

쇼핑몰 추천 시스템 구상하기

```
CREATE TABLE
`coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
#rating에서 |을 제외한 테이블 생성
SELECT
*,CAST(rating AS FLOAT64) AS rating_flo
FROM
`coral-mechanism-464902-i4.modulabs_project.amazon`
WHERE
SAFE_CAST(rating AS FLOAT64) IS NOT NULL;
```

쿼리 결과

작업 정보 **결과** 실행 세부정보 실행 그래프

i 이 문으로 이름이 amazon_cleaned인 새 테이블이 생성되었습니다.

• 추천시스템1

1. BEST 제품 추천 시스템

2. 테마: 믿고 사는 베스트 제품! 평점과 평점 수가 일정 기준(4.5/5200건) 이상을 충족하는 제품 중에서 평점과 평점 수가 좋은 순으로 제품을 추천합니다. 평점의 상위 5%값이 4.5, 평점 수의 중앙값이 5179건으로 평점이 상위 5%면서 평점 수도 중앙값 이상인 제품을 고객 만족도가 높은 베스트 제품이라고 판단해 이 조건을 충족하는 제품을 뽑아 추천합니다.

핵심 질문: 많은 사람들이 사용하고도 평점이 높은 제품은 뭘까?

주요 재료: rating, rating_flo(평점에서 |을 삭제해 float로 변환한 평점 칼럼), rating_count

3. 구현 로직

```
SELECT AVG(rating_flo),#평균
(SELECT PERCENTILE_CONT(rating_flo, 0.5) OVER()
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
LIMIT 1
) AS median_raing_flo #중앙값
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
```

```
SELECT AVG(rating_flo),
(SELECT PERCENTILE_CONT(rating_flo, 0.95) OVER()
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
LIMIT 1
) AS median_raing_flo #95% 해당값
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
```

쿼리 결과

작업 정보 **결과** 차트 JSON 실행

행	fo_	median_raing_flo
1	4.096584699453...	4.1

쿼리 결과			
작업 정보		결과	차트
JSON		실행 세부정보	
행	f0_	median_raing_flo	
1	4.096584699453...	4.5	

```

SELECT
  AVG(rating_count) AS avg_rating, #평균
  MIN(rating_count) AS min_rating, #최소
  MAX(rating_count) AS max_rating, #최대
  (SELECT PERCENTILE_CONT(rating_count, 0.5) OVER() #중앙값
   FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
   LIMIT 1
  ) AS median_rating
FROM
  `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`;

```

쿼리 결과					
작업 정보		결과	차트	JSON	실행 세부정보
실행 그래프		avg_rating	min_rating	max_rating	median_rating
1	18307.37688098...	2	426973	5179.0	

```

SELECT *
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
WHERE rating_flo>=4.5
AND rating_count>=5200
ORDER BY rating_flo DESC

```

4.결과

평점 95% 구간에 해당하는 4.5 이상이면서 평점 수 중앙값 이상을 조건으로 설정해 출력한 결과,
48건의 제품이 추출되었습니다. 상품 리스트를 평점 기준 내림차순으로 배열했습니다.

쿼리 결과									
작업 정보		결과	차트	JSON	실행 세부정보		실행 그래프		
행	product_id	product_name	category	discounted_price	actual_price	discount_percent	rating	rating_count	about_product
1	BOBR4F87BQ	Swiffer Instant Electric Water Heater Faucet Tap Home Kitchen Instantaneous Water Heater Tank less for Tap, LED Electric Head Water	Home&KitchenHeating,Cooling&AirQuality(WaterHeaters&GeyersrsInstantWaterHeaters	1439.0	1999.0	0.28	4.8	53803	✓Quick Electric Hot Wat Heating tube: high-purity copper liner heating eler Rated voltage: 220V/50I Rated Power: 3000W(V)
2	B0WNN3SRC7	Sony Bravia 164 cm (65 inches) 4K Ultra HD Smart LED Google TV KD-65X74K (Black)	ElectronicsHomeTheater,TV&VideoTelevsionsSmartTelevsions	77990.0	139900.0	0.44	4.7	5935	Resolution: 4K Ultra HD x 2160 Refresh Rate: 60Hz 178 Degree wide viewing angle

524	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	product_id	product_name	category	discounted_price	actual_price	discount_percent	rating	rating_count	about_product	user_id	user_name	review_id	review_title	review_content	img_link	product_link	rating_flo
1	B0B4F5TJQ2	Batter Instant C Home&Kitchen		1459	1999	0.28 4.5		53903	<Quick Electric: ASD707AFEL42> Yogita g. Amazon R21W4MPS1P1: Best Product 1% Must buy best f					Best Product 1% Must buy best f	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0B4F5TJQ2	4.3
2	B0B23LVWNV	Spigen EZ Fit T4 ElectronicsMob		999	2999	0.66 4.7		7779	Compatibility : G AQGQFPHABU V.K.Sudhi Prabh R13GCIUQ1D8 Easy to install.B It is easy to inst					It is easy to inst	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0B23LVWNV	4.7
3	B09WASRQ7C	Sony Bravia F4 ElectronicsHom		77990	139600	0.44 4.7		5935	Resolution: 4K LAF42ZY1XRP2 David P.Dr. ATL R18HCZWT1TR Product installat The delivery pec					The delivery pec	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B09WASRQ7C	4.7
4	B00NFQDE1Q	Logitech G402 T Computers&Acc		1995	2395	0.31 4.6		10780	HIGH SPEED T1 AFLGDPFC2GT. Madhav Ashoka R20M9KVEVXN1 Very nice design its really good p					Very nice design its really good p	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00NFQDE1Q	4.6
5	B01M2QAB8A	Logitech M331 C Computers&Acc		1295	1945	0.21 4.6		12375	Quiet Click L: CASH7P15BAK1N Awastha Shree R11S2JAWF1H1 Good but the so + excellent piece o					excellent piece o	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B01M2QAB8A	4.6
6	B0244H4H3	Spigen EZ Fit T4 ElectronicsMob		999	2399	0.58 4.6		6129	Compatibility: G AHQJQDEAR1 Prabhkar Chauha R3C2WT3SD0C5 Best For It's Moi It's A Good Func					Best For It's Moi It's A Good Func	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0244H4H3	4.6
7	B07ZLZ3Z3C	Logitech Pebble Computers&Acc		1490	2290	0.35 4.6		10952	Modern, slim an AGDND333MC Rawi Shrey Deas R170GPT2D0XJ Sleek and batter It's a good bu					Sleek and batter It's a good bu	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07ZLZ3Z3C	4.6
8	B01J1H5P26	Redgear MP34 T Computers&Acc		299	850	0.46 4.6		53434	Speed-Type surf AGSLARJ2H2JA Jayaprakash Na R32S6SCV9WVW Good product O Quality of produ					Quality of produ	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B01J1H5P26	4.6
9	B06R7J1HM	Spigen EZ Fit T4 ElectronicsMob		999	2399	0.58 4.6		26953	Compatibility : G AFDTJL2S0HE Adul Moushup R51R93V18P1 Easy to install fo I used my 15 pr					Easy to install fo I used my 15 pr	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B06R7J1HM	4.6
10	B00K5MR22	Sujata Dynamix Home&Kitchen		6120	8478	0.28 4.6		6550	Warranty, 2 year AHNCY5SLPC Amazon Custom R20MGTYKPMX Best mixer,Best Best mixer as oc					Best mixer,Best Best mixer as oc	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00K5MR22	4.6
11	B00C4Z9NUN	Crucial RAM 8G Computers&Acc		1792	3500	0.49 4.5		26104	Improve your sy AHT3PN448C1 Rz Akshat Nehr R3K0LZ5E0F1 FPS increased i I installed it in m					Installed it in m	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00C4Z9NUN	4.5
12	B07G33NVLJB	Cruical B550M 2 Computers&Acc		1815	3100	0.41 4.5		62625	2X80S 2.5-inch AGHHLJGFRJ Dhruv Pasari R21W4MPS1P1 Absolutely worth After I changed					Absolutely worth After I changed	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07G33NVLJB	4.5
13	B00NH13C9W	AmazonBasics Computers&Acc		299	800	0.83 4.5		74977	Two 3.5-foot (1.1 AGBX233CTB71 Pravin Kumar M R1C8M4JUEK1 Nice,good,Paissa Sufficient length					Nice,good,Paissa Sufficient length	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00NH13C9W	4.5
14	B00LZL0Q24	Classmate Soft OfficeProducts(C		157	100	0.02 4.5		8818	The cover desig AF3GTEWMBG Anirban B.Amli R2QV1J0V8C1 An Overall Goo First Of all, the il					Overall Goo First Of all, the il	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00LZL0Q24	4.5
15	B075ZL35TV	Casio MJ-120 T OfficeProducts(C		440	440	0 4.5		8810	Regular keys W AFCKVQFPM4C Dipu Kayumud R352WPN21021 Very easy to use Very good Nice					Very good Nice	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B075ZL35TV	4.5
16	B02W4119XK	AmazonBasics Computers&Acc		299	695	0.7 4.5		107887	One 6-foot-long AEYHTOWMEY Shiva Ubbet kotta R2AE3BNZV58F Functionality as Using it and sat					Using it and sat	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B02W4119XK	4.5
17	B00NH11PEY	AmazonBasics Computers&Acc		199	750	0.73 4.5		74979	One 6-foot-long AEGB233CTB71 Pravin Kumar M R1C8M4JUEK1 Nice,good,Paissa Sufficient length					Nice,good,Paissa Sufficient length	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00NH11PEY	4.5
18	B07R8N8VBQ	Gizga Essential Home&Improvem		249	599	0.58 4.5		5685	Gizga Essential AEGDNCZPUEE Chineshkumar A R3L1T1SL8C33 Very useful prod I have lot of cab					Very useful prod I have lot of cab	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07R8N8VBQ	4.5
19	B07658T1H7	Gizga Essential Computers&Acc		199	599	0.67 4.5		13588	Compatible W/ AE3JL4N2G2W Dhruvendra Chns R2ZVMEYTD4N1 Good No Problem Case is hard an					Good No Problem Case is hard an	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07658T1H7	4.5
20	B0118B9KAC	Golimedix Cui ElectronicsMob		69	171	0.42 4.5		11339	LED indicator TI AFPCZJUEVW Paul Amazon C R3M4QME18H1 Good product as Product is j					Product is j	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0118B9KAC	4.5
21	B0330XDRXR	Havells Aqua P1 Home&Kitchen		1025	2395	0.48 4.5		23484	Auto shut off fun AE42COB4BK neeraa vashishT R28QMPP3RH4F Good product,G Good product,TI					Good product,G Good product,TI	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0330XDRXR	4.5
22	B08L789MPP	Logitech G102 L Computers&Acc		1495	1995	0.25 4.5		10541	COLORFUL LIG AH4Z5F JAXQD5 Hitesh Desai,c R138RZ3XMA Do for it, but the This turned out i					This turned out i	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B08L789MPP	4.5
23	B0148P4P49	Logitech X350 T Computers&Acc		2640	3195	0.17 4.5		16148	Multi-Device Co AE7DUALJ28T Padmanathan F R28Q2Z2V7PH Convenience pr So I got this key					Convenience pr So I got this key	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0148P4P49	4.5
24	B0041Q5BQJ	Logitech M235 T Computers&Acc		699	995	0.3 4.5		54495	One can surf the AQDL465FMC Chandrashekar R28ZDVIUMBF Good silent mou It's little small fo					Good silent mou It's little small fo	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0041Q5BQJ	4.5
25	B071VM4M2Q	Philips Daily Col Home&Kitchen		2095	2095	0 4.5		7949	Frequency: 50-4 AH3KCOLYU04 Joydeep Bhattach R18OC1M5ERX Good toaster,Se Works as said. E					Works as said. E	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B071VM4M2Q	4.5
26	B06X7DY7Q4	SanDisk Extrem Electronics&Acc		939	1800	0.48 4.5		20592	Save time with c AEBXBA27W65 Aadil Fayaz Nail R3Q4085N4P1 Just gets the job The write speed					The write speed	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B06X7DY7Q4	4.5
27	B06BZ7VJ2	Ely Aluminum A ElectronicsMob		314	1499	0.78 4.5		28978	Multi-angle adg AGDGVVWPLM Dhruv John Said R35G2LMLN1P Good one,Almost Good quality. Ca					Good quality. Ca	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B06BZ7VJ2	4.5
28	B00405C6SP	Casio FX-991EX OfficeProducts(C		1295	1295	0 4.5		5790	Redesigned ES AFES59MBN8C Vajraka s. Gouth R2M4Y4VRBQ4 Nice,Good and It is very easy to					Very easy to	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00405C6SP	4.5
29	B07TMXCRFV	ESR Screen Prc Computers&Acc		1234	1599	0.23 4.5		10880	Compatibility: cc AG5AXA1J0TF Aditya Kumar A R35Z2TJL4B Good product, s It is good and fr					Good and fr	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07TMXCRFV	4.5
30	B07Q4QV1DL	ELV Aluminum J ElectronicsMob		299	1499	0.82 4.5		28978	Multi-angle adg AGDGVVWPLM Shaik John Said R35G2LMLN1P Good one,Almost Good quality. Ca					Good quality. Ca	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07Q4QV1DL	4.5
31	B08LY17748	Cameo Oil Paste Home&Kitchen		239	239	0 4.5		6427	Oil assisted sha AF3R4AP1D1C Jayanta Hensam R14L1ETTR4DF Good product O Good product c					Good product O Good product c	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B08LY17748	4.5
32	B00NH119XK	AmazonBasics Computers&Acc		299	695	0.7 4.5		107888	One 6-foot-long AEYHTOWMEY Shiva Ubbet kotta R2AE3BNZV58F Functionality as Using it and sat					Using it and sat	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00NH119XK	4.5
33	B08FYB9H+K	TP-Link UE300C Computers&Acc		1199	1999	0.4 4.5		22420	Ideal for laptop. AHQCZ75WWM MONJUL H.Jay R305WBUK7F Easy to use,Wo Good looking an					Good looking an	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B08FYB9H+K	4.5
34	B01DJLJFPC	DuraDisk Ultra Ai Electronics&Gen		299	315	0.15 4.5		17810	Lasts up to 100T AFPSD3MVP1P1 Aadil Hga A.RAJ R3N1W4RQ2ME Longevity isn't a I used these for					I used these for	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B01DJLJFPC	4.5
35	B00445GDUU	TP-Link UE300 T Computers&Acc		1099	1999	0.42 4.5		22420	Fastest USB 3.1 AHQCZ75WWM MONJUL H.Jay R305WBUK7F Easy to use,Wo Good looking an					Good looking an	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B00445GDUU	4.5
36	B071113J7M	Sujata Powermix Home&Kitchen		5890	7508	0.22 4.5		7241	Centrifugal Juic AHR8VRVQV4T Nadia Naminder I R20WE18XJR33C Need be careful. disadvantages-					disadvantages-	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B071113J7M	4.5
37	B0145Z06Y2	DuraDisk Ultra Ai Electronics&Gen		299	315	0.15 4.5		28930	Lasts up to 100T AF3T5W6B8J4 Gopinathan Pun R31X4X2TGYDL That's a nice on Nice one, tried c					Nice one, tried c	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0145Z06Y2	4.5
38	B09V8Z2630	Cameo Artist Ai Home&Kitchen		310	310	0 4.5		5882	Set of 12 assen AF8Y18ELJ9D Dnyanesh PO R37D1AHV2Z9 No,Low line ths https://m.media-amazon.com/images/I/41W4MPS1P1.jpg					Low line ths	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B09V8Z2630	4.5
39	B004ZLLJ09	Seagate One To Computers&Acc		5799	7999	0.28 4.5		6273	Digital Storage (AG7VXPN5DQJ Amazon Custom R20Y2B15121 sometimes write sometimes write					sometimes write	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B004ZLLJ09	4.5
40	B08Y2JW7J1	Seagate Expand Computers&Acc		4098	4999	0.18 4.5		50810	Digital Storage (AFV1REBNMRJX Pallavi Varur Am R2B7YBOB15JC Good,gud,Hard Good one. gud I					Good,gud,Hard Good one. gud I	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B08Y2JW7J1	4.5
41	B01H1JHF52	Dell MS116 100 Computers&Acc		299	600	0.54 4.5		33170	Movement Deta AH4ZPNL2JW Mohammad Nos R2K3BM6M3H Bg in size as so I'm using this m					I'm using this m	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B01H1JHF52	4.5
42	B084H1VC1Z	Scissors Mouse Computers&Acc		699	1995	0.5 4.5		7211	Dimensions: W/ APTJ0DQVQD Ashish N.Janan R21K3TQXJD1 Nice looking an,This is my first p					my first p	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B084H1VC1Z	4.5
43	B08ZC086G5	SanDisk Extrem Electronics&Acc		1320	2000	0.54 4.5		19924	Save time with c AHTHY1QZEA Prasad Prayal I R130Q4CBA511 Good quality prc Good quality prc					Good quality prc Good quality prc	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B08ZC086G5	4.5
44	B07ZQ8T1JQ	Cuzor 12V Mini Computers&Acc		1499	2999	0.5 4.5		8095	Replaceable Bat AFT57N7JMSL Subramanian R132Q4CBA511 Cute one,Receiv Working as desc					Working as desc	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07ZQ8T1JQ	4.5
45	B0083T2110	Belkin Essential ElectronicsPow		1259	1499	0.14 4.5		20588	Maximum Spoke AG37J2F3JL1 Hayat Ansan,Ba R10QD1BRKH1 Good product w Product is exel					Product is exel	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0083T2110	4.5
46	B07W4119XK	AmazonBasics Computers&Acc		199	750	0.73 4.5		74978	One 6-foot-long AGBX233CTB71 Pravin Kumar M R1C8M4JUEK1 Nice,good,Paissa Sufficient length					Sufficient length	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B07W4119XK	4.5
47	B0227GXG55	AmazonBasics J Computers&Acc		999	2100	0.52 4.5		6422	Added Protectio AECPOWPKOT Brian Vavassam R2C48D24F43 Good,QUALITY It works more th					It works more th	https://m.media-amazon.com/images/I/41W4MPS1P1.jpg	https://www.amazon.in/dp/B0227GXG55	4.5
48	B00NNM0YNE	AirCase Rugged Computers&Acc		299	499	0.4 4.5		21010	Made of Thick, 1.AG3NNXG44T Souradip Naren R3CK4B2VTSF Super,Excellent Still using Desai					Still using Des			

Tr	Tr	M3	M3	M3	M3	M3
product_n	rating	rating_ooc	actual_pri	discount	discount_1	rating_flo
rtts [2 Pack] Mini	4.3		4426	4999	294	0.94
LAPSTER 12pcs	4.4		305	999	99	0.9
Elv Mobile Phon	4.3		2351	599	89	0.85
Posh 1.5 Meter	4.3		1237	999	173	0.83
Caldpree Silico	4.3		407	2999	547	0.82
ELV Aluminum A	4.5		28978	1499	269	0.82
Fire Bolt Phoen	4.3		27704	9999	1999	0.8
Fire Bolt Phoen	4.3		27696	9999	1998	0.8
Lapster 65W cor	4.5		127	999	199	0.8
Synowite LTC to	5.0		5	1999	399	0.8
LS LAPSTER Qui	4.3		87	999	199	0.8
Aquadpura Copp	4.6		124	24999	4999	0.8
Aqua d pure Act	4.5		287	24999	4999	0.8
Fire-Bolt Phoen	4.3		27709	9999	1998	0.8
Corbolt Silicone	4.5		505	1999	399	0.8
SVVO WT 3130	4.3		27139	3990	799	0.8
STRIFF PS2_01	4.3		42641	499	99	0.8
Fire-Bolt Phoen	4.3		27696	9999	1999	0.8
Lapster 65W cor	4.5		127	999	199	0.8
Elv Aluminum A	4.5		28978	1499	314	0.79
Fire-Bolt Vision	4.3		17161	17999	3999	0.78
Amazon Basics	4.4		426973	1400	309	0.78
Robustrion Sma	4.3		5556	2499	549	0.78
Gizga Essentials	4.3		255	299	69	0.77
Dealfreez Case	4.3		4145	1499	349	0.77
STRIFF Adjusta	4.3		24791	1499	349	0.77
Gizga Essentials	4.3		15032	499	119	0.76
Coway Professic	4.4		3837	59900	14400	0.76
Fire-Bolt Vision	4.3		17162	16999	3999	0.76
Fire-Bolt Vision	4.3		17159	16999	3999	0.76
Newly Launched	4.3		240	8499	1999	0.76
Noise_Colorfit	4.5		38	999	249	0.75
REDTECH USB-C	5.0			999	249	0.75
Kyocel Advance	4.5		596	1199	299	0.75
POPO Temporel	4.3		714	599	150	0.75
Starlite Super Sp	4.3		112	999	249	0.75
Instant Pot Air R	4.8		3964	20049	4995	0.75
Fire-Bolt Tank	4.4		768	11999	2999	0.75
Samsung EVO P	4.3		140035	3999	1059	0.74
Amozo Ultra Hyt	4.3		1454	1799	474	0.74
AmazonBasics	4.5		74976	750	199	0.73
Agaro Blaze USE	4.3		14184	595	159	0.73
boAt Laptop, Sm	4.3		20850	999	273.1	0.73
SanDisk Ultra m	4.4		67260	2400	649	0.73
AmazonBasics	4.5		74976	750	199	0.73
Gadgetronics Di	4.5		63	2999	799	0.73
Provenit Copper	4.4		535	19990	5395	0.73
RC PRINT G1 79	4.3		1367	1999	549	0.73
AGARO Blaze US	4.3		14185	495	139	0.72
GILTON Egg Boil	4.3		629	1199	353	0.71

● 추천시스템 3

1. 핫한 카테고리 내 인기 제품 추천 시스템

2. 테마: 사람들의 선택은 믿을 수 있다. 평점이 중앙값(4.1) 이상이며, 평점도 작성된 카테고리 제품들을 추려낸 뒤, 사람들이 많이 구매한 상위 카테고리라와 카테고리별 제품 수량을 조합해 탑5 카테고리를 선정했다. 탑5 카테고리별로 평점 수 기준 상위 3개 제품을 선정해 추천한다.

핵심질문: 사람들은 어떤 카테고리에 속한 제품을 주로 사며, 해당 카테고리 내 인기제품은 될까?

주요자료: category, rating_count, COUNT(product_id)(카테고리별 제품 수량)

3. 구현 로직

```
WITH hot_category AS (
  SELECT product_id, product_name, rating, rating_count, rating_flo,ca
  FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`,
  UNNEST(SPLIT(category, '|')) AS ca
  WHERE rating_count > 0
  AND rating_flo>4.1),

top5_categories AS (
  SELECT ca, COUNT(product_id) AS product_cnt
  FROM hot_category
  GROUP BY ca
  ORDER BY product_cnt DESC
  LIMIT 5)
SELECT t5.ca AS t5_category,hc.product_name,hc.product_id,hc.rating_flo,hc.rating_count, t5.product_cnt
FROM hot_category AS hc
JOIN top5_categories AS t5
```

ON hc.ca = t5.ca

QUALIFY

ROW_NUMBER() OVER (PARTITION BY hc.ca ORDER BY hc.rating_count DESC) <= 3

ORDER BY

t5.product_cnt DESC,

hc.rating_flo DESC,

t5.ca ;

4. 결과

CTE로 탑5카테고리, 조건(평점 4.1 초과, 평점 수 0개 초과) 을 만족하는 제품 리스트를 임시테이블로 생성하고 병합해 탑5 카테고리에 해당하는 제품 리스트를 생성했다. 평점 작성 수가 제품 판매수량을 대체할 수 있다고 생각해 탑5카테고리별로 평점 작성 수로 상위 3개 제품을 선정했다. 상위 3개 제품을 카테고리별 제품 수량 내림차순, 평점 내림차순, 카테고리 오름차순으로 우선순위를 지정해 정렬했다.

쿼리 결과

결과 저장

결과

작업 정보

JSON

실명 세부정보

실명 그래프

행	t5_category	product_name	product_id	rating_flo	rating_count	product_cnt
1	Computers&Accessories	SanDisk Cruzer Blade 32GB US...	B005FYNT3G	4.3	253105	253
2	Computers&Accessories	SanDisk Ultra Dual 64 GB USB 3...	B01N6LU1VF	4.3	189104	253
3	Computers&Accessories	TP-Link Nano USB WIFI Dongle 150Mbps High Gain Wireless Network Wi-Fi Adapter for PC Desktop and Laptops, Supports Windows	B002SZEOLG	4.2	179692	253
4	Electronics	Amazon Basics High-Speed HD...	B014I8SX4Y	4.4	426973	235

페이지당 결과 수: 50 1 ~ 15 (전체 15행)

t5_category	product_name	product_id	rating_flo	rating_count	product_cnt
Computers&Accessories	SanDisk Cruzer Blade 32GB USB Flash Drive	B005FYNT3G	4.3	253105	253
Computers&Accessories	SanDisk Ultra Dual 64 GB USB 3.0 OTG Pen Drive (Black)	B01N6LU1VF	4.3	189104	253
Computers&Accessories	TP-Link Nano USB WiFi Dongle 150Mbps High Gain Wireless Network Wi-Fi Adapter for PC Desktop and Laptops, Supports Windows 10/8.1/8/7/XP, Linux, Mac OS X (TL-WN722N)	B002SZEOLG	4.2	179692	253
Electronics	Amazon Basics High-Speed HDMI Cable, 6 Feet - Supports Ethernet, 3D, 4K video,Black	B014I8SSD0	4.4	426973	235
Electronics	AmazonBasics Flexible Premium HDMI Cable (Black, 4K@60Hz, 18Gbps), 3-Foot	B07KSMBL2H	4.4	426973	235
Electronics	Amazon Basics High-Speed HDMI Cable, 6 Feet (2-Pack),Black	B014I8SX4Y	4.4	426973	235
Accessories&Peripherals	AmazonBasics USB 2.0 Cable - A-Male to B-Male - for Personal Computer, Printer- 6 Feet (1.8 Meters), Black	B00NH11KIK	4.5	107686	202
Accessories&Peripherals	AmazonBasics USB 2.0 Cable - A-Male to B-Male - for Personal Computer,	B00NH11KIK	4.5	107687	202

	Printer- 6 Feet (1.8 Meters), Black				
Accessories&Peripherals	boAt Deuce USB 300 2 in 1 Type-C & Micro USB Stress Resistant, Tangle-Free, Sturdy Cable with 3A Fast Charging & 480mbps Data Transmission, 10000+ Bends Lifespan and Extended 1.5m Length(Martian Red)	B08HDJ86NZ	4.2	94364	202
Home&Kitchen	Swiffer Instant Electric Water Heater Faucet Tap Home-Kitchen Instantaneous Water Heater Tank less for Tap, LED Electric Head Water Heaters Tail Gallon Comfort(3000W) ((Pack of 1))	B0BR4F878Q	4.8	53803	169
Home&Kitchen	Bajaj DX-7 1000W Dry Iron with Advance Soleplate and Anti-bacterial German Coating Technology, White	B008YW8M0G	4.2	46647	169
Home&Kitchen	Bajaj Rex 500W Mixer Grinder with Nutri-Pro Feature, 3 Jars, White	B00HVXS7WC	4.2	41349	169
Cables	Amazon Basics High-Speed HDMI Cable, 6 Feet (2-Pack),Black	B014I8SX4Y	4.4	426973	149
Cables	Amazon Basics High-Speed HDMI Cable, 6 Feet - Supports Ethernet, 3D, 4K video,Black	B014I8SSD0	4.4	426973	149
Cables	AmazonBasics Flexible Premium HDMI Cable (Black, 4K@60Hz, 18Gbps), 3-Foot	B07KSMBL2H	4.4	426973	149

• 추천시스템 4

1. 구매 패턴 유사 사용자 리뷰기반 추천 시스템

2. 테마: 특정 제품에 관심 있는 사람들의 구매 패턴은 비슷할 것이다. 특정 제품에 리뷰를 남긴 사람들의 리뷰 작성 기록을 추적해 특정 제품 잠재 구매고객에게 그 제품 리뷰 작성자들이 리뷰를 남긴 다른 상품도 추천한다.

핵심질문: 특정 제품을 산 사람들은 어떤 제품을 살까?

주요자료: product_id, user_id

3. 구현 로직

```
WITH uppair AS (
  SELECT product_id, product_name, user_id_split
  FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`,
  UNNEST(SPLIT(user_id, ',')) AS user_id_split),
tu AS (
  SELECT DISTINCT user_id_split
  FROM uppair
  WHERE product_id = 'B01N6LU1VF'#3번 로직의 2번째 제품을 타깃 제품으로 설정
)
SELECT
```

```

uppair.product_name,
COUNT(*) AS co_purchase_count,
uppair.product_id
FROM uppair
JOIN tu
ON uppair.user_id_split = tu.user_id_split
WHERE uppair.product_id != 'B01N6LU1VF'#리뷰 중에서 타킷 제품 리뷰는 제외
GROUP BY uppair.product_name, uppair.product_id
ORDER BY co_purchase_count DESC

```

4. 결과

상품코드 'B01N6LU1VF'인 샌디스크 듀얼 64기가 USB에 리뷰를 남긴 사람들이 리뷰를 남긴 제품은 전체 6개다. 아마존베이직 USB 급속충전 케이블이 2건, 필립스 스팀 다리미 1건, 젠하이저 무선 헤드폰 1건 등이다.

쿼리 결과

결과 저장 다음에서

작업 정보	결과	차트	JSON	실행 세부정보	실행 그래프
행	product_name	co_purchase_count	product_id		
1	Amazonbasics Micro Usb Fast Charging Cable For Android Smartphone,Personal Computer,Printer With Gold Plated Connectors (6 Feet, Black)	2	B07232M876		
2	Sennheiser CX 80S in-Ear Wired Headphones with in-line One-Button Smart Remote with Microphone Black	1	B083T5G5PM		

페이지당 결과 수: 50 1 - 6 (전체 6행) |<

Amazonbasics Micro Usb Fast Charging Cable For Android Smartphone,Personal Computer,Printer With Gold Plated Connectors (6 Feet, Black)	2	B07232M876
Philips GC1905 1440-Watt Steam Iron with Spray (Blue)	1	B008QTK47Q
Sennheiser CX 80S in-Ear Wired Headphones with in-line One-Button Smart Remote with Microphone Black	1	B083T5G5PM
AmazonBasics Micro USB Fast Charging Cable for Android Phones with Gold Plated Connectors (3 Feet, Black)	1	B0711PVX6Z
Bajaj DX-7 1000W Dry Iron with Advance Soleplate and Anti-bacterial German Coating Technology, White	1	B008YW8M0G
Western Digital WD 2TB My Passport Portable Hard Disk Drive, USB 3.0 with Automatic Backup, 256 Bit AES Hardware Encryption,Password Protection,Compatible with Windows and Mac, External HDD-Black	1	B07VTFN6HM

• 추천시스템5

1. 가격대별 BEST 상품 추천

2. 테마: 고객들의 주머니 사정은 다르다. 할인가를 저가, 중저가, 중가, 중고가, 고가 다섯 구간으로 구분해 고객이 생각하는 예산대 별로 베스트 상품 3개를 추천한다. 베스트 상품은 평점과 평점 수를 이용 선정한다.

핵심질문: 가격대별 베스트 상품은?

주요 재료: price_tier, rating_flo, rating_count

3. 구현 로직

```

WITH priced AS (
SELECT
product_id, product_name,discounted_price,
rating_flo,rating_count,
NTILE(5) OVER (ORDER BY discounted_price) AS price_tier
FROM `coral-mechanism-464902-i4.modulabs_project.amazon_cleaned`
WHERE rating_count > 0
),

```

```

priced_labeled AS (
  SELECT *,
    CASE price_tier
      WHEN 1 THEN '저가'
      WHEN 2 THEN '중저가'
      WHEN 3 THEN '중가'
      WHEN 4 THEN '중고가'
      WHEN 5 THEN '고가'
    END AS price_segment
  FROM priced
)
SELECT price_segment, price_tier, product_id, product_name,
  discounted_price, rating_flo, rating_count
FROM priced_labeled

QUALIFY
  ROW_NUMBER() OVER (
    PARTITION BY price_tier
    ORDER BY rating_flo DESC, rating_count DESC
  ) <= 3

ORDER BY
  price_tier,
  rating_flo DESC,
  rating_count DESC;

```

4. 결과

할인가를 저가, 중저가, 중가, 중고가, 고가 5개 구간으로 나누고, 5개 구간별로 평점, 평점 수를 기준으로 상위 3개 제품을 추출했다. 가격 구간 오름차순, 평점과 평점 수 내림차순을 우선순위로 가격구간대별 제품리스트를 정렬하였다.

쿼리 결과

결과 저장

작업 정보

결과

차트

JSON

실명 세부정보

실명 그래프

명	price_segment	price_tier	product_id	product_name	discounted_price	rating_flo	rating_count
1	저가	1	B00SH18114	ikea 903.391.72 Polypropylene Plastic Solid Bevara Sealing Clip (Multicolour) - 30 Pack, Adjustable	160.0	4.6	2781
2	저가	1	B00NH11KIK	AmazonBasics USB 2.0 Cable - A-Male to B-Male - for Personal Computer, Printer- 6 Feet (1.8 Meters) Black	209.0	4.5	107687

페이지당 결과 수: 50

1 - 15 (전체 15행)

price_segment	price_tier	product_id	product_name	discounted_price	rating_flo	rating_count
저가	1	B00SH18114	Ikea 903.391.72 Polypropylene Plastic Solid Bevara Sealing Clip (Multicolour) - 30 Pack, Adjustable	160	4.6	2781
저가	1	B00NH11KIK	AmazonBasics USB 2.0 Cable - A-Male to B- Male - for Personal Computer, Printer- 6 Feet	209	4.5	107687

			(1.8 Meters), Black			
저가	1	B00NH11KIK	AmazonBasics USB 2.0 Cable - A-Male to B- Male - for Personal Computer, Printer- 6 Feet (1.8 Meters), Black	209	4.5	107686
중저가	2	B09ZHCJDP1	Amazon Basics Wireless Mouse 2.4 GHz Connection, 1600 DPI Type - C Adapter Upto 12 Months of Battery Life Ambidextrous Design Suitable for PC/Mac/Laptop	499	5	23
중저가	2	B0BP7XLX48	Syncwire LTG to USB Cable for Fast Charging Compatible with Phone 5/ 5C/ 5S/ 6/ 6S/ 7/8/ X/XR/XS Max/ 11/12/ 13 Series and Pad Air/Mini, Pod & Other Devices (1.1 Meter, White)	399	5	5
중저가	2	B0BQ3K23Y1	Oratech Coffee Frother electric, milk frother electric, coffee beater, cappuccino maker, Coffee Foamer, Mocktail Mixer, Coffee Foam Maker, coffee whisker electric, Froth Maker, coffee stirrers electric, coffee frothers, Coffee Blender, (6 Month Warranty) (Multicolour)	279	4.8	28
중가	3	B0B23LW7NV	Spigen EZ Fit Tempered Glass Screen Protector for iPhone 14 Pro Max - 2 Pack (Sensor Protection)	999	4.7	7779

중가	3	B0BM9H2NY9	Multifunctional 2 in 1 Electric Egg Boiling Steamer Egg Frying Pan Egg Boiler Electric Automatic Off with Egg Boiler Machine Non-Stick Electric Egg Frying Pan-Tiger Woods (Multy)	699	4.7	2300
중가	3	B0BM4KTNL1	FIGMENT Handheld Milk Frother Rechargeable, 3-Speed Electric Frother for Coffee with 2 Whisks and Coffee Decoration Tool, Coffee Frother Mixer, CRESCENT ENTERPRISES VRW0.50BK (A1)	699	4.7	1729
중고가	4	B0BR4F878Q	Swiffer Instant Electric Water Heater Faucet Tap Home-Kitchen Instantaneous Water Heater Tank less for Tap, LED Electric Head Water Heaters Tail Gallon Comfort(3000W) ((Pack of 1))	1439	4.8	53803
중고가	4	B0BP89YBC1	Campfire Spring Chef Prolix Instant Portable Water Heater Geyser 1Ltr. for Use Home Stainless Steel Baking Rack Restaurant Office Labs Clinics Saloon with Installation Kit (With MCB)	1499	4.7	2591
중고가	4	B01MQ2A86A	Logitech M331 Silent Plus Wireless Mouse, 2.4GHz with USB Nano Receiver, 1000	1295	4.6	12375

			DPI Optical Tracking, 3 Buttons, 24 Month Life Battery, PC/Mac/Laptop - Black			
고가	5	B0B53DS4TF	Instant Pot Air Fryer, Vortex 2QT, Touch Control Panel, 360° EvenCrisp™ Technology, Uses 95 % less Oil, 4-in-1 Appliance: Air Fry, Roast, Bake, Reheat (Vortex 1.97Litre, Black)	4995	4.8	3964
고가	5	B09WN3SRC7	Sony Bravia 164 cm (65 inches) 4K Ultra HD Smart LED Google TV KD-65X74K (Black)	77990	4.7	5935
고가	5	B00K57MR22	Sujata Dynamix DX Mixer Grinder, 900W, 3 Jars (White)	6120	4.6	6550