Bank Loan Report Query Document

KPIS:

--1.Total Loan Applications:

```sql
select count(id)as Total_Loan_application
from bank_loan_data
```

Total_Loan_application
38576

--MTD Loan Application

```sql
select count(id)as MTD_Total_Loan_application from bank_loan_data
where month(issue_date)=11 and YEAR(issue_date)=2021
```

MTD_Total_Loan_application
20851

--PMTD Loan Application

```sql
select count(id)as Total_Loan_application from bank_loan_data
where month(issue_date)=10 and YEAR(issue_date)=2021
```

Total_Loan_application
11197

--2.Total Funded Amount:(المبلغ الإجمالي للأموال المدفوعة كقروض)

```sql
select sum(loan_amount) as Total_Funded_Amount
from bank_loan_data
```

Total_Funded_Amount
435757075

```sql
--MTD
select sum(loan_amount) as MTD_Total_Funded_Amount from bank_loan_data
where MONTH(issue_date)=11 and YEAR(issue_date)=2021
```

MTD_Total_Funded_Amount
253214725

```sql
--PMTD
select sum(loan_amount) as PMTD_Total_Funded_Amount from bank_loan_data
where MONTH(issue_date)=10 and YEAR(issue_date)=2021
```

PMTD_Total_Funded_Amount
119568600

```sql
--3.Total Amount Received:(المبلغ الاجمالي الوارد من المقترضين)
select sum(total_payment) as Total_Amount_Received
from bank_loan_data
```

Total_Amount_Received
473070933

```sql
--MTD
select sum(total_payment) as MTD_Total_Amount_Received from bank_loan_data
where month(issue_date)=11 and YEAR(issue_date)=2021
```

MTD_Total_Amount_Received
278244337

```sql
--PMTD
select sum(total_payment) as PMTD_Total_Amount_Received from bank_loan_data
where month(issue_date)=10 and YEAR(issue_date)=2021
```

```
PMTD_Total_Amount_Received
128148384
```

--4.Average Interest Rate:(حساب متوسط سعر الفائدة عبر جميع القروض)

/*[الغرض: سعر الفائدة التكلفة السنوية للاقتراض معبرا عنها كنسبة مئوية. انها يمثل

يحدد تكلفة القرض.

الاستخدام للبنوك: تستخدم البنوك أسعار الفائدة لتسعير القروض وإدارة هوامش الربح وجذب

المستثمرون]*/

```sql
select round(avg(int_rate),4)*100 as Average_Interest_Rate
from bank_loan_data
```

```
Average_Interest_Rate
12.05
```

--MTD
```sql
select round(avg(int_rate),4)*100 as MTD_Average_Int_Rate from bank_loan_data
where month(issue_date)=11 and year(issue_date)=2021
```

```
MTD_Average_Interset_Rate
12.25
```

--PMTD
```sql
select round(avg(int_rate),4)*100 as PMTD_Average_Int_Rate from bank_loan_data
where month(issue_date)=10 and year(issue_date)=2021
```

```
PMTD_Average_Interset_Rate
11.77
```

--5.Average Debt-to-Income Ratio (DTI): Evaluating the average DTI for our borrowers helps us gauge their financial health.) gauge-->measure

/*[Purpose: DTI measures the borrower's debt burden relative to income. It gauges the

borrower's capacity to take on additional debt.

Use for Banks: Banks use DTI to assess a borrower's ability to handle loan payments and

make responsible lending decisions]

لتقييم قدرة المقترض على التعامل مع مدفوعات القروض و DTI تستخدم البنوك   :الاستخدام للبنوك

/*اتخاذ قرارات الإقراض المسؤولة

/*   The Debt-to-Income Ratio (DTI) is an important financial metric that lenders use to assess a borrower's ability to manage

monthly payments and debts relative to their income. A lower DTI ratio generally indicates

a healthier financial situation for borrowers.

Calculating the average DTI helps in understanding the overall financial health of borrowers within the dataset. */

.المنخفضة عمومًا إلى وضع مالي أكثر صحة للمقترضين DTI تشير نسبة --

```sql
select round(AVG(dti),4)*100 as Average_DTI

from bank_loan_data
```

Average_DTI
13.33

--MTD

```sql
select round(AVG(dti),4)*100 as MTD_Average_DTI from bank_loan_data

where month(issue_date)=11 and YEAR(issue_date)=2021
```

MTD_Average_DTI
13.86

```sql
--PMTD

select round(AVG(dti),4)*100 as PMTD_Average_DTI from bank_loan_data

where month(issue_date)=10 and YEAR(issue_date)=2021
```

PMTD_Average_DTI
12.98

-if DTI is more high then you are not able to manage your payments and all things.[30% to 35%] is better DTI NOT LOW AND NOT HIGH.

```sql
--6.How does the loan amount correlate with the annual income?

select annual_income,AVg(loan_amount) as Avg_Loan_Amount

from bank_loan_data

group by annual_income

order by annual_income
```

--This query analyzes the relationship between loan amounts and annual incomes, potentially revealing trends in borrowing behavior based on income levels.

‏يحلل هذا الاستعلام العلاقة بين مبالغ القروض والدخل السنوي، مما قد يكشف عن اتجاهات في سلوك الاقتراض بناءً على مستويات الدخل‏--.

PMTD_Average_DTI
12.98

```sql
--7.What is the average interest rate for each loan grade and term combination?

select round(avg(int_rate),2)*100 as Average_int_rate,grade,term

from bank_loan_data

group by grade,term

order by grade,term
```

```
/* grade--> :‏استخدم البنوك الدرجة لتسعير القروض وإدارة المخاطر‏.    ‏عادة ما تتلقى القروض ذات الدرجة الأعلى أسعار فائدة أقل‏
‏وتكون أكثر جاذبية للمستثمرين‏

    term--<‏يحدد مصطلح مدة القرض بالأشهر‏.    ‏يحدد فترة السداد‏

    ‏تستخدم البنوك المصطلح لهيكلة اتفاقيات القروض وحساب مدفوعات الفائدة وإدارة آجال استحقاق القروض‏

*/
```

Average_int_rate	grade	term
13	C	36 months
14	C	60 months
15	D	36 months
16	D	60 months
17	E	36 months
18	E	60 months
19	F	36 months
20	F	60 months
20	G	36 months
22	G	60 months

--GOOD LOAN

--1.Goad Loan Percentage

```sql
SELECT
(COUNT(CASE WHEN loan_status = 'Fully Paid' OR loan_status = 'Current' THEN id
END) * 100.0) /
COUNT(id) AS Good_Loan_Percentage
FROM bank_loan_data


/* CASE WHEN loan_status = 'Fully Paid' OR loan_status = 'Current' THEN id END:

This part of the expression creates a conditional statement. It checks if the
loan_status is either 'Fully Paid' or 'Current'.

If this condition is true for a particular loan, it returns the value of the id
column for that loan.

Otherwise, it returns NULL.


So, THEN id within the CASE statement is used to retrieve and count specific
values (ids) based on the condition specified,

contributing to the overall count of loans meeting the condition of being either
'Fully Paid' or 'Current'.

*/
```

Good_Loan_Percentage
86.175342181667

```sql
--2.Good Loan Application

select count(id) as goad_loan_application from bank_loan_data

where loan_status='Fully Paid' OR loan_status='Current'
```

goad_loan_application
33243

```sql
--3.Good Loan Funded Amount

select sum(loan_amount) as good_loan_funded_amount from bank_loan_data

where loan_status='Fully Paid' OR loan_status='Current'
```

good_loan_funded_amount
370224850

```sql
--4.Good Loan Total Received Amount

select sum(total_payment) as good_loan_total_received_amount from bank_loan_data

where loan_status='Fully Paid' OR loan_status='Current'
```

good_loan_total_received_amount
435786170

```sql
--Bad Loan:
--1.Bad Loan Percentage

select(count(case when loan_status='Charged off' Then id End)*100.0)/

count(id) as Bad_Loan_Percentage

from bank_loan_data
```

Bad_Loan_Percentage
13.824657818332

```
--2.Bad Loan Application
select count(id) as Bad_Loan_Application from bank_loan_data
where loan_status='Charged off'
```

Bad_Loan_Application
5333

```
--3.Bad Loan Funded Amount
select sum(loan_amount) as Bad_loan_funded_amount from bank_loan_data
where loan_status='Charged off'
```

Bad_loan_funded_amount
65532225

```
--4.Bad Loan Total Received Amount
select sum(total_payment) as Bad_loan_total_received_amount from bank_loan_data
where loan_status='Charged off'
```

Bad_loan_total_received_amount
37284763

```
--LOAN STATUS
/*  In order to gain a comprehensive overview of our lending operations and
monitor the performance of loans, we aim

to create a grid view report categorized by 'Loan Status.' By providing insights
into metrics such as 'Total Loan

Applications,' 'Total Funded Amount,' 'Total Amount Received,' 'Month-to-Date (MTD)
Funded Amount,' 'MTD

Amount Received,' 'Average Interest Rate,' and 'Average Debt-to-Income Ratio
(DTI),' this grid view will empower us

to make data-driven decisions and assess the health of our loan portfolio.    */
```

```
select loan_status,
            count(id) as Total_Loan_Applications,
            sum(loan_amount) as Total_Funded_Amount,
            sum(total_payment) as Total_Amount_Received,
            avg(int_rate*100) as Average_Int_Rate,
            avg(dti*100) as Average_DTI
from bank_loan_data
Group by loan_status
```

loan_status	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received	Average_Int_Rate	Average_DTI
Fully Paid	32145	351358350	411586256	11.6410707918092	13.1673507557434
Current	1098	18866500	24199914	15.0993260800947	14.7243442736843
Charged Off	5333	65532225	37284763	13.8785749318289	14.0047328005517

```
--MTD
select loan_status,
            sum(loan_amount) as MTD_Total_Funded_Amount,
            sum(total_payment) as MTD_Total_Amount_Received
from bank_loan_data
where month(issue_date)=11
Group by loan_status
```

loan_status	MTD_Total_Funded_Amount	MTD_Total_Amount_Received
Fully Paid	193488075	230501995
Current	18866500	24199914
Charged Off	40860150	23542428

--BANK LOAN REPORT | OVERVIEW

--1.Monthly Trends by Issue Date :(To identify seasonality and long-term trends in lending activities)

```sql
select
        month(issue_date) as month_name,
            DATENAME(MONTH,issue_date) as Month_Name,
            count(id) as Total_Loan_Applications,
            sum(loan_amount) as Total_Funded_Amount,
            sum(total_payment) as Total_Amount_Received
from bank_loan_data
group by Month(issue_date),DATENAME(MONTH,ISSUE_DATE)
order by   month(issue_date)
```

month_name	Month_Name	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
1	January	2	6500	7774
2	February	4	36550	23460
5	May	1	12000	3522
7	July	253	2232675	2227604
8	August	1561	14385275	14065428
9	September	4706	46295750	50344561
10	October	11197	119568600	128148384
11	November	20851	253214725	278244337
12	December	1	5000	5863

```sql
--Regional Analysis by State: To identify regions with significant lending
activity and assess regional disparities
select address_state,
        count(id) as Total_Loan_Applications,
            sum(loan_amount) as Total_Funded_Amount,
            sum(total_payment) as Total_Amount_Received
from bank_loan_data
group by address_state
order by address_state
```

address_state	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
AK	78	1031800	1108570
AL	432	4949225	5492272
AR	236	2529700	2777875
AZ	833	9206000	10041986
CA	6894	78484125	83901234
CO	770	8976000	9845810
CT	730	8435575	9357612
DC	214	2652350	2921854
DE	110	1138100	1269136
FL	2773	30046125	31601905

--Loan Term Analysis: To allow the client to understand the distribution of loans across various term length.

```sql
select term,
       count(id) as Total_Loan_Applications,
          sum(loan_amount) as Total_Funded_Amount,
          sum(total_payment) as Total_Amount_Received


from bank_loan_data
group by term
order by term
```

term	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
36 months	28237	273041225	294709458
60 months	10339	162715850	178361475

emp_length(مدة العمل للمقدم علي القرض)--

/*   الغرض: يوفر طول الموظف نظرة ثاقبة على الاستقرار الوظيفي للمقترض

.قد تشير فترات العمل الأطول إلى قدر أكبر من الأمن الوظيفي.

استخدام للبنوك: تأخذ البنوك في الاعتبار طول التوظيف عند تقييم قدرة المقترض على السداد

.   غالبا ما يترجم التوظيف المستقر إلى انخفاض مخاطر التخلف عن السداد   */


```sql
select emp_length,
      count(id) as Total_Loan_Applications,
        sum(loan_amount) as Total_Funded_Amount,
        sum(total_payment) as Total_Amount_Received


from bank_loan_data
group by emp_length
order by emp_length
```

emp_length	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
< 1 year	4575	44210625	47545011
1 year	3229	32883125	35498348
10+ years	8870	116115950	125871616
2 years	4382	44967975	49206961
3 years	4088	43937850	47551832
4 years	3428	37600375	40964850
5 years	3273	36973625	40397571
6 years	2228	25612650	27908658
7 years	1772	20811725	22584136
8 years	1476	17558950	19025777

```
/*      Purpose: Purpose specifies the reason for the loan (e.g., debt
consolidation, education). It

helps understand borrower intentions.

Use for Banks: Banks use this field to segment and customize loan offerings,
aligning loan

terms with borrower needs.   */


select purpose,
     count(id) as Total_Loan_Applications,
        sum(loan_amount) as Total_Funded_Amount,
        sum(total_payment) as Total_Amount_Received


from bank_loan_data
group by purpose
order by purpose
```

purpose	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
car	1497	10223575	11324914
credit card	4998	58885175	65214084
Debt consolidation	18214	232459675	253801871
educational	315	2161650	2248380
home improvement	2876	33350775	36380930
house	366	4824925	5185538
major purchase	2110	17251600	18676927
medical	667	5533225	5851372
moving	559	3748125	3999899
other	3824	31155750	33289676

--home Owenership(ملكية المنزل)

/*   الغرض: تشير ملكية المنزل إلى حالة سكن المقترض. يقدم رؤى حول
الاستقرار المالي.

الاستخدام للبنوك: تستخدم البنوك هذا المجال لتقييم توافر الضمانات واستقرار المقترض.

قد يكون لدى مالكي المنازل معدلات افتراضية أقل.

*/

```sql
select home_ownership,
       count(id) as Total_Loan_Applications,
          sum(loan_amount) as Total_Funded_Amount,
          sum(total_payment) as Total_Amount_Received


from bank_loan_data
where grade='A' and address_state='CA'
group by home_ownership
order by home_ownership
```

home_ownership	Total_Loan_Applications	Total_Funded_Amount	Total_Amount_Received
MORTGAGE	612	6276375	6490097
OTHER	2	14000	15340
OWN	93	802100	844556
RENT	894	7359175	7680797

```sql
--important note
/*  Differentiating Ownership Status:

By incorporating mortgage information into the "home ownership" column, you can
differentiate between properties based on their ownership status:


    Owned: Properties that are fully owned without any mortgage.

    Mortgaged: Properties that have a mortgage, indicating that there is an
outstanding loan secured against the property.
```
/*باختصار الاولي البيت ملكه مفيش اي قرض عليه اما التانية ان فيه قرض مستحق مقابل العقار

```sql
--How many unique states are represented in the dataset?
select count(distinct address_state) as Unique_States_Count
FROM bank_loan_data
```

Unique_States_Count
50

```sql
--What are the distinct application types in the dataset?
select count(distinct application_type) as Unique_Applications_Types
from bank_loan_data
```

Unique_Applications_Types
1

```sql
--What is the average annual income of the borrowers?
select avg(annual_income) as Averge_Annual_Income
from bank_loan_data
```

Averge_Annual_Income
69644.5403105689

```sql
--How many loans were issued in each state?
select count(id) as Total_Loans_Applications,address_state
from bank_loan_data
group by address_state
order by count(id) desc
```

Total_Loans_Applications	address_state
6894	CA
3701	NY
2773	FL
2664	TX
1822	NJ
1486	IL
1482	PA
1375	VA
1355	GA
1310	MA

```sql
--What is the total loan amount for each grade of loans?

select sum(loan_amount) as Total_Loan_Amount,grade

from bank_loan_data

Group by grade

order by grade
```

Total_Loan_Amount	grade
84252225	A
130703975	B
87456450	C
63920800	D
44165100	E
18910450	F
6348075	G

```sql
--What is the average installment amount for loans with a term of 36 months?

--Installment(دفعة السداد الشهرية)

--term(مدة القرض بالاشهر)

select avg(installment)as Average_Installment

from bank_loan_data

where term='36 months'
```

Average_Installment
314.252478126916

```sql
--What is the total amount paid for loans that are "Fully Paid"?

select sum(loan_amount) as total_amount_paid

from bank_loan_data

where loan_status='Fully Paid'
```

total_amount_paid
351358350

```sql
--What is the average interest rate for loans with a term of 60 months and a grade
of "A"?

select round(avg(int_rate),4)*100 as Avg_int_rate

from bank_loan_data

where term='60 months' and grade='A'
```

Avg_int_rate
7.49

```
------------------------------------------------------------------------------------
----
```

```sql
--Can you identify any trends in loan applications over time, such as monthly or
yearly or Quertly trends?


--Monthly Trend for total loan applications

SELECT YEAR(issue_date) AS Year, MONTH(issue_date) AS Month, COUNT(id) AS
Total_Loan_Applications

FROM bank_loan_data

GROUP BY YEAR(issue_date), MONTH(issue_date)

ORDER BY Year, Month;
```

Year	Month	Total_Loan_Applications
2021	1	2
2021	2	4
2021	5	1
2021	7	253
2021	8	1561
2021	9	4706
2021	10	11197
2021	11	20851
2021	12	1

Quarterly Trends (if applicable):

```sql
--QUERTLY TRENDS
SELECT YEAR(issue_date) AS Year,
        CASE
            WHEN MONTH(issue_date) BETWEEN 1 AND 3 THEN 'Q1'
            WHEN MONTH(issue_date) BETWEEN 4 AND 6 THEN 'Q2'
            WHEN MONTH(issue_date) BETWEEN 7 AND 9 THEN 'Q3'
            ELSE 'Q4'
        END AS Quarter,
        COUNT(id) AS Total_Loan_Applications
FROM bank_loan_data
GROUP BY YEAR(issue_date),
            CASE
                WHEN MONTH(issue_date) BETWEEN 1 AND 3 THEN 'Q1'
                WHEN MONTH(issue_date) BETWEEN 4 AND 6 THEN 'Q2'
                WHEN MONTH(issue_date) BETWEEN 7 AND 9 THEN 'Q3'
                ELSE 'Q4'
            END
ORDER BY Year, Quarter;
--This query categorizes loan applications into quarters (Q1, Q2, Q3, Q4) based on
the issue date, providing a quarterly trend analysis.
```

Year	Quarter	Total_Loan_Applications
2021	Q1	6
2021	Q2	1
2021	Q3	6520
2021	Q4	32049

Here's a breakdown of what each column might represent:

id: Unique identifier for each loan application

address_state: State where the applicant resides

application_type: Type of application (individual, joint, etc.)

emp_length: Employment length of the applicant

emp_title: Employment title or position of the applicant

grade: Loan grade assigned based on risk assessment

home_ownership: Type of home ownership (rent, own, mortgage, etc.)

issue_date: Date when the loan was issued

last_credit_pull_date: Date of the last credit pull for the applicant

last_payment_date: Date of the last payment made

loan_status: Status of the loan (charged off, fully paid, etc.)

next_payment_date: Date of the next scheduled payment

member_id: Member identifier

purpose: Purpose of the loan (car, home improvement, etc.)

sub_grade: Sub-grade assigned to the loan

term: Loan term (in months)

verification_status: Verification status of applicant's data

annual_income: Applicant's annual income

dti: Debt-to-income ratio

installment: Monthly installment payment

int_rate: Interest rate

loan_amount: Loan amount requested

total_acc: Total number of credit accounts

total_payment: Total payment made

Here's the breakdown of what each status represents in the context of loan performance:

Fully Paid: Loans that have been completely paid off by the borrower.

Current: Loans that are currently active and have not yet reached their maturity date, and the borrower is making regular payments as per the loan agreement.

Charged Off: Loans that the lender does not expect to be repaid and are written off as a loss. This usually happens after a significant period of non-payment or default by the borrower.