

BANK LOAN ANALYSIS

1. View of the dataset.

SQLQuery2.sql - N... (NAHID\nameid (85))

```
select * from bank_loan_report
```

100 %

Results Messages

	id	address_state	application_type	emp_length	emp_title	grade	home_ownership	issue_date	last_credit_pu
1	54734	CA	INDIVIDUAL	< 1 year	NULL	B	RENT	2021-08-09	2021-08-12
2	55742	NY	INDIVIDUAL	< 1 year	CNN	B	RENT	2021-05-08	2021-08-12
3	57245	TX	INDIVIDUAL	10+ years	city of beaumont texas	C	OWN	2021-03-10	2021-05-16
4	57416	CT	INDIVIDUAL	6 years	State Farm Insurance	C	RENT	2021-11-09	2021-05-16
5	58915	CA	INDIVIDUAL	3 years	QQualcomm Inc	B	RENT	2021-04-08	2021-03-14
6	59006	TX	INDIVIDUAL	3 years	NULL	C	MORTGAGE	2021-09-09	2021-09-12
7	61390	TX	INDIVIDUAL	< 1 year	NULL	A	MORTGAGE	2021-02-10	2021-03-12
8	61419	MD	INDIVIDUAL	1 year	Pension Benefit Guaranty Corporation	D	RENT	2021-02-10	2021-03-13
9	62102	MA	INDIVIDUAL	5 years	Rockwell Automation Inc.	B	RENT	2021-04-10	2021-03-13
10	65426	MI	INDIVIDUAL	< 1 year	Infotrieve, Inc.	B	MORTGAGE	2021-08-09	2021-05-16
11	65640	CA	INDIVIDUAL	10+ years	kmex/univision	C	MORTGAGE	2021-05-08	2021-04-15
12	66431	KY	INDIVIDUAL	3 years	Video Monitoring Services	B	RENT	2021-02-09	2021-03-12
13	66749	MS	INDIVIDUAL	10+ years	crown cork & seal	C	MORTGAGE	2021-12-08	2021-12-11

2. Total loan applications.

SQLQuery2.sql - N... (NAHID\nameid (85))

```
--Total loan appeals
Select count(id) as total_appeals from bank_loan_report;
--MTD
--Find out total appeals of the last month of
--the year by filtering WHERE
Select count(id) as total_appeals_atDecember from bank_loan_report
where MONTH(issue_date) = 12 AND YEAR(issue_date) = 2021;
--find out last month's application
Select count(id) as total_appeals_lastMonth from bank_loan_report
where MONTH(issue_date) = 11 AND YEAR(issue_date) = 2021;
```

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Results Messages

	total_appeals
1	38576

	total_appeals_atDecember
1	4314

	total_appeals_lastMonth
1	4035

3. Total funded amount

```
--Total Funded Amount
Select SUM(loan_amount) as tot_fund_amt from bank_loan_report;
--MTD
Select SUM(loan_amount) as tot_fund_amtMTD from bank_loan_report
WHERE month (issue_date) = 12 AND year(issue_date) = 2021;
--PMTD
Select SUM(loan_amount) as tot_fund_amtPMTD from bank_loan_report
WHERE month (issue_date) = 11 AND year(issue_date) = 2021;
```

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Results Messages

	tot_fund_amt
1	435757075

	tot_fund_amtMTD
1	53981425

	tot_fund_amtPMTD
1	47754825

4. Total amount received

SQL query: `SELECT SUM(total_payment) as tot_amt_rcv from bank_loan_report;`

--Total Amount Receieved

`Select SUM(total_payment) as tot_amt_rcv from bank_loan_report;`

--MTD (Using total_payment column to find out received amount)

`Select SUM(total_payment) as tot_amt_rcvMTD from bank_loan_report WHERE month (issue_date) = 12 AND year(issue_date) = 2021;`

--PMTD

`Select SUM(total_payment) as tot_amt_rcvPMTD from bank_loan_report WHERE month (issue_date) = 11 AND year(issue_date) = 2021;`

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Results Messages

tot_amt_rcv
1 473070933

tot_amt_rcvMTD
1 58074380

tot_amt_rcvPMTD
1 50132030

5. AVG interest rate

SQL query: `SELECT AVG(int_rate) * 100 as tot_amt_rcv from bank_loan_report;`

--Average Interest Rate

--(Using int_rate column use AVG *100 to find out received amount)

`Select AVG(int_rate) * 100 as tot_amt_rcv from bank_loan_report;`

--MTD (Round it in 4 digits)

`Select ROUND(Avg(int_rate), 4) *100 as avg_int_rtMTD from bank_loan_report WHERE month (issue_date) = 12 AND year(issue_date) = 2021;`

--PMTD

`Select ROUND(AVG(int_rate),4) * 100 as avg_int_rtPMTD from bank_loan_report WHERE month (issue_date) = 11 AND year(issue_date) = 2021;`

100 %

Results Messages

tot_amt_rcv
1 12.0488314172048

avg_int_rtMTD
1 12.36

avg_int_rtPMTD
1 11.94

6. Average Dept-to-Income(dti) Ratio

```
--Average Dept-to-Income(dti) Ratio
--(Using int_rate column use AVG *100 to find out received amount)
Select AVG(dti) * 100 as avg_dti from bank_loan_report;

--MTD (Round it in 4 digits)
Select ROUND(Avg(dti), 4) *100 as avg_dtiMTD from bank_loan_report
WHERE month (issue_date) = 12 AND year(issue_date) = 2021;

--PMTD
Select ROUND(AVG(int_rate),4) * 100 as avg_dtiPMTD from bank_loan_report
WHERE month (issue_date) = 11 AND year(issue_date) = 2021;
```

100 %

Results Messages

	avg_dti
1	13.3274331211432

	avg_dtiMTD
1	13.67

	avg_dtiPMTD
1	11.94

7. Good loan / Bad loan

(Customer who **is fully paid** and currently paying = Good loan) Good loan percent, loan applications, funded amount, total receive amount.

(Customer who **charged off - not repaying** = Bad loan) Bad loan percent, loan applications, funded amount, total receive amount.

```
--good loan / Bad loan
select loan_status from bank_loan_report
```

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Results Messages

	loan_status
25...	Charged Off
25...	Fully Paid
25...	Current
25...	Fully Paid
25...	Fully Paid

```
-- (Good Loan- using count function to count CASE when it is
-- Fully paid or Current status then count it by id and multiply
-- with 100 cause need to find the percentage -otherwise it will be 0)
select (COUNT(case when loan_status = 'Fully Paid'
OR
loan_status = 'Current' THEN id end)* 100)
/ count (id) as Good_Loan from bank_loan_report;
--Good loan applications
SELECT count (id) as loan_app from bank_loan_report
WHERE loan_status = 'Fully Paid' or loan_status = 'Current'
-- Good loan funded amount
SELECT SUM(loan_amount) as good_Loans_FAmt from bank_loan_report
WHERE loan_status = 'Fully Paid' or loan_status = 'Current'
-- Good Loan Total Received amount
SELECT SUM(total_payment) as Loan_rcvAmt from bank_loan_report
WHERE loan_status = 'Fully Paid' or loan_status = 'Current'
```

100 %

Results Messages

	Good_Loan
1	86

	loan_app
1	33243

	good_Loans_FAmt
1	370224850

	Loan_rcvAmt
1	435786170

```

-- (Bad Loan- using count function to count CASE when it is
-- Charged Off then count it by id and multiply
-- with 100 cause need to find the percentage -otherwise it will be 0)
select (COUNT(case when loan_status = 'Charged Off'
                THEN id end)* 100)
      / count (id) as Bad_Loan from bank_loan_report;
--Bad loan applications
SELECT count (id) as loan_app from bank_loan_report
WHERE loan_status = 'Charged Off'
SELECT SUM(loan_amount) as bad_Loans_FAmt from bank_loan_report
WHERE loan_status = 'Charged Off'
-- Bad Loan Total Received amount
SELECT SUM(total_payment) as Loan_rcvAmt from bank_loan_report
WHERE loan_status = 'Charged Off'

```

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Results Messages

	Bad_Loan
1	13

	loan_app
1	5333

	bad_Loans_FAmt
1	65532225

	Loan_rcvAmt
1	37284763

```

-- Together
select (COUNT(case when loan_status = 'Fully Paid'
                OR
                loan_status = 'Current' THEN id end)* 100)/ count (id) as Good_Loan,
       (select COUNT(case when loan_status = 'Charged Off'
                THEN id end)* 100)/ count (id) as Bad_Loan
       from bank_loan_report;

```

100 %

Results Messages

	Good_Loan	Bad_Loan
1	86	13

8. Loan Status Grid View (MTD)

--Loan Status Grid View

```
Select loan_status,  
count (id) as TotalLoanNums,  
sum (loan_amount) as Total_Funded,  
Avg (int_rate * 100) as Interest_Rate,  
avg (dti * 100) as DeptToIncome,  
Sum (total_payment) as Total_Payment  
from bank_loan_report group by loan_status;
```

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Results Messages

	loan_status	TotalLoanNums	Total_Funded	Interest_Rate	DeptToIncome	Total_Payment
1	Fully Paid	32145	351358350	11.6410707918092	13.1673507557434	411586256
2	Current	1098	18866500	15.0993260800947	14.7243442736843	24199914
3	Charged Off	5333	65532225	13.8785749318289	14.0047328005517	37284763

SQLQuery4.sql - N... (N/A) ID (N/A) ID (00) SQLQuery5.sql - N... (N/A) ID (N/A) ID (70)

--MTD Loan Status Grid View

```
Select  
sum (loan_amount) as MTDTotal_Funded,  
Sum (total_payment) as MTDTotal_Payment  
from bank_loan_report Where MONTH(issue_date) = 12  
group by loan_status;
```

100 %

Results Messages

	loan_status	MTDTotal_Funded	MTDTotal_Payment
1	Fully Paid	41302025	47815851
2	Current	3946625	4934318
3	Charged Off	8732775	5324211

Charts

9. Monthly trend of issues date

```
--Monthly trend
select
Month(issue_date) as Number,
datename (MONTH, issue_date) as Months,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
group by month (issue_date), datename(month, issue_date)
order by month (issue_date);
```

100 %

Results Messages

	Number	Months	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	1	January	2332	25031650	27578836
2	2	February	2279	24647825	27717745
3	3	March	2627	28875700	32264400
4	4	April	2755	29800800	32495533
5	5	May	2911	31738350	33750523
6	6	June	3184	34161475	36164533
7	7	July	3366	35813900	38827220
8	8	August	3441	38149600	42682218
9	9	September	3536	40907725	43983948
10	10	October	3796	44893800	49399567
11	11	November	4035	47754825	50132030
12	12	December	4314	53981425	58074380

10. Regional analysis by state

```
--Regional analysis
select
address_state as State,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
group by address_state
order by address_state; --(sum(loan_amount) DESC, to find out max loan amt)
```

100 %

Results Messages

	State	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	AK	78	1031800	1108570
2	AL	432	4949225	5492272
3	AR	236	2529700	2777875
4	AZ	833	9206000	10041986
5	CA	6894	78484125	83901234
6	CO	770	8976000	9845810
7	CT	730	8435575	9357612
8	DC	214	2652350	2921854
9	DE	110	1138100	1269136
10	FL	2773	30046125	31601905
11	GA	1355	15480325	16728040
12	HI	170	1850525	2080184
13	IA	5	56450	64482
14	ID	6	59750	65329
15	IL	1486	17124225	18875941
16	IN	9	86225	85521

11. Loan term analysis

```
--Loan Term analysis
select
term as Term,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
group by term
order by term;
```

100 %

Results Messages

	Term	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	36 months	28237	273041225	294709458
2	60 months	10339	162715850	178361475

12. Employee length analysis

```
--Employee Length analysis
select
emp_length as Employee_Length,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
group by emp_length
order by emp_length;
```

100 %

Results Messages

	Employee_Length	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	< 1 year	4575	44210625	47545011
2	1 year	3229	32883125	35498348
3	10+ years	8870	116115950	125871616
4	2 years	4382	44967975	49206961
5	3 years	4088	43937850	47551832
6	4 years	3428	37600375	40964850
7	5 years	3273	36973625	40397571
8	6 years	2228	25612650	27908658
9	7 years	1772	20811725	22584136
10	8 years	1476	17558950	19025777
11	9 years	1255	15084225	16516173

13. Loan purpose breakdown

```
--Loan Purpose analysis
select
purpose as Loan_Purpose,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
group by purpose
order by count(id) Desc;
-- here we see max loan purpose is debt consolidation.
```

100 %

Results Messages

	Loan_Purpose	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	Debt consolidation	18214	232459675	253801871
2	credit card	4998	58885175	65214084
3	other	3824	31155750	33289676
4	home improvement	2876	33350775	36380930
5	major purchase	2110	17251600	18676927
6	small business	1776	24123100	23814817
7	car	1497	10223575	11324914
8	wedding	928	9225800	10266856
9	medical	667	5533225	5851372
10	moving	559	3748125	3999899
11	house	366	4824925	5185538
12	vacation	352	1967950	2116738
13	educational	315	2161650	2248380
14	renewable_energy	94	845750	898931

14. Home ownership analysis.

```
--Home Ownership analysis
select
home_ownership as Home_Owner,
count(id) as Total_Loan_Nums,
sum(loan_amount) as Tot_Loan_Amt,
sum(total_payment) as Tot_Rcv_amt
from bank_loan_report
where loan_status = 'Fully Paid' AND Month(issue_date) = 12 -- By filtering the fully paid
group by home_ownership
order by count(id) Desc;
```

100 %

Results Messages

	Home_Owner	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	RENT	1745	19057900	22340231
2	MORTGAGE	1383	18494250	21249702
3	OWN	318	3691175	4158032
4	OTHER	6	58700	67886

```
--Home Ownership analysis
```

```
select  
home_ownership as Home_Owner,  
count(id) as Total_Loan_Nums,  
sum(loan_amount) as Tot_Loan_Amt,  
sum(total_payment) as Tot_Rcv_amt  
from bank_loan_report  
group by home_ownership  
order by count(id) Desc;
```

100 %

Results Messages

	Home_Owner	Total_Loan_Nums	Tot_Loan_Amt	Tot_Rcv_amt
1	RENT	18439	185768475	201823056
2	MORTGAGE	17198	219329150	238474438
3	OWN	2838	29597675	31729129
4	OTHER	98	1044975	1025257
5	NONE	3	16800	19053