Unit 3
Power BI

Exploring PowerBI

SUBMITTED BY

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CSE-2

Explore Power View, Power Query

- Create a table Employee(empid, gender, department, salary, country, year_of_joining)
- Connect to the Employee data file.
- Remove missing gender and department values.
- Extract year_of_joining column and visualise number of employees w.r.t year of experience in the company.
- Perform self-join using Power Query.
- Aggregate salary with gender and Visualise using Pie chart.

Create a table Employee(empid, gender, department, salary, country, year_of_joining)

empid	gender	department	salary	country	year_of_joining
1	Male	Sales	50000	USA	2010
2	Female	HR	60000	Canada	2012
3	Male	IT	70000	UK	2015
4	Female	Finance	55000	Germany	2011
5	Male	Marketing	48000	France	2013
6	Female	Operations	65000	USA	2014
7	Male	Sales	52000	Canada	2016
8	Female	HR	61000	UK	2017
9	Male	IT	72000	Germany	2018
10	Female	Finance	56000	France	2019
11	Male	Marketing	49000	USA	2010
12	Female	Operations	66000	Canada	2012
13	Male	Sales	53000	UK	2013
14	Female	HR	62000	Germany	2014
15	Male	IT	73000	France	2015
16	Female	Finance	57000	USA	2016
17	Male	Marketing	50000	Canada	2017
18	Female	Operations	67000	UK	2018
19	Male	Sales	54000	Germany	2019
20	Female	HR	63000	France	2010
21	Male	IT	74000	USA	2011
22	Female	Finance	58000	Canada	2012
23	Male	Marketing	51000	UK	2013
24	Female	Operations	68000	Germany	2014
25	Male	Sales	55000	France	2015
26	Female	HR	64000	USA	2016
27	Male	IT	75000	Canada	2017
28	Female	Finance	59000	UK	2018
29	Male	Marketing	52000	Germany	2019
30	Female	Operations	69000	France	2010

Remove missing gender and department values.

```
= Table.SelectRows(#"Changed Type", each [gender] <> null and [gender] <> "")
```

	empid	gender	department	salary	country	year_of_joining
1	1	Male	Sales	50000	USA	2010
2	2	Female	HR	60000	Canada	2012
3	3	Male	IT	70000	UK	2015
4	4	Female	Finance	55000	Germany	2011
5	5	Male	Marketing	48000	France	2013
6	6	Female	Operations	65000	USA	2014
7	7	Male	Sales	52000	Canada	2016
8	8	Female	HR	61000	UK	2017
9	9	Male	IT	72000	Germany	2018
10	10	Female	Finance	56000	France	2019
11	11	Male	Marketing	49000	USA	2010
12	12	Female	Operations	66000	Canada	2012
13	13	Male	Sales	53000	UK	2013
14	14	Female	HR	62000	Germany	2014
15	15	Male	IT	73000	France	2015
16	16	Female	Finance	57000	USA	2016
17	17	Male	Marketing	50000	Canada	2017
18	18	Female	Operations	67000	UK	2018
19	19	Male	Sales	54000	Germany	2019
20	20	Female	HR	63000	France	2010
21	21	Male	IT	74000	USA	2011
22	22	Female	Finance	58000	Canada	2012
23	23	Male	Marketing	51000	UK	2013
24	24	Female	Operations	68000	Germany	2014
25	25	Male	Sales	55000	France	2015
26	26	Female	HR	64000	USA	2016
27	27	Male	IT	75000	Canada	2017
28	28	Female	Finance	59000	UK	2018
29	29	Male	Marketing	52000	Germany	2019
30	30	Female	Operations	69000	France	2010

```
= Table.SelectRows(#"Filtered Rows", each [department] <> null and [department] <> "")
```

	empid	gender	department	salary	country	year_of_joining
1	1	Male	Sales	50000	USA	2010
2	2	Female	HR	60000	Canada	2012
3	3	Male	IT	70000	UK	2015
4	4	Female	Finance	55000	Germany	2011
5	5	Male	Marketing	48000	France	2013
6	6	Female	Operations	65000	USA	2014
7	7	Male	Sales	52000	Canada	2016
8	8	Female	HR	61000	UK	2017
9	9	Male	IT	72000	Germany	2018
10	10	Female	Finance	56000	France	2019
11	11	Male	Marketing	49000	USA	2010
12	12	Female	Operations	66000	Canada	2012
13	13	Male	Sales	53000	UK	2013
14	14	Female	HR	62000	Germany	2014
15	15	Male	IT	73000	France	2015
16	16	Female	Finance	57000	USA	2016
17	17	Male	Marketing	50000	Canada	2017
18	18	Female	Operations	67000	UK	2018
19	19	Male	Sales	54000	Germany	2019
20	20	Female	HR	63000	France	2010
21	21	Male	IT	74000	USA	2011
22	22	Female	Finance	58000	Canada	2012
23	23	Male	Marketing	51000	UK	2013
24	24	Female	Operations	68000	Germany	2014
25	25	Male	Sales	55000	France	2015
26	26	Female	HR	64000	USA	2016
27	27	Male	IT	75000	Canada	2017
28	28	Female	Finance	59000	UK	2018
29	29	Male	Marketing	52000	Germany	2019
30	30	Female	Operations	69000	France	2010

Extract year_of_joining column and visualise number of employees w.r.t year of experience in the company.

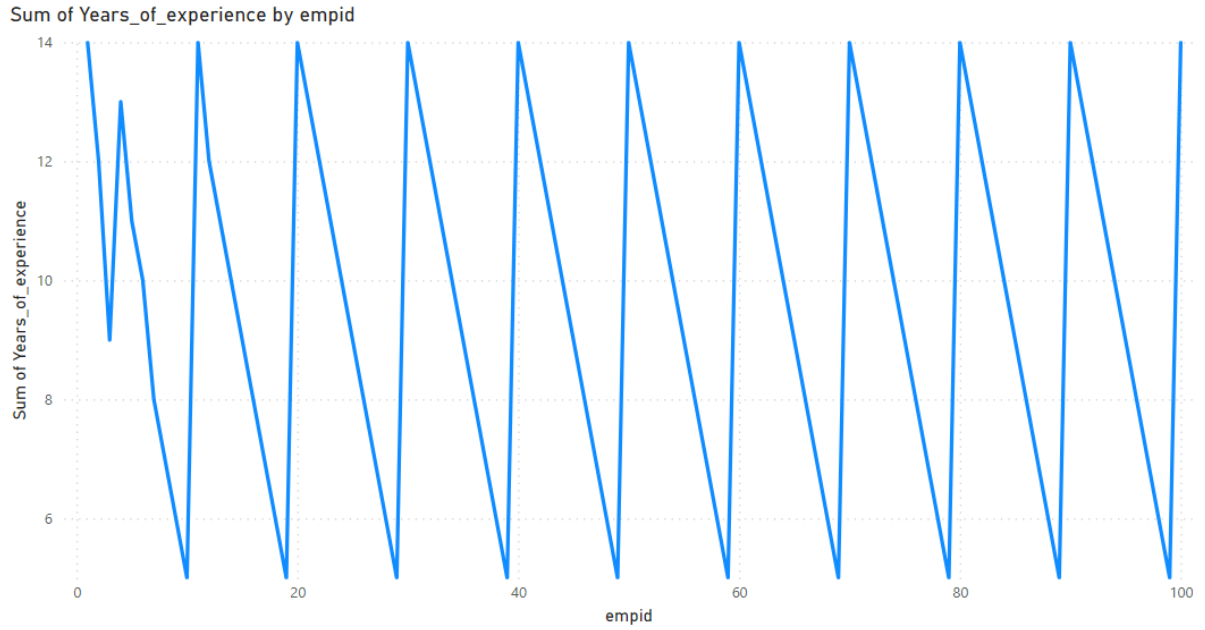
Formula to create year of experience column:

Date.Year(DateTime.LocalNow()) - [Year of Joining]

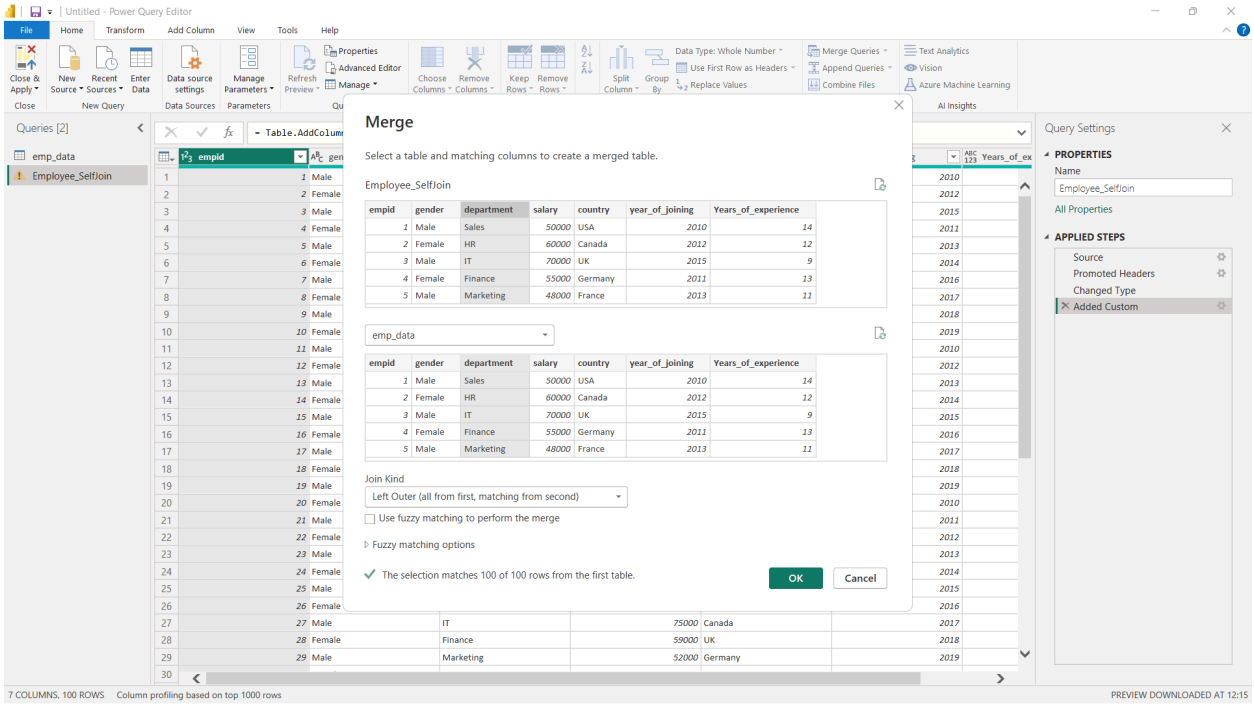
Column Added

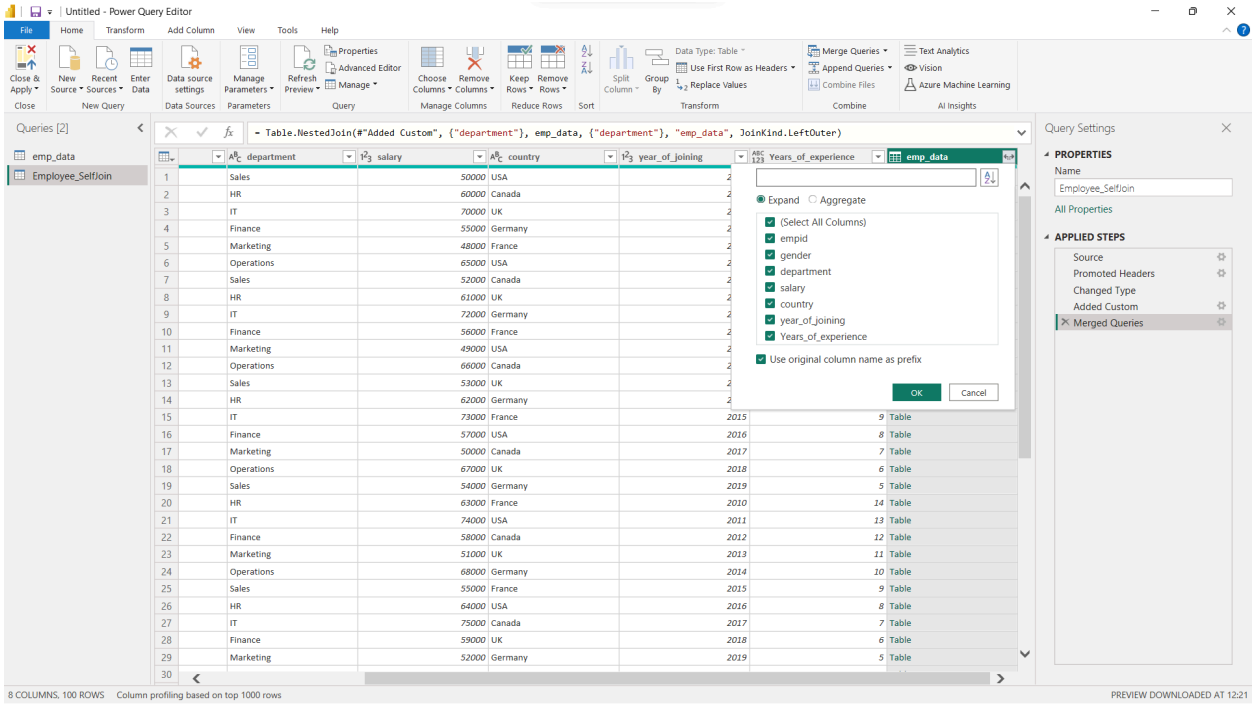
```
= Table.AddColumn(#"Filtered Rows1", "Years of Experience", each Date.Year(DateTime.LocalNow()) - [year_of_joining])
```

	gender	department	salary	country	year_of_joining	Years of Experience
1	Male	Sales	50000	USA	2010	14
2	Female	HR	60000	Canada	2012	12
3	Male	IT	70000	UK	2015	9
4	Female	Finance	55000	Germany	2011	13
5	Male	Marketing	48000	France	2013	11
6	Female	Operations	65000	USA	2014	10
7	Male	Sales	52000	Canada	2016	8
8	Female	HR	61000	UK	2017	7
9	Male	IT	72000	Germany	2018	6
10	Female	Finance	56000	France	2019	5
11	Male	Marketing	49000	USA	2010	14
12	Female	Operations	66000	Canada	2012	12
13	Male	Sales	53000	UK	2013	11
14	Female	HR	62000	Germany	2014	10
15	Male	IT	73000	France	2015	9
16	Female	Finance	57000	USA	2016	8
17	Male	Marketing	50000	Canada	2017	7
18	Female	Operations	67000	UK	2018	6
19	Male	Sales	54000	Germany	2019	5
20	Female	HR	63000	France	2010	14
21	Male	IT	74000	USA	2011	13
22	Female	Finance	58000	Canada	2012	12
23	Male	Marketing	51000	UK	2013	11
24	Female	Operations	68000	Germany	2014	10
25	Male	Sales	55000	France	2015	9
26	Female	HR	64000	USA	2016	8
27	Male	IT	75000	Canada	2017	7
28	Female	Finance	59000	UK	2018	6
29	Male	Marketing	52000	Germany	2019	5
30						

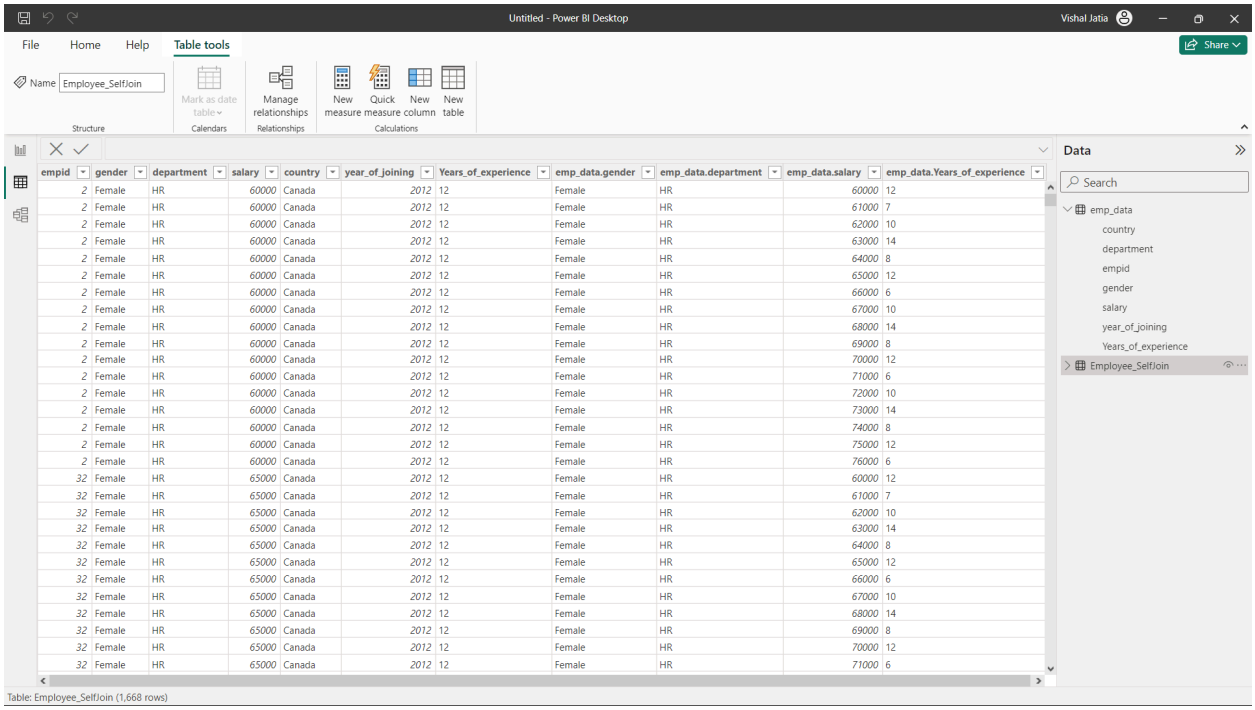


Perform self-join using Power Query.

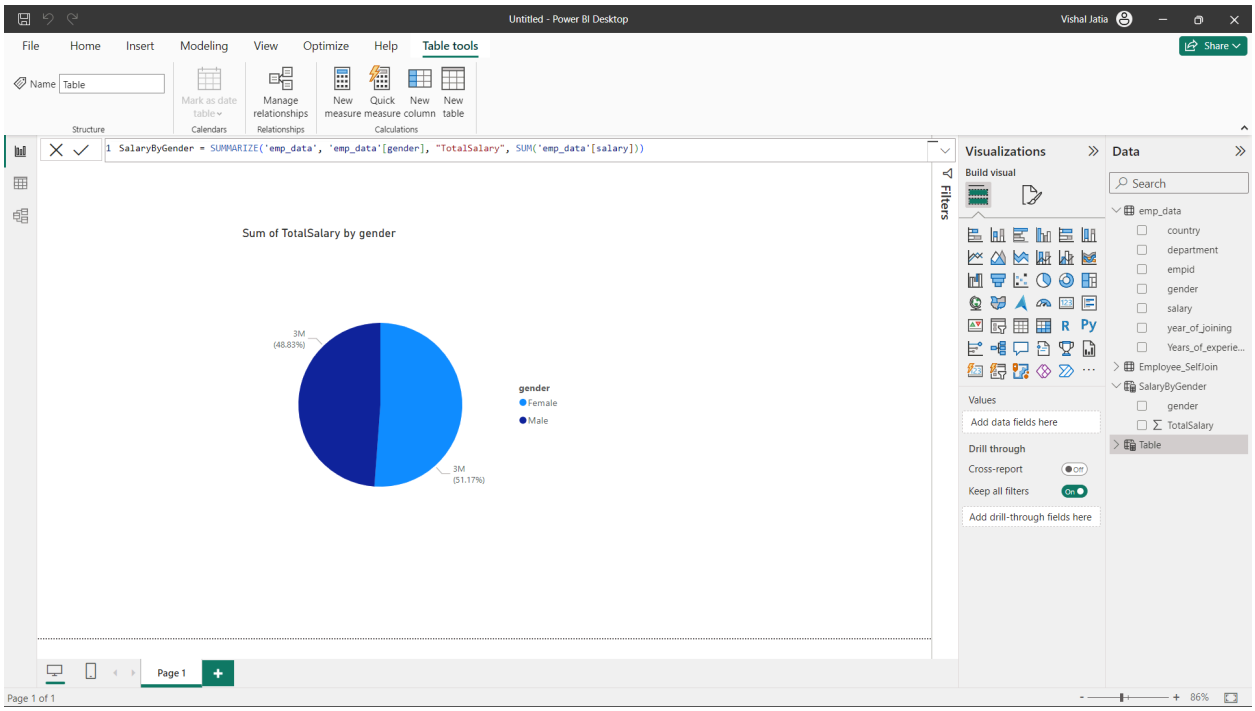




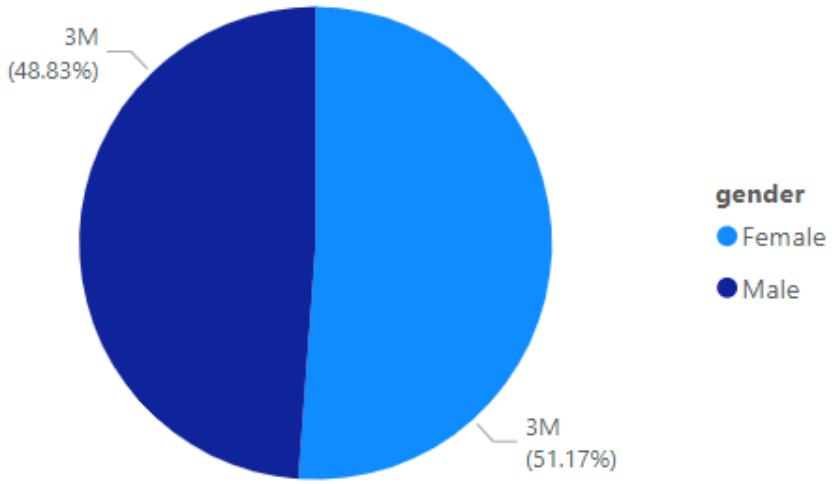
Self Joined table:



Aggregate salary with gender and Visualise using Pie chart.



Sum of TotalSalary by gender



Visualise the result of any Machine Learning algorithm on any dataset of your choice in PowerBI.

Introduction:

"This model leverages a comprehensive set of factors, including gender, marital status, number of dependents, education level, self-employment status, applicant income, co-applicant income, loan amount, loan term, credit history, and property location, to accurately predict the likelihood of loan approval. Our goal extends beyond prediction and into the realm of visualisation, where Power BI will be employed to present these findings in a compelling and insightful manner."

Here's why this version is stronger:

- Highlights range of factors: Emphasises the multi-dimensional nature of the model.
- Concisely states the goal: Clearly mentions the goal of loan status prediction.
- Enhances 'visualisation' aspect: Underscores the use of Power BI to communicate results effectively.

Visualisations:

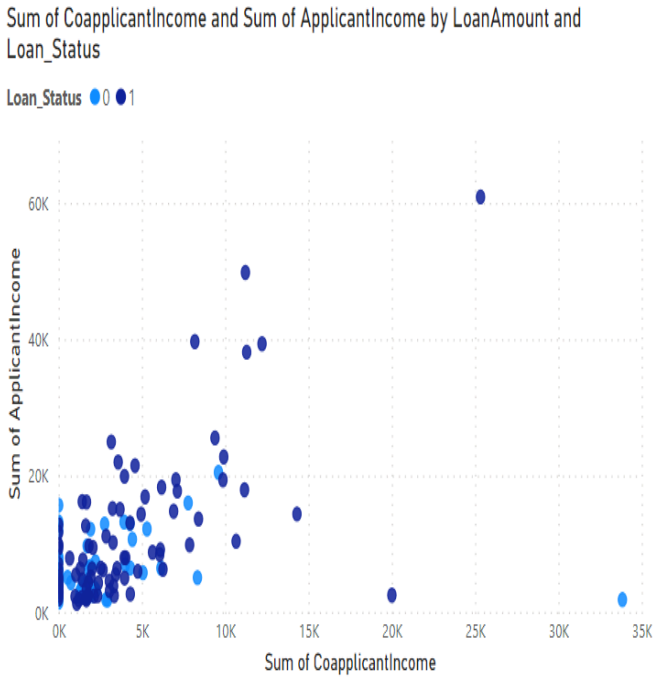
1. Accuracy and Roc score

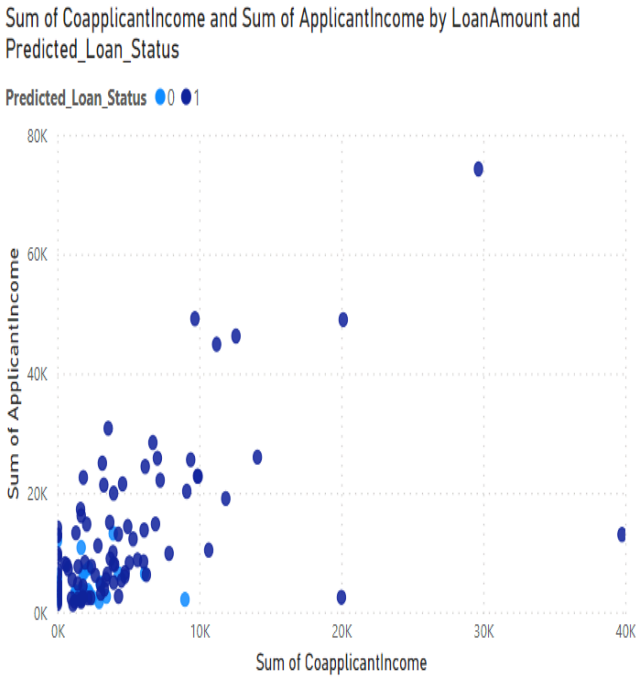
```
Accuracy Score: 81.82%
Roc Score: 66.67%
```

2. Confusion matrix

Predicted	0	1	All
True			
0	7	14	21
1	0	56	56
All	7	70	77

3. Finding the relationship between loan amount (real and predicted) and the income of the family.





4. Matrix visualisation for the loan amount for property value (normalised) vs credit history

Property_Area	0	1	Total
0	2212	9476	**11688**
1	1719	10679	**12398**
3	2232	13682	**15914**
Total	**6163**	**33837**	**40000**

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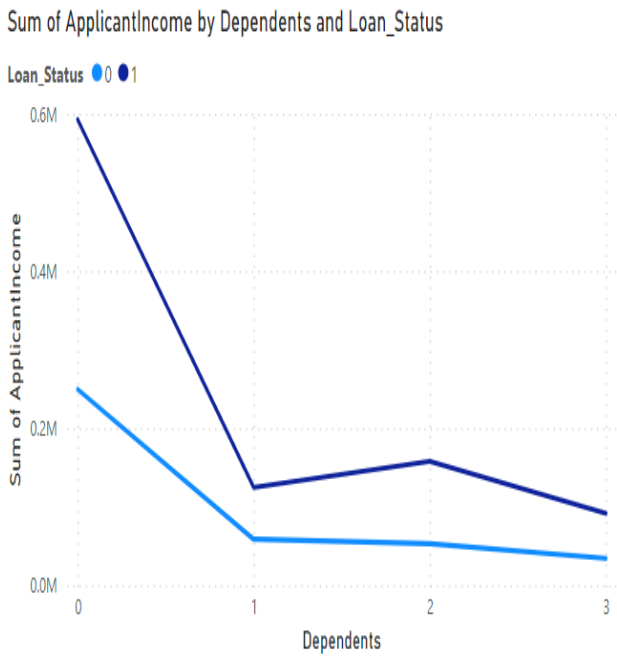
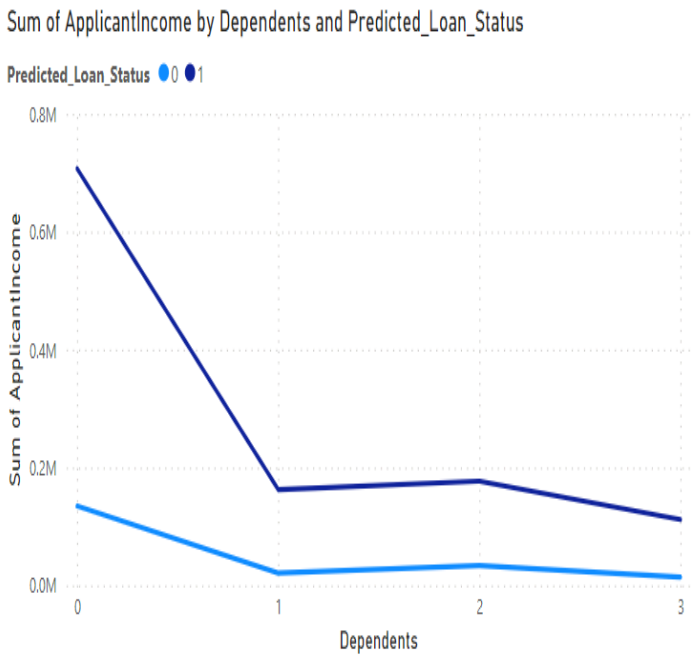
5. The loan status (actual and predicted) based on the income of the house and number of dependents





6. Loan Status and Predicted _ Loan _ Status by ApplicantIncome