

SQL Case Study on Appstore Data Set

```
SELECT * FROM appstore;
```

```
TRUNCATE TABLE appstore;
```

```
LOAD DATA INFILE "//Mac/Home/Downloads/appstore.csv"
```

```
INTO TABLE appstore
```

```
FIELDS TERMINATED BY ','
```

```
OPTIONALLY ENCLOSED BY '\"'
```

```
LINES TERMINATED BY '\r\n'
```

```
IGNORE 1 ROWS;
```

1. You are working as a market analyst for a mobile app development company. Your task is to identify the most promising categories(TOP 5) for launching new free apps based on their average ratings.

```
SELECT Category, ROUND(AVG(Rating),2) AS `AVG Rating` FROM appstore
```

```
WHERE Type = 'Free'
```

```
GROUP BY Category
```

```
ORDER BY `AVG Rating` DESC LIMIT 5;
```

Category	Avg Rating
EVENTS	4.44
EDUCATION	4.38
ART_AND DESIGN	4.36
BOOKS_AND_REFERENCE	4.35
PARENTING	4.34

2. As a business strategist for a mobile app company, your objective is to pinpoint the three categories that generate the most revenue from paid apps. This calculation is based on the product of the app price and its number of installations.

```
SELECT Category, ROUND(SUM((Price*Installs)),2) AS `Revenue` FROM appstore  
WHERE Type = 'Paid'  
GROUP BY Category  
ORDER BY `Revenue` DESC LIMIT 3;
```

The screenshot shows a database query results grid. At the top, there are buttons for 'Result Grid' (selected), 'Filter Rows', 'Export', 'Wrap Cell Content', and 'Fetch rows'. The result grid itself has a header row with 'Category' and 'Revenue'. Below this, there are three data rows: 'FAMILY' with a revenue of 185997086.7, 'LIFESTYLE' with 57583939.4, and 'GAME' with 40986840.88. The 'FAMILY' row is currently selected.

Category	Revenue
FAMILY	185997086.7
LIFESTYLE	57583939.4
GAME	40986840.88

3. As a data analyst for a gaming company, you're tasked with calculating the percentage of apps within each category. This information will help the company understand the distribution of gaming apps across different categories.

```
SELECT *, (`Count`/ (SELECT COUNT(*) FROM appstore) )*100 AS Percentage  
FROM  
(SELECT Category, COUNT(Category) AS `Count` FROM appstore  
GROUP BY Category) t;
```

Result Grid | Filter Rows:

Export: Wrap Cell Content:

	Category	Count	Percentage
▶	ART_AND DESIGN	61	0.6517
	AUTO_AND VEHICLES	73	0.7799
	BEAUTY	42	0.4487
	BOOKS_AND REFERENCE	178	1.9017
	BUSINESS	303	3.2372
	COMICS	58	0.6197
	COMMUNICATION	328	3.5043
	DATING	195	2.0833
	EDUCATION	155	1.6560
	ENTERTAINMENT	149	1.5919
	EVENTS	45	0.4808
	FINANCE	323	3.4509
	FOOD_AND DRINK	109	1.1645
	HEALTH_AND FITNESS	297	3.1731
	HOUSE_AND HOME	76	0.8120
	LIBRARIES_AND DEMO	64	0.6838
	LIFESTYLE	314	3.3547
	GAME	1097	11.7201
	FAMILY	1746	18.6538
	MEDICAL	350	3.7393
	SOCIAL	259	2.7671
	SHOPPING	238	2.5427
	PHOTOGRAPHY	317	3.3868
	SPORTS	319	3.4081
	TRAVEL_AND LOCAL	226	2.4145
	TOOLS	733	7.8312
	PERSONALIZATION	312	3.3333
	PRODUCTIVITY	351	3.7500
	PARENTING	50	0.5342
	WEATHER	75	0.8013
	VIDEO PLAYERS	160	1.7094
	NEWS_AND MAGAZINES	233	2.4893
	MAPS_AND NAVIGATION	124	1.3248

4. As a data analyst at a mobile app-focused market research firm, you will recommend whether the company should develop paid or free apps for each category based on the ratings of that category.

WITH FreeApp AS

(

SELECT Category, ROUND(AVG(Rating), 2) AS `AVG Free Rating` FROM appstore

WHERE Type = 'Free'

GROUP BY Category

),

PaidApp AS

(

SELECT Category, ROUND(AVG(Rating), 2) AS `AVG Paid Rating` FROM appstore

WHERE Type = 'Paid'

GROUP BY Category

)

SELECT *, IF(`AVG Free Rating` > `AVG Paid Rating`, 'Develop Free Apps', 'Develop Paid Apps') AS Recommendation

FROM (SELECT f.Category, f.`AVG Free Rating`, p.`AVG Paid Rating` FROM FreeApp

AS f INNER JOIN PaidApp AS p ON f.Category = p.Category) k;

Result Grid		Filter Rows:	Export:	Wrap Cell Content:
	Category	Avg Free Rating	Avg Paid Rating	Recommendation
▶	BUSINESS	4.12	4.2	Develop Paid Apps
	COMMUNICATION	4.17	4.06	Develop Free Apps
	DATING	3.98	3.62	Develop Free Apps
	EDUCATION	4.38	4.75	Develop Paid Apps
	ENTERTAINMENT	4.12	4.6	Develop Paid Apps
	FOOD_AND_DRINK	4.16	4.35	Develop Paid Apps
	HEALTH_AND_FITNESS	4.27	4.39	Develop Paid Apps
	GAME	4.28	4.37	Develop Paid Apps
	FAMILY	4.18	4.3	Develop Paid Apps
	MEDICAL	4.17	4.26	Develop Paid Apps
	PHOTOGRAPHY	4.2	4.04	Develop Free Apps
	SPORTS	4.22	4.25	Develop Paid Apps
	PERSONALIZATION	4.31	4.44	Develop Paid Apps
	PRODUCTIVITY	4.21	4.21	Develop Paid Apps
	WEATHER	4.23	4.37	Develop Paid Apps
	TOOLS	4.04	4.17	Develop Paid Apps
	TRAVEL_AND_LOCAL	4.11	4.1	Develop Free Apps
	LIFESTYLE	4.09	4.25	Develop Paid Apps
	AUTO_AND_VEHICLES	4.18	4.6	Develop Paid Apps
	NEWS_AND_MAGAZINES	4.13	4.8	Develop Paid Apps
	SHOPPING	4.26	4.5	Develop Paid Apps
	BOOKS_AND_REFERE...	4.35	4.28	Develop Free Apps
	SOCIAL	4.26	3.7	Develop Free Apps
	ART_AND DESIGN	4.36	4.73	Develop Paid Apps
	VIDEO_PLAYERS	4.06	4.1	Develop Paid Apps
	FINANCE	4.14	3.83	Develop Free Apps
	MAPS_AND_NAVIGATI...	4.06	3.86	Develop Free Apps
	PARENTING	4.34	3.35	Develop Free Apps

5. Suppose you're a database administrator, your databases have been hacked and hackers are changing price of certain apps on the database, its taking long for IT team

to neutralize the hack, however you as a responsible manager do not want your data to be changed, do some measure where the changes in price can be recorded as you cannot stop hackers from making changes

-- Creating Table to Record Changes

```
CREATE TABLE Price_Change_Log
(
App VARCHAR(255),
Old_Price DECIMAL(10, 2),
New_Price DECIMAL(10, 2),
Operation_Type VARCHAR(255),
Operation_Date TIMESTAMP
);
```

```
CREATE TABLE Copy AS SELECT * FROM appstore;
```

-- Creating Trigger

```
DELIMITER //
CREATE TRIGGER price_change_update
AFTER UPDATE ON Copy
FOR EACH ROW
BEGIN
    INSERT INTO Price_Change_Log (App, Old_Price, New_Price,
Operation_Type, Operation_Date)
VALUES (NEW.App, OLD.Price, NEW.Price, 'UPDATE',
CURRENT_TIMESTAMP);
```

```

END;

// DELIMITER ;

SET SQL_SAFE_UPDATES = 0;

UPDATE Copy
SET PRICE = 4
WHERE App = 'Sketch - Draw & Paint';

SELECT * FROM Copy
WHERE App = 'Sketch - Draw & Paint';

```

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Version	Android Version
▶	Sketch - Draw & Paint	ART_AND DESIGN	4.5	215644	25M	5000000	Free	4	Teen	Art & Design	2018-06-08	Varies with device	4.2 and up

6. Your IT team have neutralized the threat, however hackers have made some changes in the price column but because of your measure you have noted the changes , now you want correct data to be inserted into the database.

```

DROP TRIGGER price_change_update;

UPDATE Copy AS t1
INNER JOIN Price_Change_Log AS t2 ON t1.App = t2.App
SET t1.Price = t2.Old_Price;

```

```

SELECT * FROM Copy
WHERE App = 'Sketch - Draw & Paint';

```

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Version	Android Version
▶	Sketch - Draw & Paint	ART_AND DESIGN	4.5	215644	25M	50000000	Free	0	Teen	Art & Design	2018-06-08	Varies with device	4.2 and up

7. As a data person you are assigned the task to investigate the correlation between two numeric factors: app ratings and the quantity of reviews.

```

SET @x = (SELECT ROUND(AVG(Rating), 2) FROM appstore);
SET @y = (SELECT ROUND(AVG(Reviews), 2) FROM appstore);

WITH t AS
(
    SELECT *, ROUND((Rat*Rev),2) AS 'SQRT_X', ROUND((Rev*Rev),2) AS
    'SQRT_Y' FROM
    (
        SELECT Rating, @x, ROUND((Rating - @x),2) AS 'Rat', Reviews, @y,
        ROUND((Reviews - @y),2) AS 'Rev' FROM appstore
    ) a
)

```

```

SELECT @Numerator := ROUND(SUM(Rat*Rev),2), @Denominator_1 :=
ROUND(SUM(SQRT_X),2), @Denominator_2 := ROUND(SUM(SQRT_Y),2) FROM t;
SELECT ROUND((@Numerator)/(sqrt(@Denominator_1*@Denominator_2)),2) AS
`Correaltion Coefficient`;

```

Result Grid		Filter Rows:	Export:	Wrap Cell Content:
Correalion Coefficient	0.07			

8. Your boss noticed that some rows in genres columns have multiple genres in them, which was creating issue when developing the recommender system from the data. He/she assigned you the task to clean the genres column and make two genres out of it, rows that have only one genre will have other column as blank.

```

DELIMITER //

CREATE FUNCTION first_text(a VARCHAR(255))
RETURNS VARCHAR(255)
DETERMINISTIC
BEGIN
DECLARE i INT;
DECLARE result VARCHAR(255);

SET i = LOCATE(';', a);

IF i > 0 THEN
    SET result = TRIM(LEFT(a, i - 1));
ELSE
    SET result = TRIM(a);
END IF;
```

```
RETURN result;
END;
// DELIMITER ;

DELIMITER //
CREATE FUNCTION last_text(a VARCHAR(255))
RETURNS VARCHAR(255)
DETERMINISTIC
BEGIN
DECLARE i INT;
DECLARE result VARCHAR(255);

SET i = LOCATE(';', a);

IF i > 0 THEN
    SET result = TRIM(SUBSTRING(a, i + 1));
ELSE
    SET result = "";
END IF;

RETURN result;
END;
// DELIMITER ;

SELECT App, Genres, first_text(Genres) AS 'Genre 1', last_text(Genres) AS 'Genre 2'
FROM appstore;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows: |

	App	Genres	Genre 1	Genre 2
▶	Photo Editor & Candy Camera & Grid & ScrapBook	Art & Design	Art & Design	
	Coloring book moana	Art & Design;Pretend Play	Art & Design	Pretend Play
	U Launcher Lite – FREE Live Cool Themes, Hide ...	Art & Design	Art & Design	
	Sketch - Draw & Paint	Art & Design	Art & Design	
	Pixel Draw - Number Art Coloring Book	Art & Design;Creativity	Art & Design	Creativity
	Paper flowers instructions	Art & Design	Art & Design	
	Smoke Effect Photo Maker - Smoke Editor	Art & Design	Art & Design	
	Infinite Painter	Art & Design	Art & Design	
	Garden Coloring Book	Art & Design	Art & Design	
	Kids Paint Free - Drawing Fun	Art & Design;Creativity	Art & Design	Creativity
	Text on Photo - Fonteee	Art & Design	Art & Design	
	Name Art Photo Editor - Focus n Filters	Art & Design	Art & Design	
	Tattoo Name On My Photo Editor	Art & Design	Art & Design	
	Mandala Coloring Book	Art & Design	Art & Design	
	3D Color Pixel by Number - Sandbox Art Coloring	Art & Design	Art & Design	
	Photo Designer - Write your name with shapes	Art & Design	Art & Design	
	350 Diy Room Decor Ideas	Art & Design	Art & Design	
	FlipaClip - Cartoon animation	Art & Design	Art & Design	
	ibis Paint X	Art & Design	Art & Design	
	Logo Maker - Small Business	Art & Design	Art & Design	
	Boys Photo Editor - Six Pack & Men's Suit	Art & Design	Art & Design	
	Superheroes Wallpapers 4K Backgrounds	Art & Design	Art & Design	

Result 28 ×

App	Genres	Genre 1	Genre 2
Free Dating App - YoCutie - Flirt, Chat & Meet	Dating	Dating	
Duolingo: Learn Languages Free	Education;Education	Education	Education
TED	Education	Education	
English Communication - Learn English for Chine...	Education	Education	
Khan Academy	Education	Education	
Learn English with Wlingua	Education	Education	
Princess Coloring Book	Education;Creativity	Education	Creativity
Learn Spanish - Español	Education	Education	
English Grammar Test	Education	Education	
Speed Reading	Education	Education	
English for beginners	Education	Education	
Flame - درب عقولك يومياً	Education	Education	
Mermaids	Education;Creativity	Education	Creativity
Learn Japanese, Korean, Chinese Offline & Free	Education;Education	Education	Education
Kids Mode	Education	Education	
PBS KIDS Video	Education;Music & Video	Education	Music & Video
Dinosaurs Coloring Pages	Education;Education	Education	Education
Cars Coloring Pages	Education;Creativity	Education	Creativity
Babbel – Learn Languages	Education	Education	
Math Tricks	Education	Education	
Monster Truck Driver & Racing	Education;Action & Adv...	Education	Action & Ad...
Learn English Words Free	Education	Education	
Japanese / English one-shop search dictionary -...	Education	Education	
English speaking texts	Education	Education	
Thai Handwriting	Education	Education	
THAI DICT 2018	Education	Education	
Kanji test • Han search Kanji training (free versi...	Education	Education	
Game for KIDS: KIDS match'em	Education	Education	
Flippy Campus - Buy & sell on campus at a disco...	Education	Education	
Free intellectual training game application	Education;Pretend Play	Education	Pretend Play
ABC Preschool Free	Education;Education	Education	Education
PINKFONG Baby Shark	Education	Education	
English words application mikan	Education	Education	

9. Your senior manager wants to know which apps are not performing as par in their particular category, however he is not interested in handling too many files or list for every category and he/she assigned you with a task of creating a dynamic tool where he/she can input a category of apps he/she interested in and your tool then provides real-time feedback by displaying apps within that category that have ratings lower than the average rating for that specific category.

DELIMITER //

```
CREATE PROCEDURE checking(IN in_category VARCHAR(30))
```

```
BEGIN
```

```
DECLARE avg_value DECIMAL(6,2);
```

```
SELECT ROUND(AVG(Rating), 2) INTO avg_value
```

```
FROM appstore
```

```
WHERE Category = in_category;
```

```
SELECT * FROM appstore
```

```
WHERE Category = in_category AND Rating < avg_value;
```

```
END;
```

```
// DELIMITER ;
```

```
CALL checking('Business');
```

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Version	Android Version
▶	Visual Voicemail by MetroPCS	BUSINESS	4.1	16129	Varies with device	1000000	Free	0	Everyone	Business	2018-07-30	Varies with device	Varies with device
	Docs To Go™ Free Office Suite	BUSINESS	4.1	217730	Varies with device	5000000	Free	0	Everyone	Business	2018-04-02	Varies with device	Varies with device
	USPS MOBILE®	BUSINESS	3.9	16589	9.1M	100000	Free	0	Everyone	Business	2018-06-14	4.9.10	4.0.3 and up
	Alba Heaven - Alvarez Job Portal Services	BUSINESS	4	8941	12M	500000	Free	0	Everyone	Business	2018-07-31	4.6.30	4.0.3 and up
	Facebook Pages Manager	BUSINESS	4	1279184	Varies with device	5000000	Free	0	Everyone	Business	2018-08-02	Varies with device	Varies with device
	Jobs in Alabama - Jobs in Alba	BUSINESS	4.1	11622	Varies with device	500000	Free	0	Everyone	Business	2018-07-26	Varies with device	Varies with device
	Plugin:AOT v5.0	BUSINESS	3.1	4034	23k	100000	Free	0	Everyone	Business	2015-09-11	3.0.1.11 (Build 311)	2.2 and up
	Karier.net	BUSINESS	3.9	45964	16M	1000000	Free	0	Everyone	Business	2018-07-18	5.1.5	4.1 and up
	Become a Job - Find a job or advertise	BUSINESS	4.1	6903	14M	1000000	Free	0	Everyone	Business	2018-07-10	2.3.6	4.1 and up
	Easy Installer - Apps On SD	BUSINESS	4.1	23055	Varies with device	5000000	Free	0	Everyone	Business	2018-06-08	Varies with device	Varies with device
	Facebook Ads Manager	BUSINESS	4.1	19023	Varies with device	1000000	Free	0	Everyone	Business	2018-08-01	99.0.0.35.75	4.1 and up
	Secure Folder	BUSINESS	3.8	14760	8.6M	5000000	Free	0	Everyone	Business	2018-01-31	1.1.07.6	7.0 and up
	UPS Mobile	BUSINESS	3.9	23243	Varies with device	500000	Free	0	Everyone	Business	2018-06-25	Varies with device	Varies with device
	FreshBooks Classic	BUSINESS	4.1	1802	26M	100000	Free	0	Everyone	Business	2018-04-18	1.7.14	4.2 and up
	Insightly CRM	BUSINESS	3.8	1383	51M	100000	Free	0	Everyone	Business	2018-07-12	3.24.1	5.0 and up
	HipChat - Chat Built for Teams	BUSINESS	3.8	5868	20M	50000	Free	0	Everyone	Business	2018-07-03	3.19.005	4.1 and up
	Xero Accounting Software	BUSINESS	3.5	2111	Varies with device	100000	Free	0	Everyone	Business	2018-07-30	Varies with device	Varies with device
	MailChimp - Email, Marketing Automation	BUSINESS	4.1	5448	12M	500000	Free	0	Everyone	Business	2018-07-25	4.9.1	5.0 and up
	AdWords Express	BUSINESS	4.1	7149	11M	1000000	Free	0	Everyone	Business	2018-07-31	2.6.158	4.0 and up
	join.me - Simple Meetings	BUSINESS	4	6989	Varies with device	1000000	Free	0	Everyone	Business	2018-07-16	4.3.0.508	4.4 and up
	ScreenMeet, Easy Phone Meeting	BUSINESS	4	624	9.0M	100000	Free	0	Everyone	Business	2018-03-22	1.2.287	5.0 and up
	Start Meeting	BUSINESS	4.1	308	14M	50000	Free	0	Everyone	Business	2018-05-29	3.1.4.0	4.0.3 and up
	join.me - Simple Meetings	BUSINESS	4	6989	Varies with device	1000000	Free	0	Everyone	Business	2018-07-16	4.3.0.508	4.4 and up
	ClickMeeting Webinars	BUSINESS	3.8	5211	26M	1000000	Free	0	Everyone	Business	2018-07-30	3.3.0	4.0 and up
	BlueJeans for Android	BUSINESS	3.9	1058	23M	500000	Free	0	Everyone	Business	2018-06-29	2.22.397	5.0 and up
	Skype for Business for Android	BUSINESS	3.9	78172	Varies with device	1000000	Free	0	Everyone	Business	2018-08-02	Varies with device	Varies with device
	FreshBooks Classic	BUSINESS	4.1	1802	26M	100000	Free	0	Everyone	Business	2018-04-18	1.7.14	4.2 and up
	Insightly CRM	BUSINESS	3.8	1383	51M	100000	Free	0	Everyone	Business	2018-07-12	3.24.1	5.0 and up
	HipChat - Chat Built for Teams	BUSINESS	3.8	5868	20M	500000	Free	0	Everyone	Business	2018-07-03	3.19.005	4.1 and up
	Xero Accounting Software	BUSINESS	3.5	2111	Varies with device	100000	Free	0	Everyone	Business	2018-07-30	Varies with device	Varies with device