```sql
--Create a new database
create database [Bank Loan DB];

--Switch to the new database
use [Bank Loan DB];

--Retrieve Records
select * from bank_loan_data;

--Data Cleaning
/*dropping unnecessary columns*/
alter table bank_loan_data
drop column verification_status, emp_title;

/*Delete duplicate rows*/
delete from bank_loan_data
where id NOT IN (select MIN(id) from bank_loan_data
group by address_state, application_type, emp_length, grade, home_ownership,
  issue_date,
last_credit_pull_date, last_payment_date, loan_status, next_payment_date,
  member_id, purpose, sub_grade,
term, annual_income, dti, installment, int_rate, loan_amount,
  total_acc,total_payment
);

/*checking for null values in columns*/
select * from bank_loan_data
where id IS NULL
   OR address_state IS NULL
   OR emp_length IS NULL
   OR grade IS NULL
   OR home_ownership IS NULL
   OR issue_date IS NULL
   OR last_credit_pull_date IS NULL
   OR last_payment_date IS NULL
   OR loan_status IS NULL
   OR next_payment_date IS NULL
   OR member_id IS NULL
   OR purpose IS NULL
   OR sub_grade IS NULL
   OR term IS NULL
   OR annual_income IS NULL
   OR dti IS NULL
   OR installment IS NULL
   OR int_rate IS NULL
   OR loan_amount IS NULL
   OR total_acc IS NULL
   OR total_payment IS NULL;

```

```sql
--Writing queries for Problem Statement questions
--i)KPI Requirements
--1) Total Loan Applications:
select COUNT(id) AS [Total Loan Applications] from bank_loan_data;

--MTD (Month-to-Date) Total Loan Applications:
select COUNT(id) AS [MTD Total Loan Applications] from bank_loan_data
where MONTH(issue_date)=12 AND YEAR(issue_date)=2021;

--PMTD (Previous Month-to-Date) Total Loan Applications:
select COUNT(id) AS [PMTD Total Loan Applications] from bank_loan_data
where MONTH(issue_date)=11 AND YEAR(issue_date)=2021;

--2) Total Funded Amount:
select SUM(loan_amount) AS [Total Funded Amount] from bank_loan_data;

--MTD (Month-to-Date) Total Funded Amount:
select SUM(loan_amount) AS [MTD Total Funded Amount] from bank_loan_data
where MONTH(issue_date)=12 AND YEAR(issue_date)=2021;

--PMTD (Previous Month-to-Date) Total Funded Amount:
select SUM(loan_amount) AS [PMTD Total Funded Amount] from bank_loan_data
where MONTH(issue_date)=11 AND YEAR(issue_date)=2021;

--3) Total Amount Received:
select SUM(total_payment) AS [Total Amount Received] from bank_loan_data;

--MTD (Month-to-Date) Total Amount Received:
select SUM(total_payment) AS [MTD Total Amount Received] from bank_loan_data
where MONTH(issue_date)=12 AND YEAR(issue_date)=2021;

--PMTD (Previous Month-to-Date)  Total Amount Received:
select SUM(total_payment) AS [PMTD Total Amount Received] from bank_loan_data
where MONTH(issue_date)=11 AND YEAR(issue_date)=2021;

--4) Average Interest Rate:
select ROUND(AVG(int_rate),4)*100 AS [Average Interest Rate] from
  bank_loan_data;

--MTD (Month-to-Date) Average Interest Rate:
select ROUND(AVG(int_rate),4)*100 AS [MTD Average Interest Rate] from
  bank_loan_data
where MONTH(issue_date)=12 AND YEAR(issue_date)=2021;

--PMTD (Previous Month-to-Date) Average Interest Rate:
select ROUND(AVG(int_rate),4)*100 AS [PMTD Average Interest Rate] from
  bank_loan_data
where MONTH(issue_date)=11 AND YEAR(issue_date)=2021;

```

```sql
--5) Average Debt-to-Income Ratio (DTI):
select ROUND(AVG(dti),4)*100 AS [Average Debt-to-Income Ratio] from
  bank_loan_data;

--MTD (Month-to-Date) Average Debt-to-Income Ratio (DTI):
select ROUND(AVG(dti),4)*100 AS [MTD Average Debt-to-Income Ratio] from
  bank_loan_data
where MONTH(issue_date)=12 AND YEAR(issue_date)=2021;

--PMTD (Previous Month-to-Date) Average Debt-to-Income Ratio (DTI):
select ROUND(AVG(dti),4)*100 AS [PMTD Average Debt-to-Income Ratio] from
  bank_loan_data
where MONTH(issue_date)=11 AND YEAR(issue_date)=2021;

--ii) Good Loan KPI:
--1.Good Loan Application Percentage:
select (COUNT(
CASE
    WHEN loan_status='Fully Paid'
    OR loan_status='Current' THEN id
    END
    )*100)/COUNT(id) AS [Good Loan Percentage] from bank_loan_data;

--2.Good Loan Applications:
select COUNT(id) AS [Good Loan Applications] from bank_loan_data
where loan_status IN ('Fully Paid','Current');

--3.Good Loan Funded Amount:
select SUM(loan_amount) AS [Good Loan Funded Amount] from bank_loan_data
where loan_status IN ('Fully Paid','Current');

--4.Good Loan Amount Received
select SUM(total_payment) AS [Good Loan Amount Received] from bank_loan_data
where loan_status IN ('Fully Paid','Current');

--iii) Bad Loan KPI:
--1.Bad Loan Application Percentage:
select (COUNT(
CASE
    WHEN loan_status='Charged Off' THEN id
    END) *100)/COUNT(id) AS [Bad Loan Percentage] from bank_loan_data;

--2.Bad Loan Applications:
select COUNT(id) AS [Bad Loan Applications] from bank_loan_data
where loan_status='Charged Off';

--3.Bad Loan Funded Amount:
select SUM(loan_amount) AS [Bad Loan Funded Amount] from bank_loan_data
where loan_status='Charged Off';
```

```sql

--4.Bad Loan Total Received Amount:
select SUM(total_payment) AS [Bad Loan Amount Received] from bank_loan_data
where loan_status='Charged Off';

--Loan Status
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 Interest Rate],
AVG(dti*100) AS [Average Debt-to-Income Ratio (DTI)] from bank_loan_data
group by loan_status;

--1. Monthly Trends by Issue Date:
select MONTH(issue_date) AS [Month Number],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 Number];

--2.Regional Analysis by State:
select address_state AS 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 State;

--3.Loan Term Analysis
select term AS [Loan 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 [Loan Term];

--4.Employee Length Analysis:
select emp_length AS [Employee 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 [Employee Length];

--5.Loan Purpose Breakdown:
select purpose AS [Loan 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 [Loan Purpose];

```

```
187 --6. Home Ownership Analysis
188 select home_ownership AS [Home Ownership],COUNT(id) AS [Total Loan
      Applications],
189 SUM(loan_amount) AS [Total Funded Amount],
190 SUM(total_payment) AS [Total Amount Received] from bank_loan_data
191 group by home_ownership
192 order by [Home Ownership];
193
194 --Details Dashboard
195 select id AS ID, purpose AS Purpose, home_ownership AS [Home Ownership],
196 grade AS Grade, sub_grade AS [Sub Grade], issue_date AS [Issue Date],
197 CONCAT('$',loan_amount) AS [Total Funded Amount], CONCAT(ROUND
      (int_rate*100,2),'%') AS [Interest Rate],
198 ROUND(installment,2) AS Installment, CONCAT('$',total_payment) AS [Amount
      Received] from bank_loan_data;
```