISTINCT

user\_id

FROM

`modulabs-project-465602.250715\_project.amazon`

WHERE

REGEXP\_CONTAINS(rating, r'^\d+(\.\d+)?\$') --특수문자가 섞여있을 경우 오

류 방지

```
AND product_id = 'B07JW9H4J1'
AND CAST(rating AS FLOAT64) >= 4.0 --평점 4.0 이상 매긴 사용자 필터링
AND user_id IS NOT NULL),
--기준 제품을 좋게 평가한 사용자들이 좋아한 다른 제품들
Recommendations AS (
SELECT
    t.product_id,
    t.product_name,
    t.category,
    t.product_link
FROM
    `modulabs-project-465602.250715_project.amazon` AS t
JOIN
    SimilarUsers s ON t.user_id = s.user_id
WHERE
    REGEXP_CONTAINS(t.rating, r'^\d+(\.\d+)?$')
    AND t.product_id != 'B07JW9H4J1'
    --기준 제품은 목록에서 제외한다
    AND CAST(t.rating AS FLOAT64) >= 4.0
    --평가 기준은 4.0으로 동일, 다른 제품도 4.0 이상이면 필터링
)
SELECT
    r.product_name AS `추천 제품명`,
    r.category AS `카테고리`,
    --추천점수
    --비슷한 사용자 그룹에서 각 제품에 몇번 등장 했는가 카운팅
    --높을수록 많은 사람이 (비슷한 사람이) 구매한 제품이다 > 신뢰도가 높은 물품이다
    COUNT(r.product_id) AS recommendation_score,
    ANY_VALUE(r.product_link) AS `제품_링크`
FROM
    Recommendations AS r
GROUP BY
    r.product_name, r.category
ORDER BY
    recommendation_score DESC;
```

명	추천 제품명	카테고리	recommendation	제품 링크
1	Wayona Nylon Braided (2 Pack) Lightning Fast Usb Data Cable Fast Charger Cord For Iphone, Ipad Tablet (3 Ft Pack Of 2, Grey)	Computers&Accessories(Accessories&Peripherals(Cables&Accessories(Cables)USB Cables	1	<a href="https://www.amazon.in/Wayona-Braided-WN3LG2-Syncing-Charging/dp/B07JH1C41D/ref=sr_1_98?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-98">https://www.amazon.in/Wayona-Braided-WN3LG2-Syncing-Charging/dp/B07JH1C41D/ref=sr_1_98?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-98</a>
2	Wayona Nylon Braided 2M / 6ft Fast Charge Usb To Lightning Data Sync And Charging Cable For Iphone, Ipad Tablet (6 Ft Pack Of 1, Grey)	Computers&Accessories(Accessories&Peripherals(Cables&Accessories(Cables)USB Cables	1	<a href="https://www.amazon.in/Wayona-Braided-WN3LG1-Syncing-Charging/dp/B07JGDBSM1/ref=sr_1_119?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-119">https://www.amazon.in/Wayona-Braided-WN3LG1-Syncing-Charging/dp/B07JGDBSM1/ref=sr_1_119?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-119</a>
3	Wayona Nylon Braided 3A Lightning to USB A Syncing and Fast Charging Data Cable for Iphone, Ipad (3 Ft Pack of 1, Black)	Computers&Accessories(Accessories&Peripherals(Cables&Accessories(Cables)USB Cables	1	<a href="https://www.amazon.in/Wayona-Braided-WN3LB1-Syncing-Charging/dp/B07JW1YKX1/ref=sr_1_46?pd_rd_i=1672909125&amp;pf_rd_p=1672909125&amp;pf_rd_t=146&amp;pf_rd_m=1672909125&amp;pf_rd_s=electronics&amp;pf_rd_e=1-46">https://www.amazon.in/Wayona-Braided-WN3LB1-Syncing-Charging/dp/B07JW1YKX1/ref=sr_1_46?pd_rd_i=1672909125&amp;pf_rd_p=1672909125&amp;pf_rd_t=146&amp;pf_rd_m=1672909125&amp;pf_rd_s=electronics&amp;pf_rd_e=1-46</a>
4	Wayona Nylon Braided Usb Syncing And Charging Cable Sync And Charging Cable For Iphone, Ipad (3 Ft, Black) - Pack Of 2	Computers&Accessories(Accessories&Peripherals(Cables&Accessories(Cables)USB Cables	1	<a href="https://www.amazon.in/Wayona-Braided-WN3LB2-Syncing-Charging/dp/B07JH1CBGW/ref=sr_1_241?pd_rd_i=1672909136&amp;pf_rd_p=1672909136&amp;pf_rd_t=146&amp;pf_rd_m=1672909136&amp;pf_rd_s=electronics&amp;pf_rd_e=1-241">https://www.amazon.in/Wayona-Braided-WN3LB2-Syncing-Charging/dp/B07JH1CBGW/ref=sr_1_241?pd_rd_i=1672909136&amp;pf_rd_p=1672909136&amp;pf_rd_t=146&amp;pf_rd_m=1672909136&amp;pf_rd_s=electronics&amp;pf_rd_e=1-241</a>
5	Wayona Usb Nylon Braided Data Sync And Charging Cable For Iphone, Ipad Tablet (Red, Black)	Computers&Accessories(Accessories&Peripherals(Cables&Accessories(Cables)USB Cables	1	<a href="https://www.amazon.in/Wayona-Braided-WN3LB3-Syncing-Charging/dp/B07JGDBSM1/ref=sr_1_98?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-98">https://www.amazon.in/Wayona-Braided-WN3LB3-Syncing-Charging/dp/B07JGDBSM1/ref=sr_1_98?pd_rd_i=1672909129&amp;pf_rd_p=1672909129&amp;pf_rd_t=146&amp;pf_rd_m=1672909129&amp;pf_rd_s=electronics&amp;pf_rd_e=1-98</a>

페이지당 결과 수: 50 1 - 5 (전체 5명) |< > >|

-구매자 자신과 취향이 비슷한 타 구매자가 좋게 평가한 제품을 추천하는 개인화된 시스템이다.

-B07JW9H4J1라는 기준 제품의 경우, 해당 제품을 좋게 평가한 사용자 중 1명은 Wayona 케이블 제품을 좋게 평가하였다. 따라서 해당 기준 제품을 좋게 평가한 사용자에게도 공통적으로 추천할 수 있는 신뢰도가 높은 제품임을 알 수 있다.