GAME RECOMMENDATION SYSTEM

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2024
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2019
University College of Aviation Malaysia
Associate Degree – Flight Operations Management
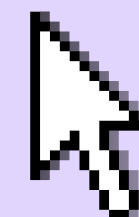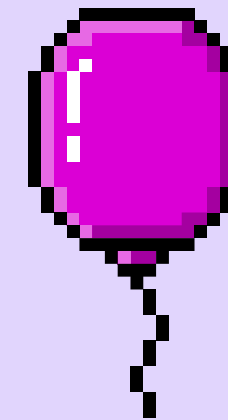
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2021 – 2023,
Operation Officer & Helideck Inspector
Oryx Aviation Services LLC. Abu Dhabi, UAE

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Content Analyst
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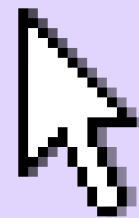
01.
DATA UNDERSTANDING

02.
EXPLORATORY DATA ANALYSIS & DATA PRE PROCESSING

03.
RECOMMENDATION SYSTEM

01.
DATA UNDERSTANDING

DATA UNDERSTANDING

Obtained through kaggle this dataset is about the games that are available on steam. It consist of 27075 rows with 18 columns. The target is to get a game recomendation according to the ones we recently played.

1 appid = ID of the game
2 name = Name of the game
3 release_date = Release date of the game
4 english = If the games are in English or not
5 developer = Company that creates the game
6 publisher = Company that publishes the game
7 platforms = Platforms the game are available on
8 required_age = Required age to play the game
9 categories = Category of the game
10 genres = Genre of the game
11 steamspy_tags = Multiple genre of the game
12 achievements = Whether the game has achievements or not
13 positive_ratings
14 negative_ratings
15 average_playtime
16 median_playtime
17 owners = Number of owner
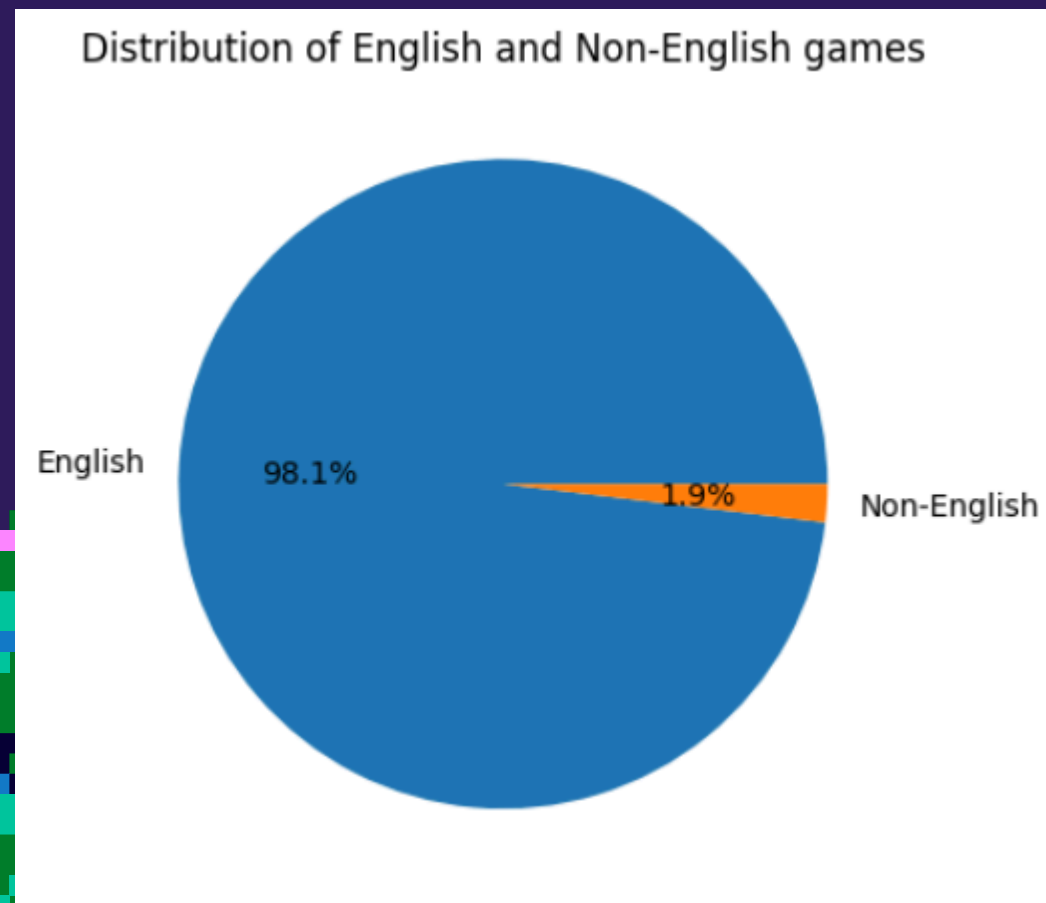18 price = Price of the game

02.
EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

In this section did basic data cleaning such as checking the missing values and duplicated values, and the results are none! Next I feature engineer a few things to make easier analysis, such as creating a new column called overall reviews and free.

```
appid              0
name               0
release_date       0
english            0
developer          0
publisher          0
platforms          0
required_age       0
categories         0
genres             0
steamspy_tags      0
achievements       0
positive_ratings   0
negative_ratings   0
average_playtime   0
median_playtime    0
owners             0
price              0
dtype: int64
```

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

Distribution of English and Non-English games

English — 98.1% 1.9% — Non-English

Distribution of Free and Paid games

Paid — 90.5% 9.5% — Free

```
english
1     26564
0       511
```
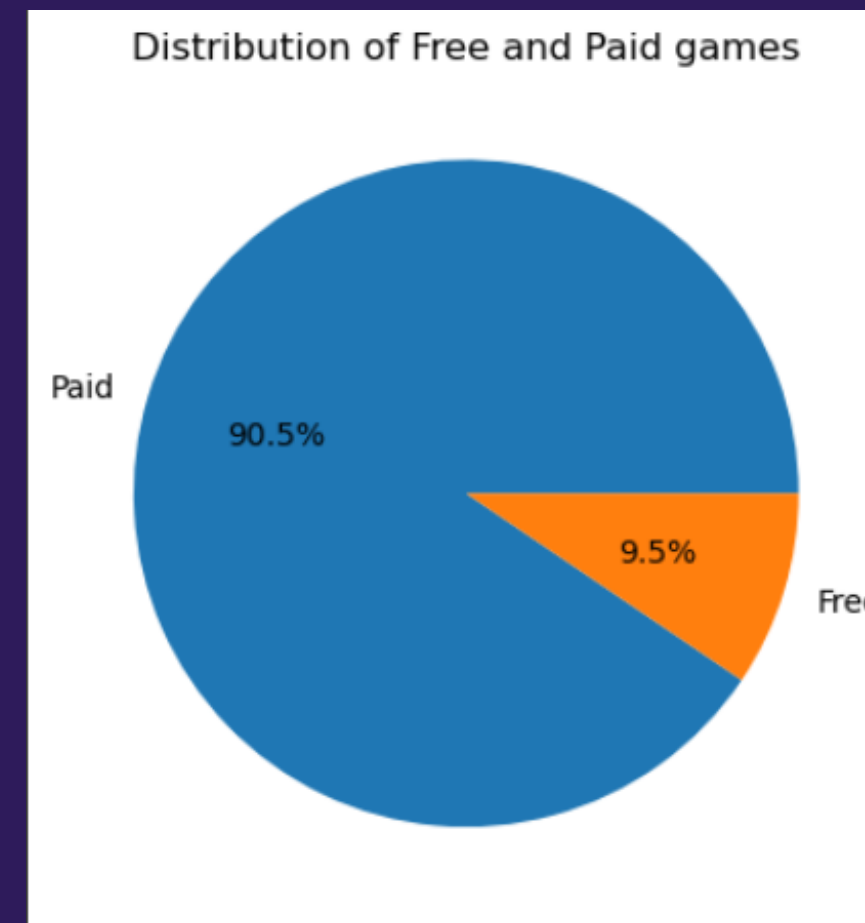
```
free
False    24515
True      2560
```

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

Distribution of Negative Ratings by Price

True
10.8%

89.2%

False

Distribution of Positive Ratings by Price

True
10.2%

89.8%

False
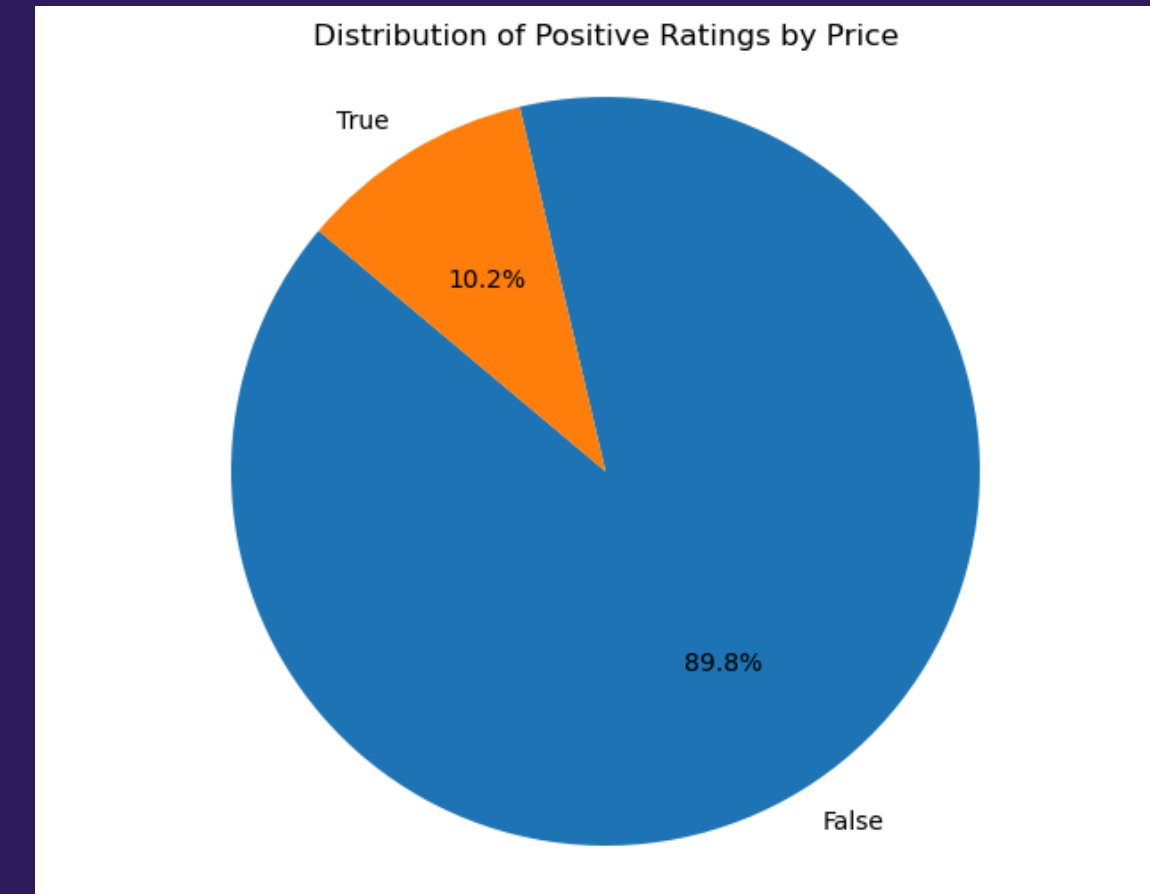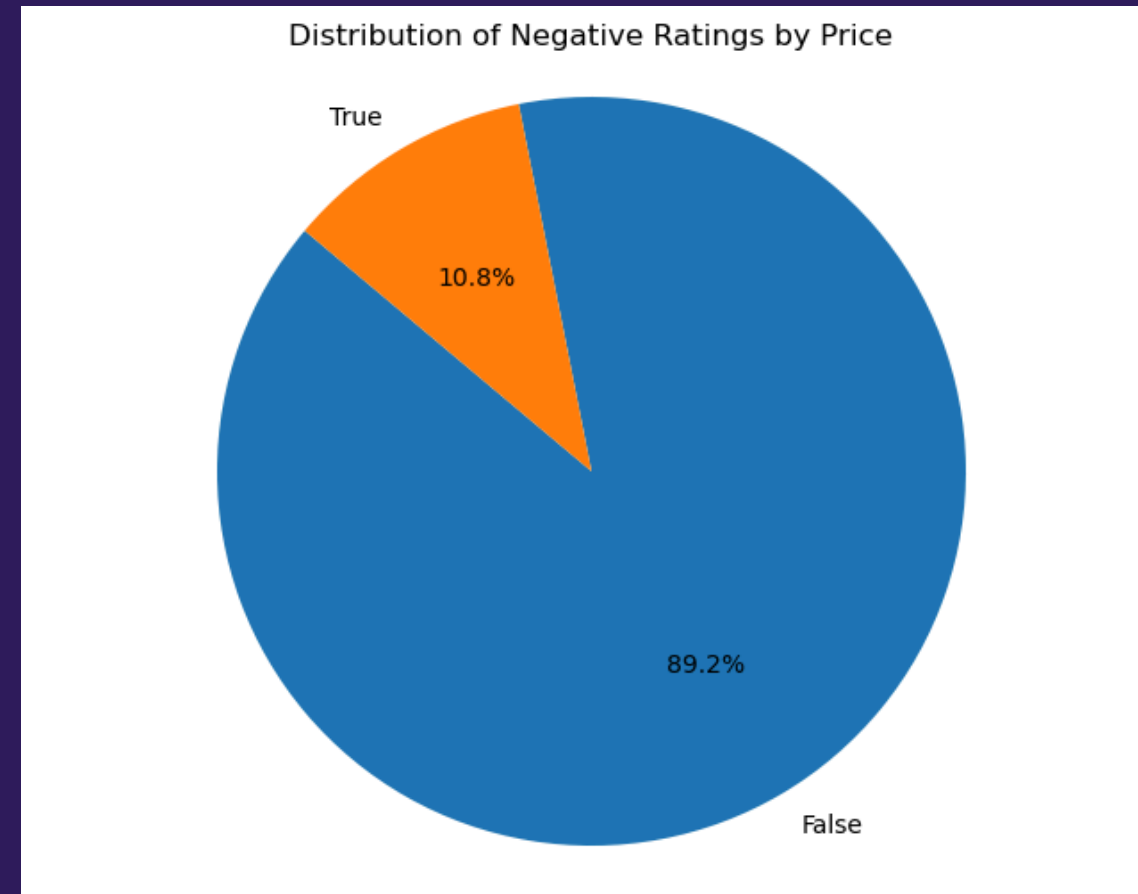
Pie chart above explains whether ratings effect the price of the game or not, we can see that there is not much of a difference between the two

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

	name	developer	publisher	genres	positive_ratings
25	Counter-Strike: Global Offensive	Valve;Hidden Path Entertainment	Valve	Action;Free to Play	2644404
22	Dota 2	Valve	Valve	Action;Free to Play;Strategy	863507
19	Team Fortress 2	Valve	Valve	Action;Free to Play	515879
12836	PLAYERUNKNOWN'S BATTLEGROUNDS	PUBG Corporation	PUBG Corporation	Action;Adventure;Massively Multiplayer	496184
121	Garry's Mod	Facepunch Studios	Valve	Indie;Simulation	363721
2478	Grand Theft Auto V	Rockstar North	Rockstar Games	Action;Adventure	329061
1467	PAYDAY 2	OVERKILL - a Starbreeze Studio.	Starbreeze Publishing AB	Action;RPG	308657
3362	Unturned	Smartly Dressed Games	Smartly Dressed Games	Action;Adventure;Casual;Free to Play;Indie	292574
1120	Terraria	Re-Logic	Re-Logic	Action;Adventure;Indie;RPG	255600
21	Left 4 Dead 2	Valve	Valve	Action	251789

	developer	games	reviews
15119	Valve;Hidden Path Entertainment	1	2644404
15117	Valve	26	2253475
4759	Facepunch Studios	4	584310
10447	PUBG Corporation	1	496184
1614	Bethesda Game Studios	10	472969
14872	Ubisoft Montreal	19	362333
11951	Rockstar North	4	330260
10079	OVERKILL - a Starbreeze Studio.	1	308657
12899	Smartly Dressed Games	1	292574
2279	CD PROJEKT RED	4	268423

	name	developer	publisher	genres	negative_ratings
12836	PLAYERUNKNOWN'S BATTLEGROUNDS	PUBG Corporation	PUBG Corporation	Action;Adventure;Massively Multiplayer	487076
25	Counter-Strike: Global Offensive	Valve;Hidden Path Entertainment	Valve	Action;Free to Play	402313
22	Dota 2	Valve	Valve	Action;Free to Play;Strategy	142079
2478	Grand Theft Auto V	Rockstar North	Rockstar Games	Action;Adventure	139308
7809	Z1 Battle Royale	NantG	Daybreak Game Company	Action;Adventure;Free to Play;Massively Multip...	91664
1506	DayZ	Bohemia Interactive	Bohemia Interactive	Action;Adventure;Massively Multiplayer	77169
4712	ARK: Survival Evolved	Studio Wildcard;Instinct Games;Efecto Studios;...	Studio Wildcard	Action;Adventure;Indie;Massively Multiplayer;RPG	66603
5235	Tom Clancy's Rainbow Six® Siege	Ubisoft Montreal	Ubisoft	Action	59620
1467	PAYDAY 2	OVERKILL - a Starbreeze Studio.	Starbreeze Publishing AB	Action;RPG	56523
2563	No Man's Sky	Hello Games	Hello Games	Action;Adventure	56488

	developer	games	reviews
10447	PUBG Corporation	1	487076
15119	Valve;Hidden Path Entertainment	1	402313
15117	Valve	26	220682
11951	Rockstar North	4	139788
1969	Bohemia Interactive	16	100566
9594	NantG	1	91664
1614	Bethesda Game Studios	10	88805
14872	Ubisoft Montreal	19	79882
4759	Facepunch Studios	4	70193
13529	Studio Wildcard;Instinct Games;Efecto Studios;...	1	66603

Above we can see that CSGO along with the developer valve has the highest number of positive ratings. Meanwhile PUBG has the most negative ratings.

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

	name	developer	genres	average_playtime	overall_reviews
25	Counter-Strike: Global Offensive	Valve;Hidden Path Entertainment	Action;Free to Play	22494	3046717
22	Dota 2	Valve	Action;Free to Play;Strategy	23944	1005586
12836	PLAYERUNKNOWN'S BATTLEGROUNDS	PUBG Corporation	Action;Adventure;Massively Multiplayer	22938	983260
19	Team Fortress 2	Valve	Action;Free to Play	8495	549915
2478	Grand Theft Auto V	Rockstar North	Action;Adventure	9837	468369
121	Garry's Mod	Facepunch Studios	Indie;Simulation	12422	380154
1467	PAYDAY 2	OVERKILL - a Starbreeze Studio.	Action;RPG	3975	365180
3362	Unturned	Smartly Dressed Games	Action;Adventure;Casual;Free to Play;Indie	3248	324056
5235	Tom Clancy's Rainbow Six® Siege	Ubisoft Montreal	Action	7504	310798
2016	Rust	Facepunch Studios	Action;Adventure;Indie;Massively Multiplayer;RPG	9352	274079

	developer	games	reviews
15119	Valve;Hidden Path Entertainment	1	3046717
15117	Valve	26	2474157
10447	PUBG Corporation	1	983260
4759	Facepunch Studios	4	654503
1614	Bethesda Game Studios	10	561774
11951	Rockstar North	4	470048
14872	Ubisoft Montreal	19	442215
10079	OVERKILL - a Starbreeze Studio.	1	365180
1969	Bohemia Interactive	16	355603
12899	Smartly Dressed Games	1	324056

We can see here that the overall reviews directly effect the developers reviews

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

	name	genres	negative_ratings	average_playtime
9201	The Abbey of Crime Extensum	Adventure;Free to Play	22	190625
1478	The Banner Saga: Factions	Free to Play;Indie;RPG;Strategy	202	95245
6014	The Secret of Tremendous Corporation	Adventure;Casual;Free to Play;Indie	50	95242
8969	PRICE	Adventure;Casual;Indie	233	63481
3930	Boundless	Action;Adventure;Indie;Massively Multiplayer;RPG	486	55204
3969	Shroud of the Avatar: Forsaken Virtues	Free to Play;Massively Multiplayer;RPG	1017	54618
2435	X-Plane 11	Simulation	443	44169
23409	懶人修仙传	Casual;Indie;RPG;Simulation	164	43632
2023	Fantasy Grounds	Indie;RPG;Strategy	100	43074

Does average playing time effects negative and positive ratings?

We can clearly see that games with so much higher average play time gets much less reviewer.

	name	genres	positive_ratings	average_playtime
9201	The Abbey of Crime Extensum	Adventure;Free to Play	146	190625
1478	The Banner Saga: Factions	Free to Play;Indie;RPG;Strategy	569	95245
6014	The Secret of Tremendous Corporation	Adventure;Casual;Free to Play;Indie	218	95242
8969	PRICE	Adventure;Casual;Indie	4198	63481
3930	Boundless	Action;Adventure;Indie;Massively Multiplayer;RPG	1153	55204
3969	Shroud of the Avatar: Forsaken Virtues	Free to Play;Massively Multiplayer;RPG	1065	54618
2435	X-Plane 11	Simulation	2033	44169
23409	懶人修仙传	Casual;Indie;RPG;Simulation	404	43632
2023	Fantasy Grounds	Indie;RPG;Strategy	377	43074

	name	genres	overall_reviews	average_playtime
9201	The Abbey of Crime Extensum	Adventure;Free to Play	168	190625
1478	The Banner Saga: Factions	Free to Play;Indie;RPG;Strategy	771	95245
6014	The Secret of Tremendous Corporation	Adventure;Casual;Free to Play;Indie	268	95242
8969	PRICE	Adventure;Casual;Indie	4431	63481
3930	Boundless	Action;Adventure;Indie;Massively Multiplayer;RPG	1639	55204
3969	Shroud of the Avatar: Forsaken Virtues	Free to Play;Massively Multiplayer;RPG	2082	54618
2435	X-Plane 11	Simulation	2476	44169
23409	懶人修仙传	Casual;Indie;RPG;Simulation	568	43632
2023	Fantasy Grounds	Indie;RPG;Strategy	477	43074

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

Distribution of Games Across Platforms

windows — 67.1%
mac — 20.0%
linux — 13.0%
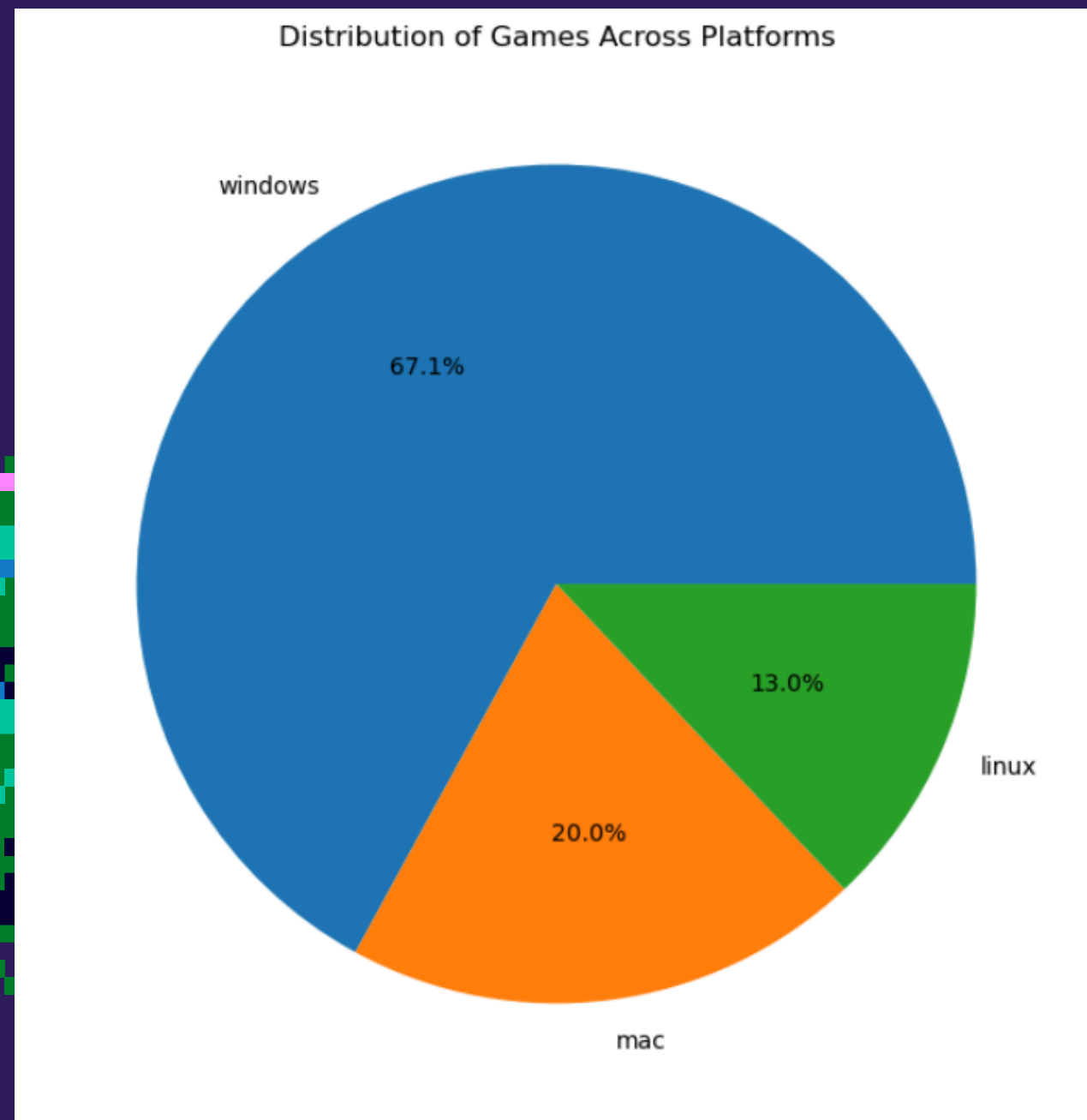
windows	27070
mac	8066
linux	5235

EXPLORATORY DATA ANALYSIS & DATA PREPROCESSING

Platform Distribution based on Negative Ratings

mac 19.0%
linux 19.0%
windows 61.9%

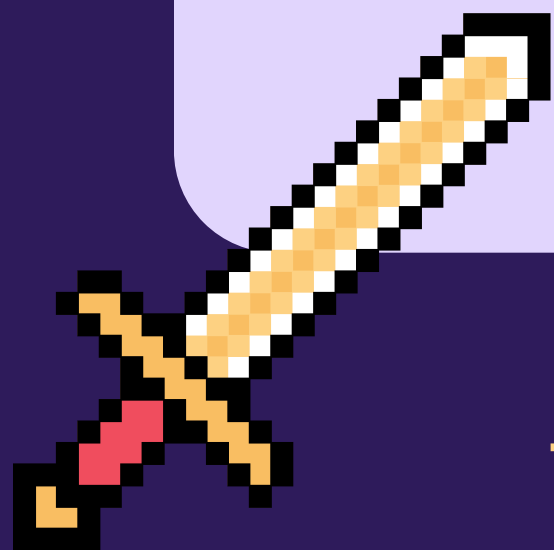Platform Distribution based on Positive Ratings

linux 25.4%
mac 28.9%
windows 45.7%
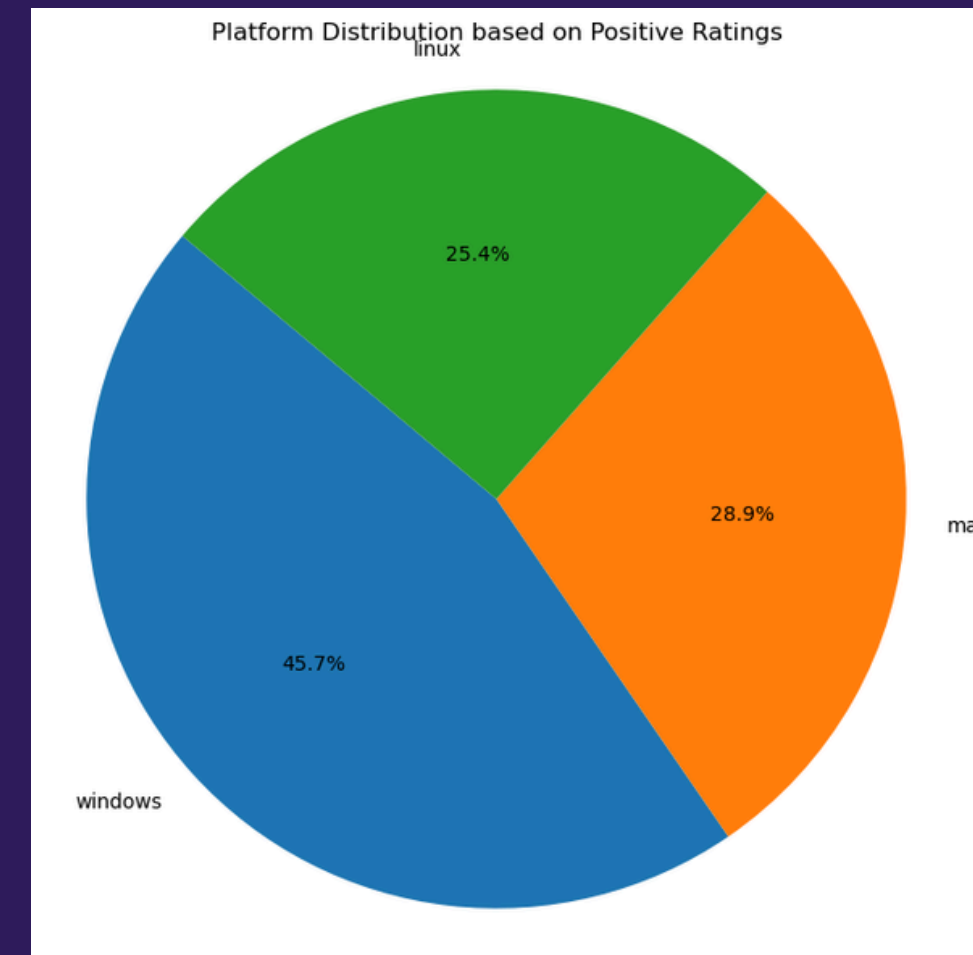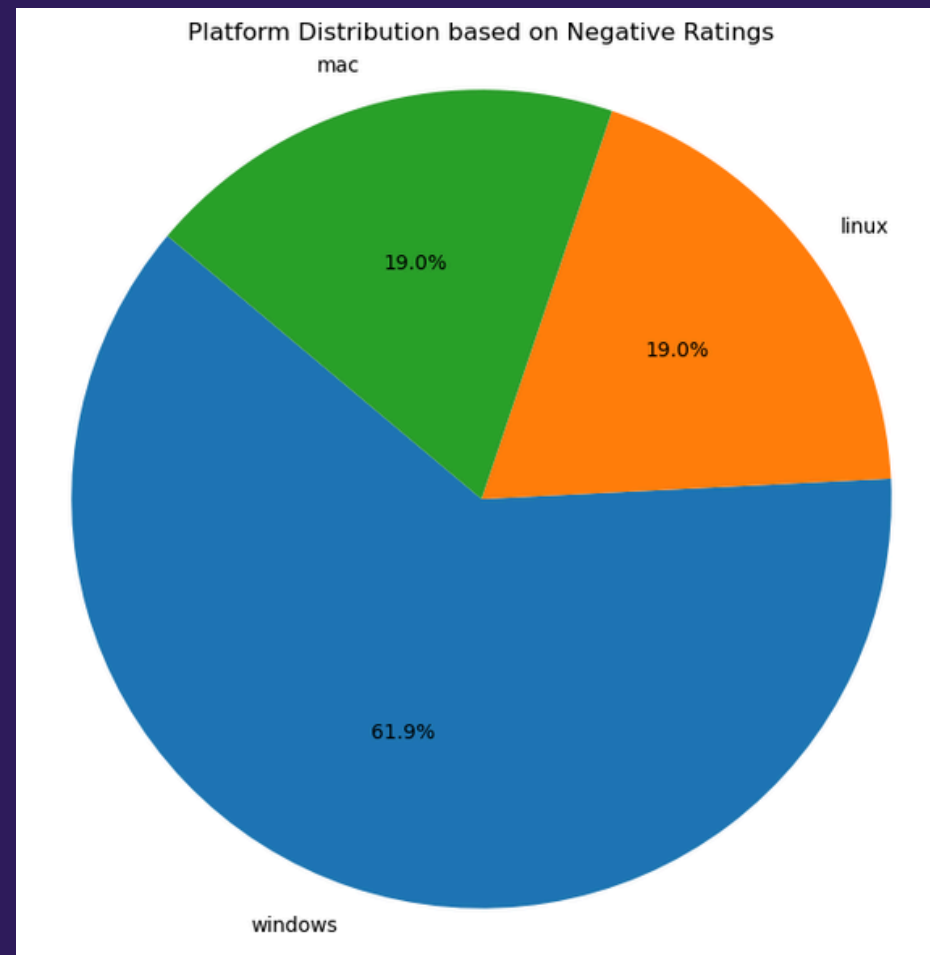
From the chart above we can see that there are more negative ratings on windows compared to the positive ratings

03.
RECOMMENDATION SYSTEM

RECOMMENDATION SYSTEM

The recommendation system that will be used is content based recommendation where it will take recommendation based on the user past preference. In the recommendation it will also display The game name, platform, steamspy tags, overall reviews as well as the price. Below are the top 10 recommended games that are similar to Grand Theft Auto V

```
Recommended games for Grand Theft Auto V:
+------------------------------------------+-----------+-------------------------------+-----------------+-------+
|                   name                   | platforms |         steamspy_tags         | overall_reviews | price |
+------------------------------------------+-----------+-------------------------------+-----------------+-------+
|             Grand Theft Auto             |  windows  |    Action;Classic;Open World  |       229       |  0.0  |
|            Grand Theft Auto 2            |  windows  |    Action;Classic;Open World  |       201       |  0.0  |
|           Grand Theft Auto III          |  windows  |    Open World;Action;Classic  |      5468       |  5.99 |
|      Grand Theft Auto: San Andreas      |  windows  | Open World;Action;Multiplayer |      30120      |  9.99 |
|           Grand Theft Auto IV           |  windows  |    Open World;Action;Bowling  |      54166      | 19.99 |
| Grand Theft Auto: Episodes from Liberty City | windows | Open World;Action;Multiplayer |      8746       | 14.99 |
|        Grand Theft Auto: Vice City      |  windows  |     Open World;Action;1980s   |      10636      |  5.99 |
|               Get Over Here             |  windows  |         Action;Indie          |       24        |  6.99 |
|              Auto-Staccato             |  windows  |  Early Access;Casual;Action   |        7        |  7.19 |
|       BLOCK WARRIORS: "Open World" Game |  windows  |  Adventure;Action;Open World  |       541       |  1.69 |
+------------------------------------------+-----------+-------------------------------+-----------------+-------+
```

RECOMMENDATION SYSTEM

	name	developer	publisher	genres	positive_ratings
25	Counter-Strike: Global Offensive	Valve;Hidden Path Entertainment	Valve	Action;Free to Play	2644404
22	Dota 2	Valve	Valve	Action;Free to Play;Strategy	863507
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1467	PAYDAY 2	OVERKILL - a Starbreeze Studio.	Starbreeze Publishing AB	Action;RPG	308657
3362	Unturned	Smartly Dressed Games	Smartly Dressed Games	Action;Adventure;Casual;Free to Play;Indie	292574
1120	Terraria	Re-Logic	Re-Logic	Action;Adventure;Indie;RPG	255600
21	Left 4 Dead 2	Valve	Valve	Action	251789

Recommended games with the most positive ratings

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Github: https://github.com/Nauffdlh/Data