

Power BI Dashboard for Analysis of Success and Failures of APIs and Average Time Taken by API to process

Project report submitted in fulfillment of the requirement for the degree of Bachelor of Technology

in

Computer Science and Engineering/Information Technology

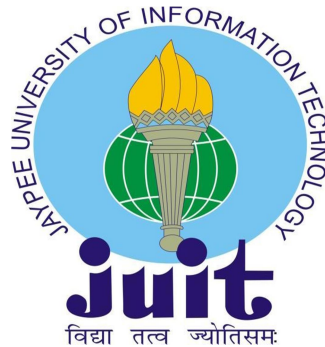
By

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Under the supervision of

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to



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Certificate

Candidate's Declaration

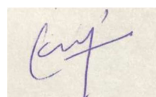
I hereby declare that the work presented in this report entitled “ **Power BI Dashboard for Analysis of Success and Failures of APIs and Average Time Taken by API to process**” in fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering** submitted in the department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from February 2023 to May 2023 under the supervision of **Dr. Yugal Kumar** (Associate Professor, Department of CSE, Jaypee University of Information Technology, Waknaghat).

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

Mohit Gautam

191385

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



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Acknowledgement

All compliments and praise are due to God who empowered me with strength and sense of devotion to successfully accomplish this project work successfully.

I am really grateful and wish my profound indebtedness to Supervisor **Dr. Yugal Kumar, Associate Professor**, Department of CSE Jaypee University of Information Technology, Wakhnaghat. Deep Knowledge & keen interest of my supervisor in the field of “**Machine Learning**” to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stages have made it possible to complete this project.

I would like to express my heartiest gratitude to **Dr. Yugal Kumar**, Department of CSE, for his kind help to finish my project.

I would also generously welcome each one of those individuals who have helped me straightforwardly or in a roundabout way in making this project a win. In this unique situation, I might want to thank the various staff individuals, both educating and non-instructing, which have developed their convenient help and facilitated my undertaking.

Finally, I must acknowledge with due respect the constant support and patients of my parents.

Mohit Gautam

191385

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Abstract

This abstract examines the successes and failures encountered when utilizing Application Programming Interfaces (APIs) in the context of Power BI, Excel, and data analysis for a project. APIs have revolutionized the way data is accessed, processed, and visualized, offering powerful capabilities for project teams to extract insights and make informed decisions. This abstract explores both the positive outcomes and challenges faced when integrating APIs with Power BI, Excel, and data analysis in the project context.

Successes:

Improved Data Integration: APIs enable seamless integration of external data sources into Power BI and Excel, facilitating the consolidation of diverse datasets for the project. This integration empowers project teams to perform comprehensive analyses by accessing real-time and up-to-date information from various systems, enabling more accurate and holistic insights.

Automated Data Updates: APIs allow for automated data retrieval and updates, ensuring that project data remains current without manual intervention. This feature saves time and ensures that project reports and analyses are consistently up-to-date, enabling more efficient decision-making and progress tracking.

Some APIs may have limited support or documentation, making it difficult to find comprehensive resources and troubleshoot issues. This limitation can hinder the integration process and limit the full potential of utilizing APIs in Power BI, Excel, and data analysis for the project.

Chapter 01

INTRODUCTION

1.1 About the Company

I was given the chance to work for Shivalik Small Finance Bank. Shivalik has always placed a strong emphasis on technology, with customer centricity as a fundamental tenet. The Infosys Finacle Core Banking and Digital Banking Suite, which includes online and mobile banking, power the Bank. The Bank has unequalled agility thanks to the cloud-based architecture, which enables cost-effective scale management and growth. Shivalik is a direct member of the National Financial Switch and is accessible on all retail payment platforms.

The first and only multi-state cooperative bank in Uttar Pradesh, Shivalik Bank was founded on September 5, 1998, as a district cooperative bank in the Saharanpur district of the state. Its full name is Shivalik Mercantile Cooperative Bank Ltd. originating from a bank branch. Saharanpur, Muzaffarnagar, Meerut, Hapur, Lucknow, Ghaziabad, and Gautam Buddha Nagar districts in Uttar Pradesh, and Indore, Dhar, Ujjain, Khargone, and Dewas districts in Madhya Pradesh, all have Shivalik Bank branches operating as of the time of writing these lines. Apart from the states of Delhi, Dehradun, and Uttarakhand, the Reserve Bank of India has declared that the bank is operating satisfactorily.

Small Finance Banks (SFBs) are banks with constrained financial resources that fall under Reserve Bank of India regulation. SFBs aim to offer lending services to the unorganised sector, which includes households, microbusinesses, and small manufacturing facilities.



Figure 1: Shivalik Bank

Vision

To be a reputable financial services provider and a role model for employers by concentrating on underserved and tiny market segments and providing them with digitally oriented, reasonably priced goods and unique customer experiences.

Values

Since its foundation, Shivalik has placed a high priority on technology, with customer centricity as a fundamental tenet. The Digital Banking Suite from Infosys, which includes online and mobile banking, powers the Bank.

Purpose

- Impact lender with a conscience
- using a digital first strategy for all available products and services
- Increasing financial literacy and financial inclusion
- Financial process and product innovator
- Become a full-service provider of solutions for our clients.
- Compliant with environmental, social, and governance (ESG)
- Add value for all parties involved, including society, employees, customers, organisations, and shareholders

Indian specialty banks include SFBs. Small finance bank (SFB) licenced banks can offer the fundamental banking services of accepting deposits and lending. These are intended to help the unorganised sector, small businesses, marginal farmers, and other economic sectors that aren't currently covered by other banks, gain access to financial services.

In order to achieve its goals, the small finance bank will primarily carry out standard banking activities, such as accepting deposits from and lending to underserved and unserved groups, such as unorganised sector entities, small business units, small and marginal farmers, and micro- and small industries. It may also engage in other straightforward Banking and finance operations that don't include risk sharing include the sale of mutual fund units, insurance, pension, and other products after receiving previous RBI clearance and adhering to sectoral regulator regulations.

1.2 Types of Banks in India

Central Bank

The Reserve Bank of India is the name of the central bank of our country. Every country has a central bank that regulates all other banks operating there. The central bank's main responsibilities include acting as the country's bank and overseeing and controlling all other banking institutions. The following are the responsibilities of a country's central bank:

The person in charge of managing the financial system creates money and implements monetary policy.

To put it another way, the central bank of the country may also be referred to as the banker's bank since it supports the other banks in the country and regulates the financial system under the control of the government.

Cooperative banks

These banks are set up in accordance with a state law. The agricultural industry and other related businesses receive short-term loans from them.

Cooperative banks' primary objective is to advance social welfare by offering subsidised loans.

They are set up in a three-tiered structure.

State cooperative banks that are part of Tier 1 (at the state level) are supported by the government, the RBI, and NABARD. Then, funds are allocated to the general public. Concessional CRR and SLR are applicable to these banks.

SLR: 25%; CRR: 3%

owned by the state government, and members pick the company's senior management

District Level, Tier 2 - District .

Business banks

The Banking Corporations Act of 1956 was enacted

They operate on a commercial basis, with their main objective being financial gain.

They have a standardised structure and are owned by the federal, state, or any private authority.

They frequently have jobs in both urban and rural settings.

These banks do not offer reduced interest rates unless specifically instructed by the RBI to do so.

Public deposits are these banks' primary means of funding.

Three more categories can be used to further categorise the commercial banks:

Public sector banks - A bank that is primarily owned by the government or the nation's central bank.

Private sector banks are those that are majority owned by a private company, person, or group of persons.

Small Finance Banks

This type of bank, as its name suggests, provides loans and other types of financial assistance to small-scale agricultural producers, unorganised enterprises, and other socioeconomic groups. These banks are under the control of the country's central bank.

Payment Banks

Communications banks, a recently established branch of banking, were conceptualised by the Reserve Bank of India. Account holders with the bank that processes payments are only allowed to make payments up to Rs. 1,000,000 and cannot use their accounts to apply for credit cards or loans.

Payments banks offer options for internet banking, mobile banking, the issuance of ATM and debit card. A list of the few payment banks in our nation is provided below:

1.3 Types of Accounts

Saving Account

The creation of the savings accounts, as the name indicates, may be done either individually or jointly by two people.

The fact that the bank would reward you for opening a savings account with interest is its main benefit.

The following list includes a few of the savings account's features:

The total number of deposits into this account by the account holder is not limited; however, the number of withdrawals from this account is.

Account holders receive an annual interest rate that ranges from 4% to 6%.

There is no required minimum balance for this type of account.

Current Account

The second type of bank account is a current account. These accounts are not used as places to save money.

Following are some crucial guidelines about the current bank account:

- The majority of businessmen that open this form of bank account do so. Associations, organisations, businesses, religious institutions, and other enterprises can create a current account.
 - There is no restriction on how frequently money may be deposited into or taken out of these accounts.
 - There is access to online banking.
 - The maturity date for this specific type of bank account is not fixed.
 - Current bank accounts are not subject to interest payments and are thus eligible for an overdraft capacity.

Recurring Deposit Accounts

Recurring Deposit Accounts, or RD Accounts for short, are a specific kind of account where the owner is required to make recurring deposits of a set amount until the account reaches its predetermined maturity date.

The benefits of the recurring deposit account are discussed below:

A recurring deposit account may be opened by any individual or organisation, either alone or in partnership with another.

Payments that must be made on a regular basis or monthly may begin as little as Rs. 50 or may vary from bank to bank.

A RD account can be opened for a duration of six to one hundred and twenty months.

The interest rate varies depending on the bank you choose to open an account with.

A nomination mechanism is also available for RC accounts.

Fixed Deposit Account

You make a substantial payment with your financial institution into a fixed deposit that is held there for a predetermined amount of time at an established rate of interest. At the conclusion of the period, you get your original investment back plus compound interest. FDs are sometimes referred to as term deposits.

DEMAT Account

The DEMAT account is made up of shares and securities that may be stored electronically. Dematerialized Account is another name for the DEMAT account.

The following are the details that a candidate has to be aware of in relation to the DEMAT Account:

There are just two depository organisations in India that regulate this type of bank account. This includes Central Depository Services Limited and National Securities Depository Limited.

This facilitates the trading of bonds and shares.

Facilitates stress-free share transactions.

KYC is required to open a DEMAT account, which decreases transaction costs.

Trades may be executed anywhere.

Securities transfers may be done with less paper labour.

NRI Account

Account for RI

To meet the banking needs of a Non-Resident Indian or a Person of India Origin, the option of an NRI account is offered.

Three categories have been added to the NRI Accounts:

You would be able to transfer your international profits to India with ease if you have an NRO (Non-Resident Ordinary Rupees) Account. It can be opened as a savings, FD, RD, current, or current account. Both individuals and groups may open these accounts. When an Indian person relocates to work abroad, their account must be converted into an NRE (Non-Resident External Rupees) account. This account may be created jointly with a resident of India.

1.4 ATM Workflow

Customers of a banking company can use a machine known as an automated teller machine (ATM) to carry out financial activities such as cash withdrawals, deposits, money transfers, account inquiries, or account information queries whenever they want and without having to deal with bank staff members directly.

ATMs go by a variety of names, including automated teller machine (ATM) here in the US. (Occasionally stated as "ATM machine"). Nevertheless, automated banking

machine (ABM) is also utilised in Canada[4][5] and is preferred by many Canadian organisations over ABM, ATM usage is also quite prevalent in that country.[6][7][8] The phrases "cashpoint," "cash machine," and "hole in the wall" are most frequently used in British English.[9] The phrases any time money, cashline, time machine, and cash dispenser are also used.

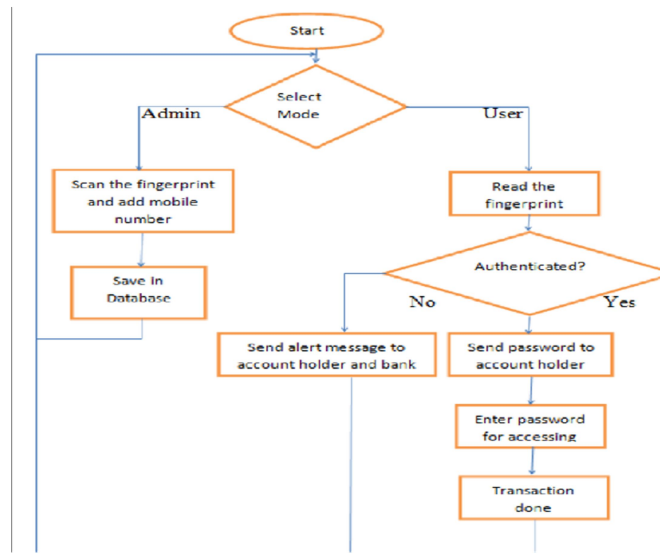


Figure 2: ATM workflow

ISO 8583

For credit and debit cards, ISO 8583 is a frequently used interchange message. It is an ISO standard for systems that send electronic transactions that cardholders start by using their payment cards.

To make it easier for these transaction requests and answers to be transmitted between various systems, ISO 8583 provides a message format and a communication flow. The great majority of transactions completed when a consumer uses a card to make a purchase in a store (EFTPOS), as well as those completed at ATMs, utilise ISO 8583 at some point in the connection chain. The ISO 8583 standard serves as the foundation for various organisations and networks, including the Mastercard, Visa, and Verve networks.

The components of an ISO 8583 message are as follows:

Message type indication, or MTI

showing the data as one or more bitmaps. Bitmaps come in two varieties: primary and secondary. The first bit of the primary bitmap indicates whether the secondary bitmap is present or not.

Data components, or the message's actual information fields

varied versions of the standard have varied field placements; for instance, the currency elements from the 1987 and 1993 editions are no longer utilised in the 2003 version of the standard, which retains money as a sub-element of any financial amount element.

Chapter 02

LITERATURE REVIEW

2.1 Data Analysis

Data analysis is the process of evaluating, cleansing, converting, and modelling data to locate pertinent information, allow conclusions, and aid decision-making. Data analysis has a wide range of applications in the domains of business, research, and social science. It employs a variety of methods and goes by several names. In the contemporary business world, data analysis aids in more scientific decision-making and more effective company operations.

Data requirements

The data is required as an input to the analysis, which is chosen based on the needs of individuals guiding the analysis (or clients, who will utilise the study's final result). An experimental unit (such as a person or group of individuals) is the basic category of entity for whom data will be gathered. Particular details of a population, such age and income, can be determined and gathered. Data can be quantitative (i.e., numbers with textual labels) or categorical.

Data Collection

Data custodians, such as employees of an organization's information technology department, may get the demands from analysts. Sensors in the surroundings, such as satellites, traffic cameras, recording devices, etc., may also collect the data. It might also be acquired through conversations with other people, obtaining data from the internet, or reading written materials.

Data Processing

Data must first be structured or processed before analysis can take place.[For instance, this may involve setting up data in a table with both columns and rows for our lmat (also known to be organised data) for further analysis, typically using a spreadsheet or statistical software.

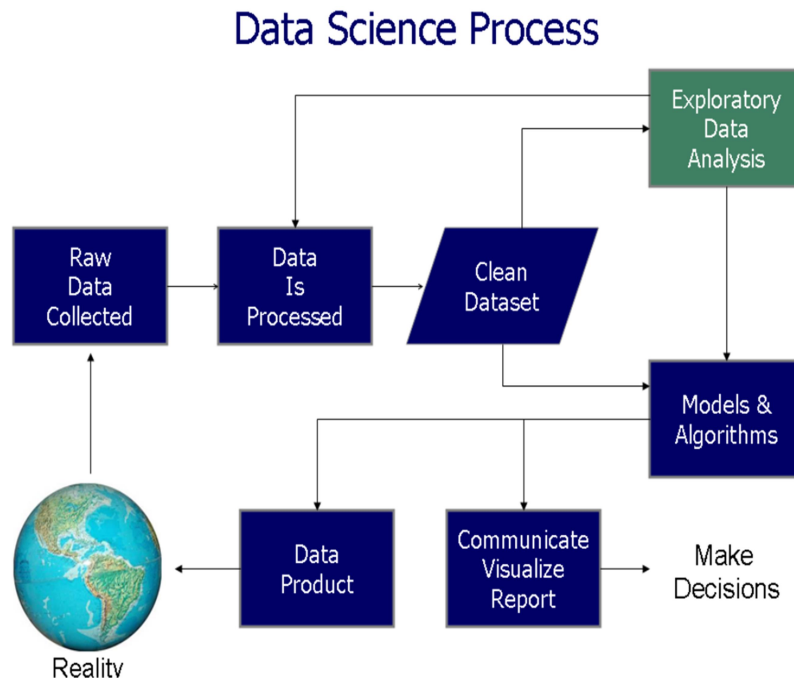


Figure 3: Data Science Process

Following organisation and processing, the data can still be inaccurate, duplicated, or lacking. The need for data cleaning will result from issues with the entry and storage of the data. Data cleaning is the process of preventing and resolving these issues. The common operations include record matching, data inaccuracy detection, data quality evaluation, deduplication, and column segmentation. A variety of analytical techniques may be used to discover these

data concerns. For instance, using financial data, the sums for certain variables may be compared against believed to be reliable numbers that have been independently published. It is also possible to look at unusual amounts that fall inside or outside of predetermined parameters.

Exploratory Data Analysis

Analysis can start when the information sets have been cleaned. Analysts can employ a variety of techniques as part of exploratory data analysis to begin identifying the signals present in the gathered data. The probability that the process of data exploration will result in what is indicated in the first sentence of this section triggers the start of the iterative stages.

extra requests for data or more data cleansing. Descriptive numbers, such the average or median, can be generated to aid in the interpretation of the data. To better grasp the messages included in the data, the analyst can examine the data graphically using the visualisation of information method.

2.2 UNIX

Initially, Unix was not intended to be a platform for non-programmers, but rather a helpful tool for developers creating applications to run on it and on other systems. As users added their own tools to the operating system and shared them with peers, the operating system grew and began to spread throughout academic organisations.

At originally, multiplexing and portability were not considered when creating Unix. Later, in a time-sharing setting, Unix evolved features for portability, multitasking, and many users. Utilising several software tools and the ability

to link small programmes using pipes on the command line rather than employing a single enormous programme with all of its features are two concepts that make up Unix.

These ideas include treating devices and some kinds of interactions between processes (IPC) as files, treating devices and IPC as files, using plain text for data storage, and a hierarchical file system. These concepts are often referred to as the "Unix philosophy". This is referred to as "the idea that the power of a system comes more from the user" in Brian Kernighan and Rob Pike's book The Unix Programming Environment.

Bell Labs, General Electric, and the Massachusetts Institute of Technology collaborated to develop Multics, a time-sharing operating system for the GE-645 mainframe computer, in the middle of the 1960s. Multics provided many innovations but also had considerable drawbacks.

```

Hid: 25834 16/03/2023 09:47:35.606 Received 207 Bytes
30 32 30 33 31 32 30 30 f0 30 81 01 08 00 80 00 02031200.0.....
00 00 00 00 04 00 00 2a 31 36 39 39 39 39 39 39 .....*16999999
30 30 30 30 30 30 30 30 30 30 33 37 30 30 30 30 0000000000370000
30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 0000000000000000
32 33 34 32 31 35 32 31 33 31 39 38 32 30 32 33 2342152131982023
30 33 31 36 31 35 30 35 32 38 32 30 32 33 30 33 0316150528202303
31 36 32 30 30 30 36 36 30 37 31 31 39 32 33 34 1620006607119234
32 31 35 32 31 33 31 39 36 49 4e 52 33 38 20 20 215213196INR38
53 48 49 20 20 20 20 20 20 31 30 32 37 20 20 20 SHI 1027
20 20 31 30 32 37 31 30 35 31 30 38 39 32 20 20 102710510892
20 20 20 30 30 33 55 50 49 30 32 31 20 20 4d 003UPI021 M
4f 42 46 45 54 43 48 7c 37 35 33 32 38 31 35 31 OBFETCH|75328151
31 33 30 31 30 37 35 33 32 38 31 35 31 31 33 130107532815113
Pid: 25834 Received At: 16/03/2023 09:47:35.609
MessageId: 1200
Field 002: 9999990000000000
Field 003: 370000
Field 004: 0000000000000000
Field 011: 234215213198
Field 012: 20230316150528
Field 017: 20230316
Field 024: 200
Field 032: 607119
Field 037: 234215213196
Field 049: INR
Field 102: SHI 1027 102710510892
Field 123: UPI
Field 125: MOBFETCH|7532815113
Field 127: 7532815113
Thu Mar 16 09:47:35 2023, PID[25834], [1678940255.660]
Limo Current Version = [A1]: Process Id = [00025834]: Executing App Id = [SWIF_EXEC]:
38
[tmp_swfso001.cxx,2187]
(fnProcessScriptForISOMsg) Cannot interpret script output[tmp_swfso001.cxx,838]
(fnSWIFProcMsg) fnProcessScriptForISOMsg : Processing Request Using Script

Thu Mar 16 09:47:35 2023, PID[25834], [1678940255.707]
Limo Current Version = [A1]: Process Id = [00025834]: Executing App Id = [SWIF_EXEC]:
583 Message_Id

File=tmp_repmanag Ver=1.14 Rtn=IWGetRepFieldStrWithLen Line=2569
]
CDCI[tmp_swfso001.cxx,4684]
(fnConvertCmnToVndrSwifMsg) Cannot interpret script output[tmp_swfso001.cxx,978]
(fnSWIFProcMsg) fnConvertCmnToVndrSwifMsg : Error while Converting Cmn to Vndr msg

Thu Mar 16 09:47:35 2023, PID[25834], [1678940255.707]
File:tmp_LisrvrMain.cpp Func:main Line:1251
ErrCode:-7 Message:Proc Msg to Function returned Error Params:

```

Figure 4: UPI Transaction

2.3 SQL

Structured Query Language is known as SQL. You may use SQL to access and modify databases. In 1986, the American National Standards Institute (ANSI) and the International Organisation for Standardisation (ISO) both recognised SQL as a standard.

- SQL has the ability to do database queries.
- SQL might get data from a database.
- SQL may be used to add records to databases.
- With SQL, records in a database may be updated.
- SQL may be used to delete records from a database.
- Using SQL, create new databases.
- SQL may create new tables in a database.
- SQL may generate stored procedures in a database.
- SQL may be used to generate views for databases.
- Permission settings for tables, procedures, and views may all be made using SQL.

2.4 DBMS

The term "database management system," or "DBMS," refers to a system for storing digital information. Users on the system are given the choice of a number of actions that may be performed on the system, either to handle the database structure itself or for modifying the data in the database. Database management systems (DBMS) are categorised using data structures or kinds.

When the primary static component of the data required by an application is the data structure rather than the data values, organisational structure is often utilised in mainframe sites. For instance, a Bill of Material (BOM) database's

structure consists of a top-level assembly part number, as well as several tiers of components and subcomponents. The structure frequently contains information on projections for prices, costs, and components, among other things. Data items (not values) are rarely discovered, therefore the data architecture of a BOM application rarely changes. A common structure for an application is to start at the top with the part number for the assembly and work down to the level of the particular components.

Both conventional and hierarchy database systems have benefits. RDBMS have an additional, essential advantage over hierarchical DBs since they are non-navigational. Navigational systems implies that the application programmer must be conversant with how data is organised in a hierarchical database. The software must have a certain feature to be able to go from the root segment to the necessary child segments carrying the necessary traits or things.

logic. Even when they are not needed, the interven segments must nevertheless be accesse by the programmer.

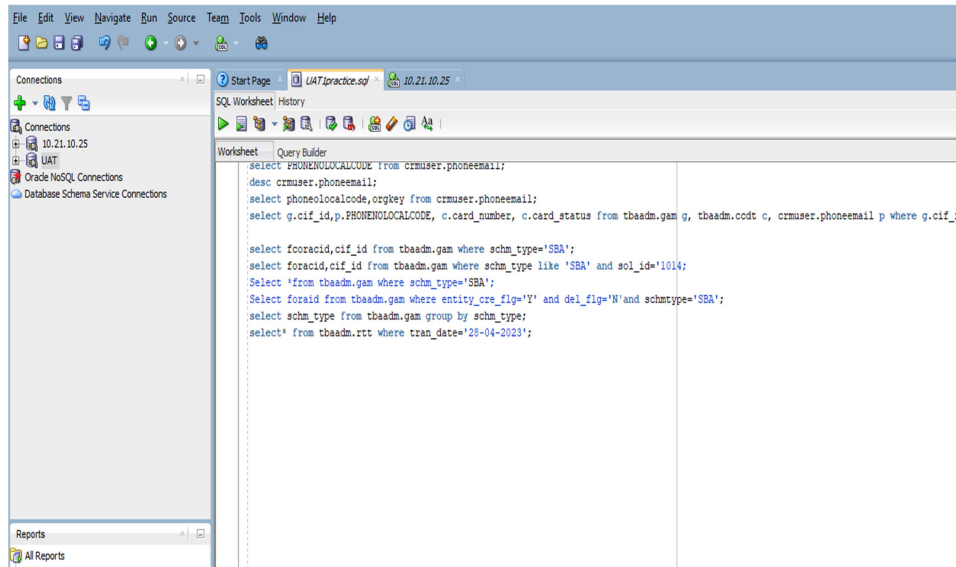


Figure 5: SQL Developer Environment

Database

A database is a logical grouping of data. It has a number of related table spaces and index spaces. A database often houses all the data associated with a single application or a group of related apps. You may have a payroll database or an inventory database, for instance. The DBMS Architecture explains the layout of the database and how users access it. The performance of the Database is impacted by this since it helps with the creation, implementation, and maintenance of the Database Management System. Architects arrange and construct the connections between the numerous components that make up the total structure while creating a building.

Table

A table is a logical structure made up of rows and columns. Since rows don't have a predetermined order, sorting the data could be required to obtain it. The columns are arranged in the order that the database administrator set when the table was made.

- Data definitions are used to add, amend, and remove definitions as well as to indicate how data is arranged in a database.
- The genuine data is added, modified, and removed from the database during data updating.
- Data Retrieval: This process is used to get data out of a database that programmes may utilise for a variety of things.
- User administration is used for user registration, user monitoring, data integrity, data security, concurrency control, performance monitoring, and information recovery from unexpected failure-corrupted data.

2.5 Postman

Developers can design, construct, test, and iterate on their APIs using the Postman API Platform. Postman claims that as of February 2023, it had more than 25 million registered users and 75,000 open APIs, making it the largest public API hub in the world. The firm was created in Bangalore and has its headquarters there as well as an office there.

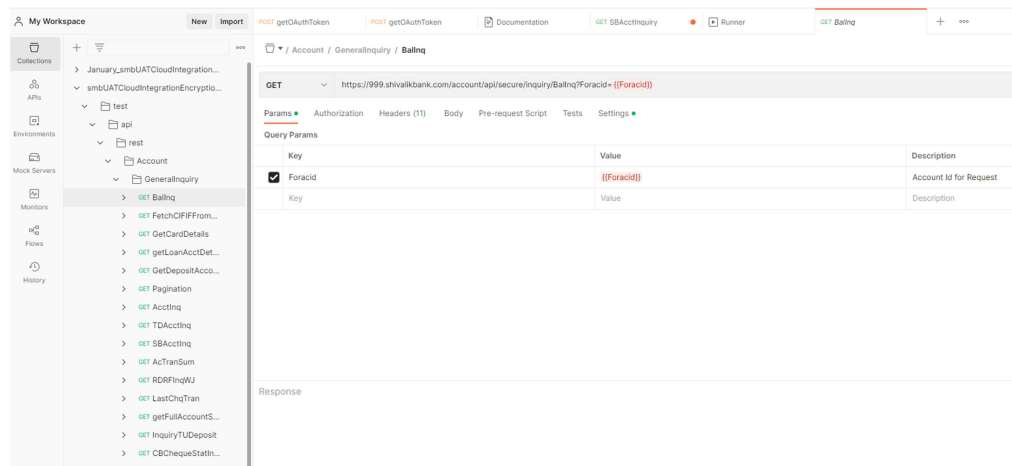


Figure 6: Postman Environment

The conventional way to characterise client and server architecture is in terms of APIs. Passengers and servers, respectively, are systems that send requests and answers. The smartphone app is the client in the weather example, while the bureau's weather database is the server.

According to when and for what reason they were built, APIs can operate in one of four different ways.

Collection of APIs we used:

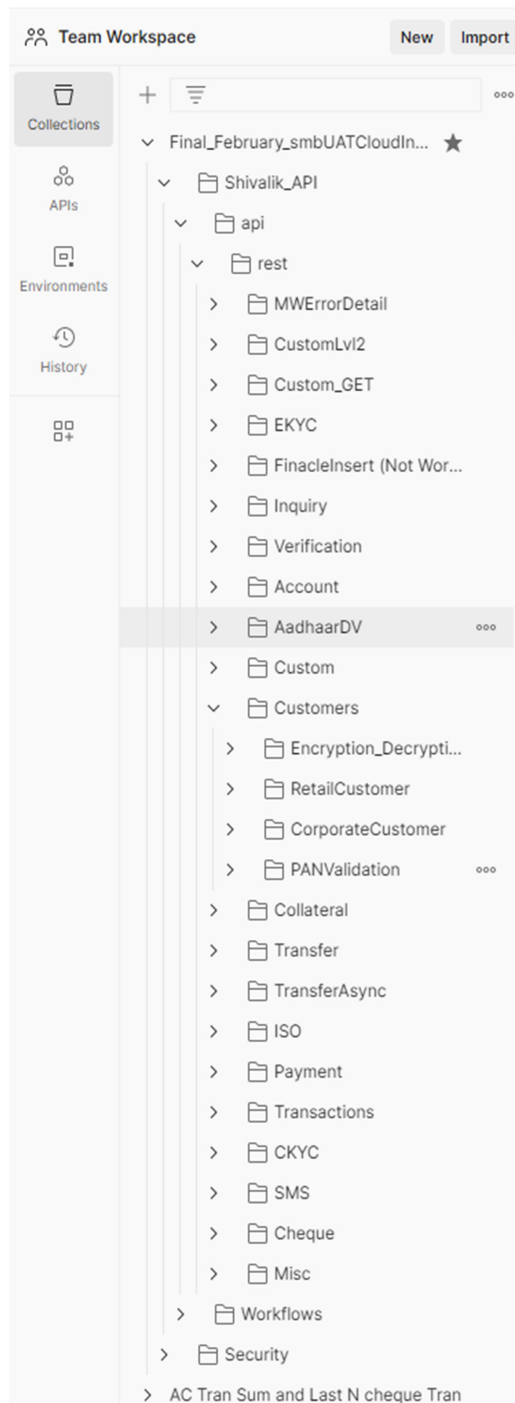


Figure 7: API Collection

Custom API Script:

```
--START
trace ON

#####
# Printing BANCS repository
#####
lv_p = urhk_B2k_PrintRepos("BANCS")
print(lv_p)

#####
#                               #
#       Repository and class creation       #
#####
IF (REPEXISTS("CUST") == 0) THEN
#{
    CREATEREPO("CUST")
#}
ENDIF

IF (CLASSEXISTS("CUST","DATA") == 0) THEN
#{
    CREATECLASS("CUST","DATA",5)
#}
ENDIF

#####
#Input Variables
#####

IF (FIELDEXISTS(BANCS.INPUT.CIFID) == 1 ) THEN
#{
    CUST.DATA.CIFID = BANCS.INPUT.CIFID
    PRINT(CUST.DATA.CIFID)
#}
ELSE
#{
    CUST.DATA.CIFID = ""
#}
ENDIF
IF (FIELDEXISTS(BANCS.INPUT.Code) == 1 ) THEN
#{
    CUST.DATA.Code = BANCS.INPUT.Code
    PRINT(CUST.DATA.Code)
#}
ELSE
#{
    CUST.DATA.Code = ""
#}
ENDIF

#####
#cif validation
#####

lv_a = " suspendedFlg|"
lv_a = lv_a + " SELECT SUSPENDED FROM CRMUSER.ACCOUNTS WHERE ORGKEY = ?SVAR AND BANK_ID = '01'"
BANCS.INPARAM.BINDVARS = CUST.DATA.CIFID
lv_b = urhk_dbSelectWithBind(lv_a)
print(lv_b)

IF (lv_b != 0) THEN
#{
    #lv_c =urhk_SetOrbOut("recCount|0")
#}

```

Figure 8: custom script 1

```

sv_m = urhk_setOrbOut("Result|Invalid CIF ID")
lv_c = urhk_setOrbOut("Status|FAILURE")
EXITSCRIPT
#)
ELSE
#(
CUST.DATA.suspendedFlg = BANCS.OUTPARAM.suspendedFlg
print(CUST.DATA.suspendedFlg)
IF(CUST.DATA.suspendedFlg == "Y")THEN
#(
lv_c = urhk_setOrbOut("resCount|0")
sv_m = urhk_setOrbOut("Result|CIF is Suspended")
sv_b = urhk_setOrbOut("Status|FAILURE")
EXITSCRIPT
#)
ENDIF
#)
ENDIF

print(CUST.DATA.Code)
print(CUST.DATA.CIFID)
IF((CUST.DATA.CIFID != 0) AND (CUST.DATA.Code == "I"))THEN
#(
sv_a = "FullMNC ["
sv_a = sv_a + " select HOLMAILFLAG from crmuser.address where orgkey = '"+CUST.DATA.CIFID+"' and ADDRESSCATEGORY = 'Home' and BANK_ID = '01'"
sv_b = urhk_dbSelectWithBind(sv_a)
print(sv_b)
IF(sv_b == 0 )THEN
#(
CUST.DATA.KYC=BANCS.OUTPARAM.FullKYC
PRINT(CUST.DATA.KYC)
IF(CUST.DATA.KYC == "N")THEN
#(
sv_m = urhk_setOrbOut("MinKYC|"+CUST.DATA.KYC)
sv_p = urhk_setOrbOut("Status|Success")
EXITSCRIPT
ELSE
CUST.DATA.KYC="Y"
sv_m = urhk_setOrbOut("MinKYC|"+CUST.DATA.KYC)
sv_p = urhk_setOrbOut("Status|Success")
EXITSCRIPT
#)
ENDIF
#)
ELSE
lv_c =urhk_SetOrbOut("Result| There is no Data available with these input combinations")
lv_c =urhk_SetOrbOut("Status| FAILURE")
EXITSCRIPT
#)
ENDIF
#)
ENDIF

print(CUST.DATA.Code)
print(CUST.DATA.CIFID)
IF((CUST.DATA.CIFID != 0) AND (CUST.DATA.Code == "U"))THEN
#(
sv_a = " update crmuser.address set HOLMAILFLAG = 'N' where ADDRESSCATEGORY in ('Mailing','Home') and orgkey = '"+CUST.DATA.CIFID+"' "
print(sv_a)
sv_b = urhk_dbSqlWithBind(sv_a)

```

```

sv_b = urhk_dbSelectWithBind(sv_a)
print(sv_b)
IF(sv_b == 0 )THEN
#(
CUST.DATA.KYC=BANCS.OUTPARAM.FullKYC
PRINT(CUST.DATA.KYC)
IF(CUST.DATA.KYC == "N")THEN
#(
sv_m = urhk_setOrbOut("MinKYC|"+CUST.DATA.KYC)
sv_p = urhk_setOrbOut("Status|Success")
EXITSCRIPT
ELSE
CUST.DATA.KYC="Y"
sv_m = urhk_setOrbOut("MinKYC|"+CUST.DATA.KYC)
sv_p = urhk_setOrbOut("Status|Success")
EXITSCRIPT
#)
ENDIF
#)
ELSE
lv_c =urhk_SetOrbOut("Result| There is no Data available with these input combinations")
lv_c =urhk_SetOrbOut("Status| FAILURE")
EXITSCRIPT
#)
ENDIF
#)
ENDIF

print(CUST.DATA.Code)
print(CUST.DATA.CIFID)
IF((CUST.DATA.CIFID != 0) AND (CUST.DATA.Code == "U"))THEN
#(
sv_a = " update crmuser.address set HOLMAILFLAG = 'N' where ADDRESSCATEGORY in ('Mailing','Home') and orgkey = '"+CUST.DATA.CIFID+"' "
print(sv_a)
sv_b = urhk_dbSqlWithBind(sv_a)
print(sv_b)
IF(sv_b != 0) Then
#(
lv_m = "Customer Details Does not Exists in CRMUSER Table For "
print(lv_m)
#)
ELSE
#(
lv_r = urhk_dbSQLWithBind("COMMIT")
print(lv_r)
lv_m = "The Retail Customer Details With CIFID Updated Successfully."
lv_r = "Result|"+lv_m
lv_r = urhk_setOrbOut(lv_r)
lv_o = urhk_setOrbOut("Status| SUCCESS")
print(lv_m)
#)
ENDIF
#)
ENDIF

IF((CUST.DATA.Code != "I") AND (CUST.DATA.Code != "U"))THEN
#(
lv_c =urhk_SetOrbOut("Result| Please provide correct Code")
lv_c =urhk_SetOrbOut("Status| FAILURE")
EXITSCRIPT

```

Figure 9: custom script 2

2.6 REST APIs provide four primary advantages:

1. Inclusion

Through APIs, new apps are integrated with existing software systems. Development time is sped up since each capability doesn't have to be constructed from scratch. To take advantage of existent code, utilise APIs.

2. Creativity

Whole industries might change in response to the release of a new software. Businesses need to move quickly and enable the quick adoption of innovative services. They can achieve this by introducing changes to the API without having to totally rebuild the code.

3. Development

Businesses have a special opportunity thanks to APIs to satisfy the demands of their customers on several platforms. For instance, the maps API enables the integration of map data into websites, Android, iOS, etc. Any company may grant comparable access to its own datasets .

4. Simple to maintain

A gateway between two systems is created via the API. Each system is required to implement internal adjustments to ensure that the API is not harmed. This manner, if one party modifies the code in the future, it won't affect the other party.

How may an API be made?

To create an API that other developers will want to use and trust, dedication and effort are needed. The five stages needed to create an excellent API are as follows:

Dedication and effort are required to establish an API that other developers will want to use and trust. The following are the five steps required to make a great API:

1. Plan the API first The design foundation for your API is provided by API standards like OpenAPI. Prior to developing an API, it is recommended to take into account numerous use cases and confirm that the API complies with current API development standards.

2. Build the API

New APIs are prototyped by API designers using boilerplate code. After testing, developers might modify the prototype to meet internal needs.

3. Inspect the API

Like software testing, API testing is essential to thwart mistakes and defects. The API testing tools may be used to assess the

4. Explain the API

API manuals can assist users more readily even when APIs are self-explanatory. Well-documented APIs with a range of capabilities and use cases are more frequently employed in service-oriented architectures.

5. Make the API known.

Similar to how Amazon is an online marketplace for buying, there are marketplaces for APIs where developers may purchase and sell other APIs. By listing your API, you might get money from it.

2.7 MS-Excel

The basic operations are available in all spreadsheets, and Microsoft Excel is no different. In order to organise data manipulations like arithmetic operations, cells are arranged in a grid with letter- and number-named columns and numbered rows. It has a range of integrated functions to meet the needs of the financial, technological, and statistical domains. Additionally, it can display data as line graphs, histograms, and charts and has a very limited three-dimensional graphical presentation. The scenario manager and pivot tables make it possible to segment data in order to examine how different points of view depend on different criteria. A pivot table is a tool for data analysis. Big data sets are compressed in order to do this utilising PivotTable columns. It includes a programming module called Visual Basic for Applications, which lets the user to utilise a variety of numerical techniques.

The Microsoft Visual Basic for Applications (VBA) programming language, a subset of Visual Basic, is supported by the Spreadsheet for Microsoft edition. VBA programming allows for sheet modification that is difficult or time-consuming with traditional spreadsheet operations. The Microsoft Visual Basic Editor (VBE), which offers windows for developing, debugging, and organising programme modules, allows designers to directly generate code. The user may direct the computation using any desired intermediate results provided back to the spreadsheet in addition to numerical approaches, automated chores like formatting or data organisation in VBA.

Using the macro recorder is a popular and simple method for developing VBA code. The user's activities are recorded by the macro-based recorder, which also produces VBA code in the form of a macro. Then, these steps might be continually repeated using the macro. The macros may also be connected to a variety of triggers, such as keyboard shortcuts, command buttons, and visual

cues. The regular toolbar choices or these trigger types can be used to execute the macros.

The VBA code for the macro may also be modified using the VBE. Other features, such screen prompts based on their own properties, loop operations, and other graphical display elements, cannot be captured and must be manually inserted into the VBA module.

2.8 Power BI

Software for changing data visualisation that was primarily created with business intelligence in mind is called Microsoft Power BI. It is a part of the Microsoft Power Platform. Power BI is a collection of software services, programmes, and connections that work together to turn various data sources into comprehensible, captivating graphics and interactive insights. For direct data entry, a database, website, or structured files like Excel sheets, CSV, XML, and JSON can be used.

Desktop Power BI

The Service receives and distributes reports that are created and distributed using PC and desktop Windows applications.

Microsoft's Power BI Desktop is created with the analyst in mind. Industry-leading data models and querying are integrated with contemporary interactive visualisations.

Electric BI Service

The internet service that is SaaS-based (software as a service). Power BI.com or just Power BI are other names for this. Previously, it was known as Power BI for Office 365.

Mobile Power BI applications

Power BI-powered mobile and tablet apps for iOS, Android, Windows, and other operating systems.

Power BI Entryway Gateways, which are also utilised to sync external data into and out of Power BI, are required for the use of automatic subscriptions. Power Automate (formerly known as Power Automate) supports enterprise mode.

Users can have more control over the design of reports that need to be printed on paper or saved as a pdf by using a particular sort of SSRS product called paginated projects for Power BI. These reports may be made using Power BI Report Builder. However, the majority of Power BI reports are designed for research, presentation, and interaction on screens. By 2022, paginated charts will no longer be possible to be created using the default Power BI Desktop report builder. The standalone Power BI Report Builder must take the place of the Microsoft Report Builder for Microsoft SQL Server's Reporting Services feature (SSRS), which was initially made available in 2004.

What is Power BI Gateway

The on-premises data gateway serves as a conduit for efficient and safe data transmission between various Microsoft cloud services and on-premises data (data that isn't in the cloud). These cloud services include Azure Analysis Services, Azure Logic Apps, Power BI, PowerApps, and Power Automate. Organisations can safely access on-premises data in cloud services while maintaining databases and other sources of information on their on-premises networks by employing a gateway.

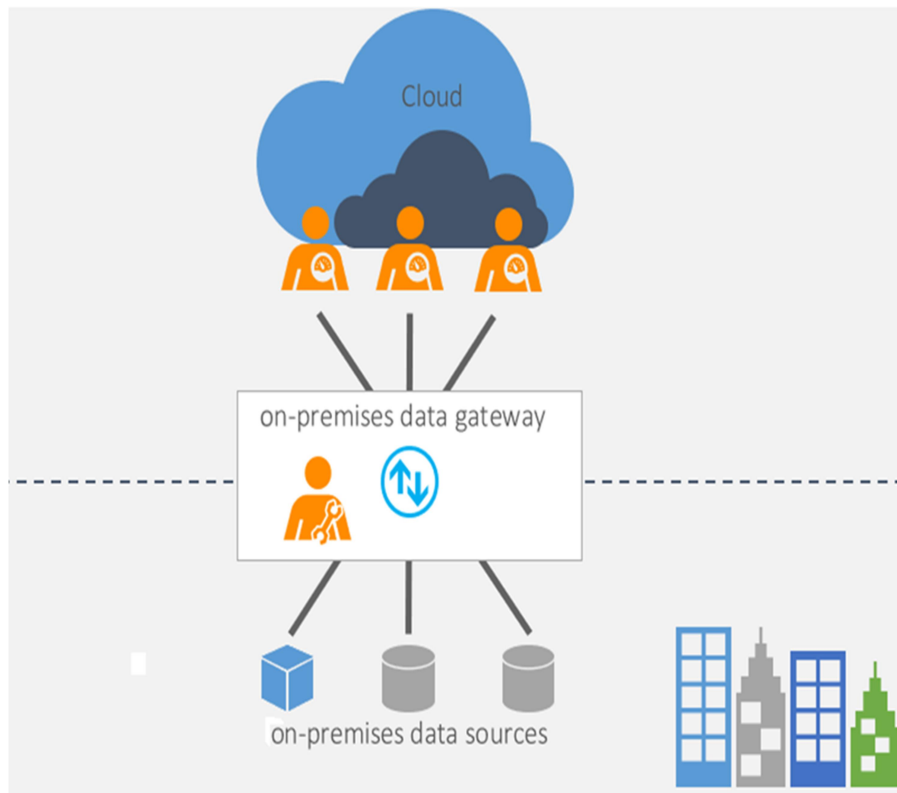


Figure 10: Power BI Gateway

Types of Gateways

There are three various gateway kinds, each of which is for a distinct scenario:

1. Through an on-premises data gateway, many users can connect to various on-premises data sources. An on-premises data gateway only has to be installed once in order to be used with every supported service. In complicated circumstances where many users access diverse data sources, this gateway performs well.

2. On-site data gateway (personal mode): It may only be used by one user at a time and cannot be shared. The only application that can use an on-premises data gateway (personal mode) is Power BI. When you are the only one who creates reports and there is no need to share any data sources, this gateway performs well.
3. Multiple users can connect to several data sources that are protected by virtual networks using a virtual network data gateway. Because it is a Microsoft managed service, there is no installation needed. This gateway works effectively in complex situations where numerous users access various data sources.

Data Hub

The data centre streamlines finding, using, and exploring the databases and datamarts in your business. It offers details on the things as well as access points for engaging with them, such as building reports on top of them or using the Analyse function in Excel, getting settings, controlling access, and more.

The data hub may be helpful in the following situations:

1. Owners of data items can monitor and manage their data items by viewing usage stats, refresh status, relevant reports, and lineage.
2. The hub can be used by report writers to locate pertinent material on which to base their reports and to generate them more quickly via links.
3. Hub allows report users to locate reports based on reliable data sources.

- The data hub aids in avoiding the production of unnecessary reports by making it simple to locate high-quality data items and the reports that are related to them. Additionally, it makes it simple to locate excellent reports to utilise as a model for future reports.

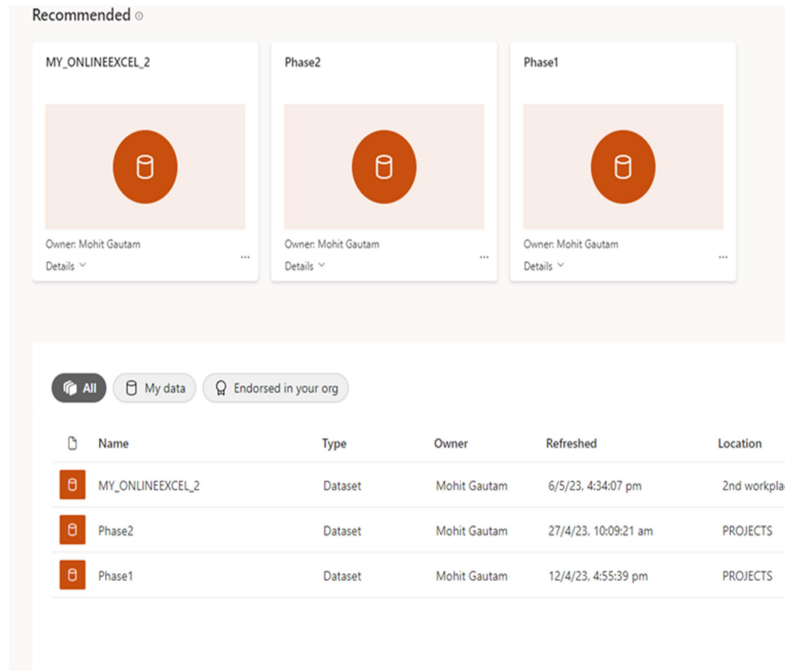


Figure 11: Power BI Environment

CI/CD Testing tool

The continuous merging coding methodology and practises encourage development teams to often make small changes to the code and check them in to a version control repository. Since most current projects entail authoring code using a range of platforms and tools, teams need a standardised process to integrate and evaluate modifications. Through continuous integration, they construct a system for automatically creating, packaging, and testing their

apps. A standard integration process encourages developers to commit code changes, which enhances collaboration and code quality.

Automated and workflow mechanics underpin the continuous integration approach to development. As part of continuous integration, developers regularly submit their code to the version control repository; most teams have the habit of doing so at least once per day. Smaller code differentials—as opposed to larger ones produced over time—make it easier to detect faults and other problems with the quality of software. Furthermore, it is less likely that many developers will update the same code and need a merge when releasing when they operate on shorter contribution cycles.

Message Id	<input type="text"/>
Secondary Bitmap	<input type="text"/>
PAN	<input type="text"/>
Processing Code	<input type="text"/>
Transaction Amount	<input type="text"/>
Conversion Rate	<input type="text"/>
System Trace Audit Number	<input type="text"/>
Local Transaction Date and Time	<input type="text"/>
Date,Expiration	<input type="text"/>
Date,settlement	<input type="text"/>
Date,Conversion	<input type="text"/>
Capture Date	<input type="text"/>
Function Code	<input type="text"/>
Original Amounts	<input type="text"/>
Acquiring Inst ID Code	<input type="text"/>
Fwd'ng Inst ID Code	<input type="text"/>
Extended PAN	<input type="text"/>
Retrieval Reference Number	<input type="text"/>
Approval Code	<input type="text"/>
Action Code	<input type="text"/>
Card Acceptor Terminal Id	<input type="text"/>
Card Acceptor Identification	<input type="text"/>
Card Acceptor Name/Location	<input type="text"/>
Amounts,Fees	<input type="text"/>
Additional Data,Private	<input type="text"/>
Transaction currency Code	<input type="text"/>
Currency, Reconciliation	<input type="text"/>
Security related information	<input type="text"/>
Original Data Elements	<input type="text"/>
Transport Data	<input type="text"/>
Cheque Details	<input type="text"/>
Consumer Number	<input type="text"/>

Figure 12: CDCI Testing Tool

Create new reports or pull data into Excel via Analyze in Excel

Select More choices , either at the bottom right of a recommended tile or on a data item's line in the list of data items, to generate a new report based on a

data item or to import the data into Excel with Analyse in Excel. Depending on the rights you have on the item, other actions might be listed in the drop-down menu.

The report edit canvas opens when you create a new report based on a data item. If you have write privileges on the workspace where the data item is located, the new report will be saved there when you save it. If you belong to a free user or don't have write access on that workspace and the data.

View data item details and explore related reports

Choose the item from the recommended items or the items list to view more details about the data item, discover similar reports, or build a new report based on it. The detail page for the item will load. This page contains details about the item, a list of the reports that are built on top of it, entry points for building new reports, and options for importing data into Excel using the Analyse in Excel feature. For further details, visit the [Data details page](#).

Discoverable Datasets

By making their dataset discoverable, dataset owners can allow you to find their dataset without really giving you access to it. The list of discoverable datasets is greyed out, and you are unable to view the dataset's capabilities or information page. You can request access to the dataset in order to view its information and make use of it.

Explore Related Reports

You may view all the reports and scorecards based on the dataset in the section under "Explore Related Reports." By selecting the line that the item is on and choosing the Save a copy icon that appears, you can make a copy of the object. You may see usage statistics for the connected goods in this area as well.

Types of data

Internal data and External data

External data is any information that parties outside the firm produce, whereas internal data originates from within the business. External data consists of facts or information that third-party organisations gather that is either public or unstructured.

Continuous vs Discrete

Independent variables can only be assumed for a limited set of values that you cannot subdivide. The majority of the time, you can count them and receive integer results. For instance, if you worked at an animal shelter, you may count the cats.

Continuous variables can be broken into smaller segments for convenience and can have any integer value. As a result, their decimal and fractional values are correct. For continuous data between any two locations, there are actually an infinite number of potential values. Usually, to measure them, a scale is utilised.

Qualitative vs Quantitative

Researchers employ non-numerical, qualitative data to interpret how people understand and provide meaning to their social world. Analysts employ

quantitative data, which includes numerical information, to identify links between variables and forecast outcomes. It offers a conclusive statistical analysis of a trend.

Structured vs Unstructured

Structured data is distinct since it is defined and searchable. Data like dates, phone numbers, and product SKUs are included in this. Everything else—which is harder to categorise or search for—is considered unstructured data. Examples include emails, podcasts, social media postings, videos, and images. Unstructured data makes up the majority of all data.

Power Apps

You may quickly construct one-of-a-kind business apps with Power Applications that link to your data that is housed in a number of online and offline data sources, such as SharePoint, Microsoft 365, Dynamics 365, SQL Server, and the underlying data platform (Microsoft Dataverse).

Strong business logic and workflow features found in Power Apps applications may be used to convert manual processes into digital, automated ones. Power Apps-created apps have a responsive design and can operate without a hitch on mobile devices (phone or tablet) and in browsers. Power apps "democratise" the process by allowing people to build unique business applications with tonnes of features without writing any code.

Power Apps flexible platform enables experienced developers to manually interact with data and metadata, apply business logic, create custom connections, and interface with other data.

Dynamics 365 apps (such Dynamics 365 Sales and Dynamics 365 Customer Service) also store and protect data using the same basic Dataverse

architecture that Power Apps employ. By enabling you to create apps using Power Apps and Dataverse directly against your current Dynamics 365 core business data, you can do away with the requirement for integration. Additional information: Dynamics 365 and Dataverse.

The mobile app development tool Power Apps Studio is used to generate Canvas apps. Thanks to the app designer, creating applications resembles more creating a Microsoft PowerPoint slide show. Additional information: develop an app with data.

To construct a model-driven app, you may add components and specify the sitemap in the app designer. More information: Use app designer to create model-driven apps.

Finacle Delivery Channel Interface

Flexi centralized Operation

FiNACLE can be set up in a "Flexi-centralized" manner, meaning that a bank's SOLs (Service Outlets) can be grouped together into several physical data centres. In this situation, BancsConnect will route the transaction to the appropriate data centre. Note that a service outlet is a site where a bank provides services to clients. simply because

We can think of a SOL as being equivalent to a branch to better comprehend.

We can think of a SOL as being equivalent to a branch to better comprehend.

The diagram and points below describe how a central BancsConnect would operate normally.

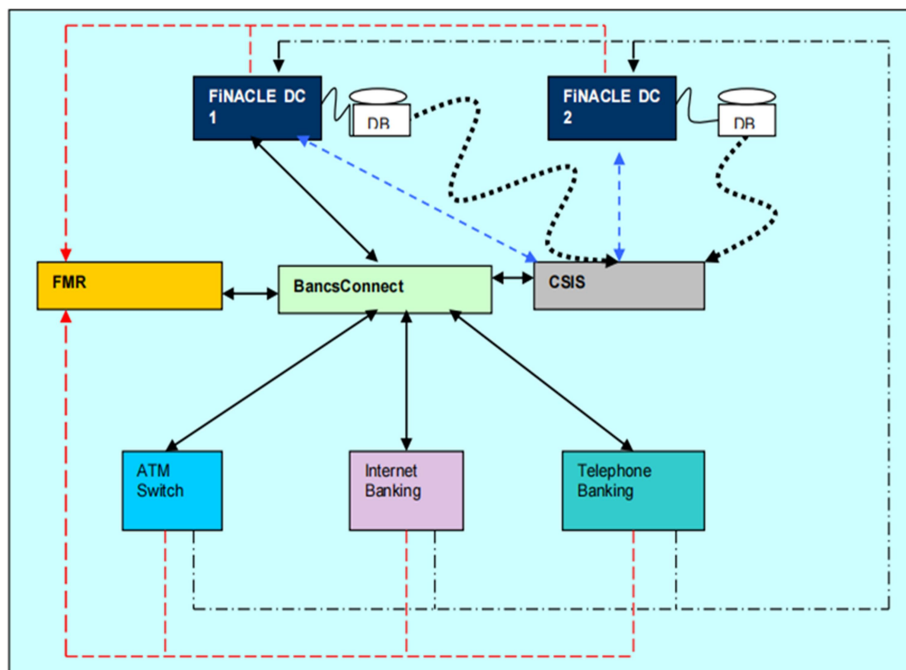
1. Only one BancsConnect must receive messages from the delivery channel controller; this BancsConnect handles data centre routing.

2. Either the SOL id of the customer account must be explicitly included in the message for BancsConnect to route it, or it must be feasible to determine the SOL id from the customer account.
3. BancsConnect has the ability to separate "Transfers" and "Payments" transactions into "Debit Authorization" and "Credit Authorization" transactions and transmit them to the proper data centres. It therefore just needs to send one "transfer" or

A significant improvement is the Central Stand In Server (CSIS). The bank interprets this to suggest that the present PBF support of Delivery

FiNACLE no longer requires channel controllers to interface with it. such that BancsConnect and Retail BankAway no longer require file downloads. The processing time for FiNACLE's EOD and BOD will be greatly reduced thanks to this improvement.

BancsConnect now provides a Stand-in Server in version 2.0, which may approve transactions when FiNACLE datacenters are unavailable.



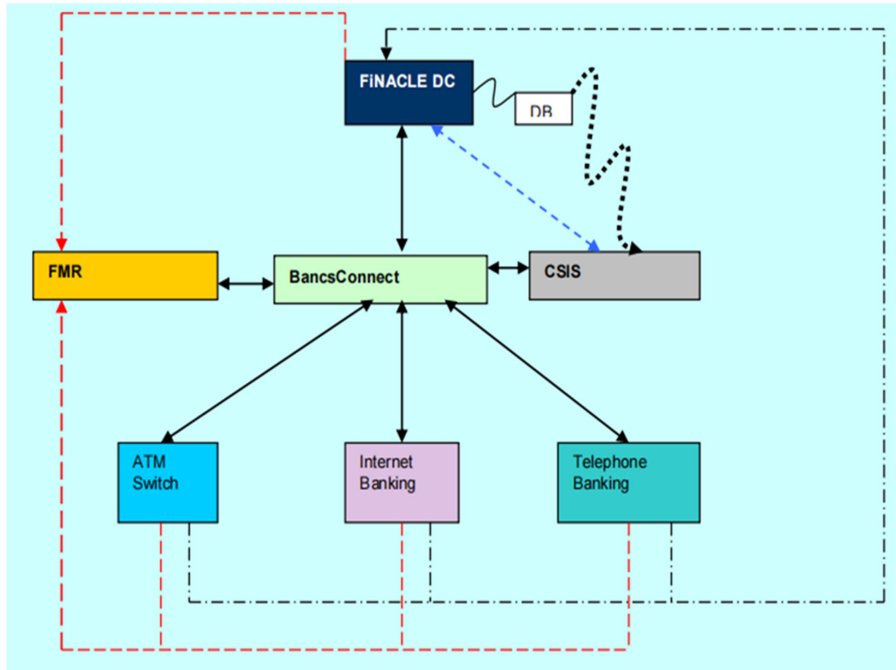


Figure 13: Complete Finacle Process

2.9 Finacle Integrator

Leading provider of online banking systems is Finacle. To encourage better banking, Infosys collaborate with both new and existing financial institutions. Our SaaS services and array of cloud-native solutions assist banks in improved engagement, innovation, operation, and transformation.

To provide banks with better technology-based solutions, enabling them to expand their horizons and improve their clients' financial lives.

To support banks in better customer, employee, and partner engagement so they may promote purposeful growth enabling banks to be more innovative, to provide new value, and to be more competitive

To find better methods to operate, so banks can spend less money and be more sustainable assisting banks in better transformation so they can remain relevant to changing market conditions

It is essential that BancsConnect operations are appropriately secured given the growing number of methods of delivery being interfaced to guests' banking systems. Since the message protocol (ISO 8583) is a need for some security features, such as client authentication and message tampering protection, these features are described in the appropriate areas of the manuscript for customisation. However, both types of communications can take advantage of a number of general features.

IP-permitted firewalls can be used to redirect messages to FiNACLE or the Stand-in server. As a result, a firewall can be used to protect both the FiNACLE and/or the Stand-in database.

Additionally, a bank can use "custom logic" to make sure that both FiNACLE

FINACLE SERVICE REQUEST LIST	
[Supported by FI]	
<u>ONS ROUTE</u>	<u>ONS ROUTE</u>
Operative Account Open and Modify	WMS Inquiry
SBAcctAdd	inquireSysInvestPlanInstructions
SBAcctMod	inquireWMSMFRedemption
CAAacctAdd	inquireWMSEntityDetails
CAAacctMod	inquireWMSFundDetails
doCCAccountOpening	inquireWMSFundNAVDetails
doCCAcctModify	inquireWMSMFSubDetails
ODAcctAdd	WMS Service Request
ODAcctMod	createMFSysInvestPlan
FCFG Maintenance	modifyMFSysInvestPlan
inquireOnFCFG	createWMSMFRedemption
modifyFCFGDetails	subscribeWMSMFDetails
addFCFGDetails	reverseWMSMFTransaction
Transfer Transaction	reverseWMSMFRedemption
XferTrmAdd	Loan Account
Bank Branch Creation and Modification	modifyLoanAccountDetailsFCRM
createBankID	doLoanAcctOpenFCRM
modifyBankID	loanReschedule
createBranchID	OnsSrvRequest
modifyBranchID	addLimitNode
Bank Branch Inquiry	modifyLimitNode
BankInq	PmtOrderAdd
BranchInq	StopChkAdd
Finacle Holiday	XferTrmRev
addCalendarHoliday	doPassBookPrint
modifyCalendarHoliday	inquireBuilderMaster
HolInq	modColtrIDtls
	AddrMod
	uploadSwiftMessage

Figure 14: Finacle Integrator

Data Visualization

Data visualisation, a crucial phase in the data science process, may help individuals and organisations convey data to coworkers and decision-makers more effectively. Teams using established template views regularly assess the

effectiveness of reporting systems. However, dashboards for efficiency are not the only use for data display.

When text mining unstructured data, an analyst may utilise a word cloud, for instance, to identify significant themes, patterns, and previously undetected connections. The relationships between the objects in a knowledge tree can also be shown using a graph structure. Keep in mind that there are several methods to represent various sorts of data and that this is a collection of abilities that should go beyond your core competencies.

Data Monitoring

Through data monitoring, an organisation may actively maintain an incredibly high standard of data quality. Instead of pre-processing data before transporting it, organisations may save resources by routinely analysing information as it is stored within apps. With data monitoring, data quality is verified during production rather than just before a transfer.

Instead of manually evaluating and converting data before it is transferred, the business uses data monitoring to save time and money. Since it enables swift adoption of new data-related activities without the need for a drawn-out data preparation phase, data analysis fosters organisational agility.

Data Monitor collects data related to research from over two hundred generalist and subject-specific repositories, cleans and enhances the information by include documents, authors, and institutions linkages, and then

distributes the data to its users. This makes tracking research data for their university and ensuring compliance for libraries and research offices simple.

Costs and mistakes may be significantly reduced by effective data quality monitoring. The three main phases of the data quality evaluation procedure are data input, issue detection, and data cleansing.

Chapter 03

SYSTEM DESIGN & IMPLEMENTATION

Problem Statement

Shivalik small finance bank is in partnership with many companies. So all the partners were given APIs to fetch data from core Database of Bank. So all the partner uses APIS everyday.

There were thousands of hits of APIS . On the very next day we receive a complete excel file which partner used which API in how many times. To read complete excel file is horrible.

So I were asked to build a Dashboard which monitor live incoming data from excel files and give us deep insights for decision making in future.

Dashboard

An enterprise may actively maintain a very high degree of data quality by tracking data. Organisations can save resources by frequently reviewing data as it is stored within applications rather than pre-processing it before transfer. Data monitoring makes it possible to keep an eye on the data's quality during production rather than just before a move.

Instead of manually examining and converting data before it is transferred, the organisation saves time and money by adopting data monitoring. Since new data-related activities may be quickly implemented without requiring a long data preparation time, data analysis promotes organisational agility.

The "dashboard" is typically accessible through a web browser and connected to dynamic data sources.

Popular dashboards include Google Analytics dashboards, which are used on 55% of all websites and provide information on visitors, entrance pages, bounce rates, and traffic sources on a website.

The Johns Hopkins coronavirus tracker and the UK government coronavirus tracker are two dashboards that were brought to light by the COVID-19 pandemic of 2020.

The word "dashboard" comes from the dashboard of a vehicle, where the instrument panel allows drivers to quickly and easily monitor the main tasks.

3.1 Technologies Used:

- **Oracle SQL Developer**
- **Power BI**
- **Spreadsheets**
- **Power Query Editor**
- **Python**

3.2 Oracle SQL Developer

Oracle SQL Developer is the name of the Oracle Database IDE. Database managers and users may carry out database tasks with fewer mouse clicks and keystrokes thanks to the free graphical user interface Oracle SQL

Developer. The features provided by SQL Developer include a spreadsheet for running queries and scripts, an administrative console for managing the database, a reporting interface, a complete data modelling solution, and an integration platform for converting your other databases to Oracle.

- Oracle SQL Developer Cloud Connection configuration
- Locally run Oracle SQL Developer. The main page for Oracle SQL Developer appears.
- Right-click Connections under Connections.
- Choose New Connection.
- Make the following items in the New/Select Database Connection dialogue box: Click Test, Connect, and then click OK.
- Activate the fresh connection.

3.3 Power BI

Power BI is a group of software products, apps, and connections that combine to create interactive insights and understandable visualisations from the data coming from your many sources. In addition to an Excel spreadsheet, you may store your data in a number of on-premises and cloud-based data warehouses.

Your numerous data sources may be transformed into insightful, engrossing visualisations and interactive insights with Power BI, a set of automated services, programmes, and linkages. Excel spreadsheets or hybrid data warehouses that incorporate on-premises and cloud storage are also possible places to save your data. Power BI makes it simple to connect to your data sources, visualise the data, find the key information, and share it with everyone.

All of the parts that make up Power BI work together, starting with these first three fundamentals:

Windows desktop software called Power BI Desktop.

Software as a service (SaaS) is a term used to describe the Power BI service.

There are Power BI Mobile programmes for cellphones running Windows, iOS, and Android.

Paginated Reports in Power BI Service

The Power BI service's paged reports are a component of another procedure. Enterprise report producers design paginated reports for printing or distribution. These reports could also be made available through the Power BI service. The word paginated refers to how well they fit on a page. Documents including invoices, transcripts, and operations reports are commonly printed using them. They provide all the data in a table, even if it spans several pages. Using the standalone programme known as Power BI Product Builder, paginated reports are created.

3.4 Spreadsheets

A spreadsheet makes it simple to create, arrange, and analyse data. You may use spreadsheets to help you with a variety of daily tasks, from simple calculations to automated data analysis.

Three sheet formats are available in Microsoft Excel: plain tables, Excel tables,

and pivot tables. The most popular kind of charts are simple ones, and most adjustments must be done by hand.

Wide-data is data where every row contains multiple data points for the particular items identified in the columns.

Long-data is a type of data where each row contains a single data point for a particular item. In the long data example below, standalone stock prices (data points) have been gathered for Apple (AAPL), Amazon (AMZN), and Google (GOOGLE) (particular items) on the given dates.

Worksheet users have the ability to modify any recorded value and observe the changes in calculated values. The spreadsheet may now be used to quickly investigate many possibilities without the need for manual recalculation, which is useful for "what-if" analysis. Multiple sheets can interact with one another and data can be presented visually or as text and numbers in modern spreadsheet apps.

Similar to how the "style" function in word processors may be used, each cell can be separately decorated using either the attributes of the text (point size, colour, bold or italic), or the cell (border thickness, background shading, or colour). A spreadsheet's readability can be increased by conditionally applying cell formatting to data; for example, a negative number can be shown in red.

The formatting of a cell typically has minimal impact on its content, and it may not be retained if the cell is used as a reference or copy in other spreadsheets or applications.

3.5 Power Query Editor

Using Power Query to make changes to your data. Before you begin working on the data transformation, we'll discuss some of the user interface panels that may be expanded or closed depending on their context. You may focus on the view that is most important to you by picking the right windows. Additionally, we'll discuss the many views that the Power Query UI provides.

A further Power Query feature that might help you comprehend your data is Data Profiling. You may get information about the data in your query fields, such as value distribution, column quality, and more, by utilising the data profiling features.

Although we advised using this option when your queries were being developed, you may always toggle on or off the feature as needed. The next figure displays every data profiling tool that has been turned on for your Nation Analysis query.

Advanced Editor

Users of the sheet have the option to update any documented value and see how the numbers that were computed changed. The spreadsheet may now be used for "what-if" analysis to swiftly analyse a variety of scenarios with the need for manual recalculation. Modern sheet apps allow for the interaction of several sheets and the visual or text-and-number presentation of data.

Chapter 4

EXPERIMENTS & RESULTS ANALYSIS

4.1 Business Partner

A business partner is a commercial entity that collaborates in some capacity with another commercial firm. There may be a contractual contract between these two parties that bans them from cooperating with anybody else. Alternately, it might be a very loose agreement made just to show off the size of the network the business partners are a part of to clients and competitors.

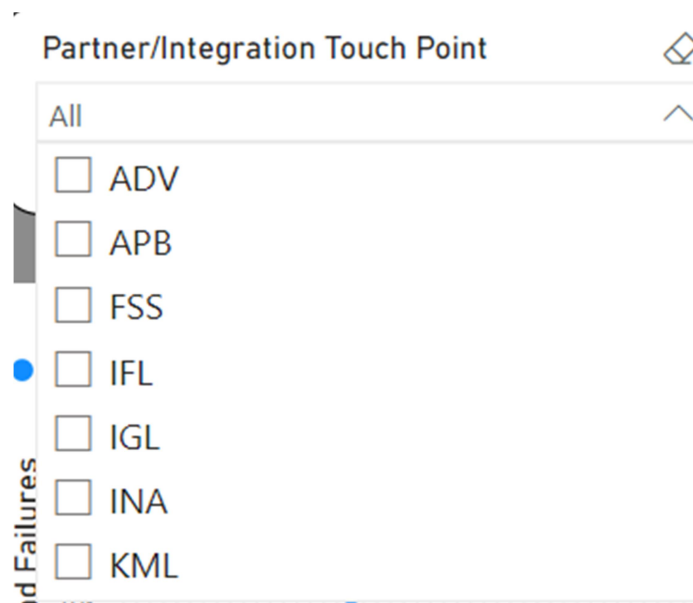


Figure 15: Partner-1

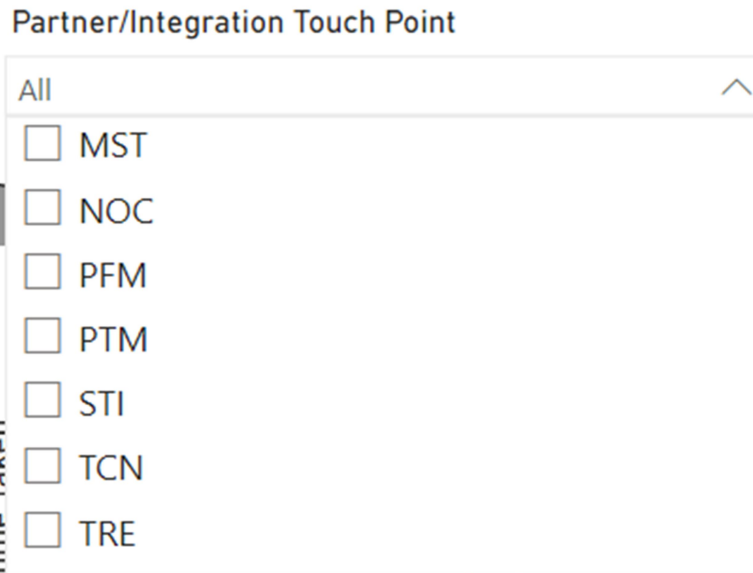


Figure 16:Partner-2

APIs Distributed among Partners

API stands for application programming interface. When speaking of APIs, any software with a certain function is referred to be an application. A service contract between two programmes is comparable to interface. The requests and responses that the two parties will use to communicate are laid forth in this agreement.

4.2 How an Api works

Your request is sent to the service provider via an API, which relays it to them and provides the necessary answer. An API request is sent to the web server by the application when the user orders the programme to perform an action using an API call. An API call, which acts as a go-between for the application and the web server, is used to submit the request.

How an API works

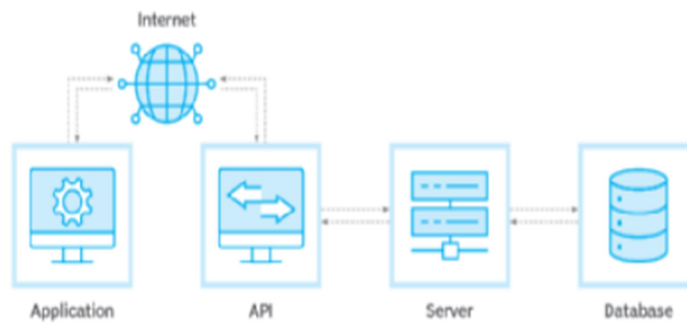


Figure 17: API workflow

API

All ^

- RRN_DETFRMPHN
- AadhaarDVGenerateToken
- AadhaarDVGetUID
- AadhaarDVInsertToken
- AadhaarDVGetTokenValue
- AcctInq
- AcctInqAIA

API

All ^

- addCoreCustomer
- AutoLoanSanction
- BalanceInquiry
- CBAadharSeedingRqst_ADV
- CBChequeStatEnquiry
- CRIFMark
- Custom

Figure 18: API for Partners

When a Partner hit an API the result in generated in following format:-

```
Body Cookies Headers (18) Test Results (0/3)
Pretty Raw Preview Visualize JSON ↕
1
2   "ReturnCode": "1",
3   "PAN": "OQTPS3244F",
4   "PANStatus": "E",
5   "LastName": "SHEKHAWAT",
6   "FirstName": "VAISHNAVI",
7   "MiddleName": "",
8   "PAN-title": "Kumari",
9   "LastUpdateDate": "26/09/2021",
10  "NameOnCard": "VAISHNAVI SHEKHAWAT",
11  "AadhaarSeedingStatus": "Y"
12
```

Figure 19: JSON Output

4.3 JSON

- JavaScript Object Notation, or JSON,
- JSON is a compact data exchange format.
- JavaScript object notation is used to write plain text in JSON.
- Data is sent between computers using JSON.
- JSON is not language specific.

JavaScript object notation syntax is an ancestor of JSON syntax:

- Name/value pairs make up the data.
- Commas are used to separate data.
- Curved braces hold things

- arrays are held in square brackets.

Diagram made up of points, lines, segments, curves, or regions that show how several variables compare to one another, often along two axes at a right angle.

The following graph shows the total number of API hits in a particular time frame by the selected partner. When we select the Partner from drop-down menu and API of Selected partner from Drop-down menu of APIs , having a Date slide bar which can be adjust.

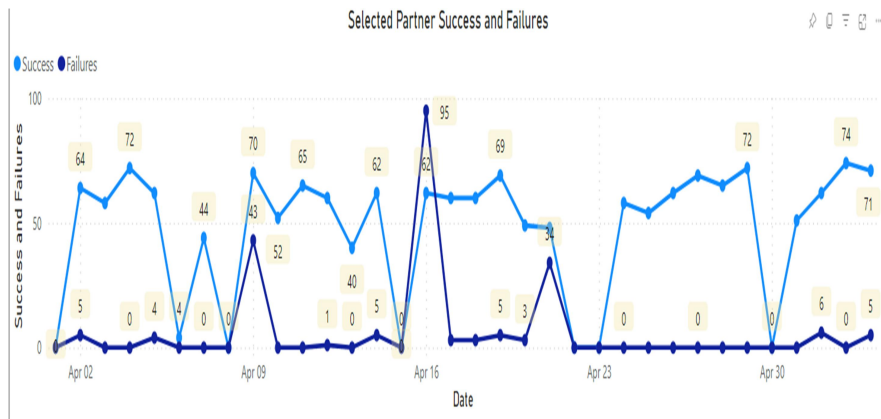


Figure 20: Selected Partner Success and Failures

Now the following graph shows the complete success and failure of all the partner using that Selected API.

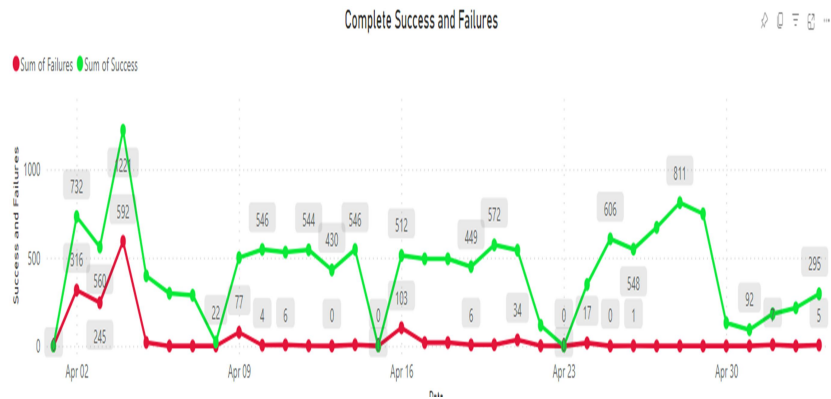


Figure 21: All partner success and failure

Partner:-Selected Partner is IGL(India Gold Loan).

API:-Using LoanACtAdd custom API.

Date:-1st april 2023 -04 may 2023

1st graph showing the success and failures of selected partner.

2nd graph showing the success and failures of all partners using that API.



Figure 22: Paginated Report-1

4.4 Average Time

Total number of API hits/Total time taken

Average time taken by selected partner for selected API.

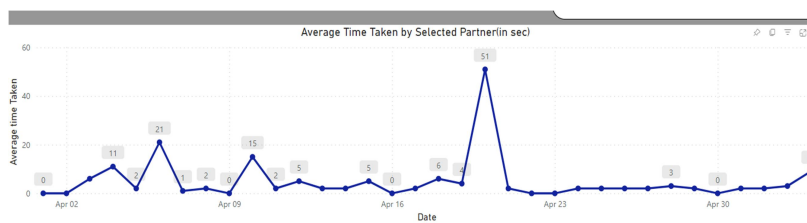


Figure 23: Selected Partner time

Now the following graph shows the Average time taken by all partner for hitting that selected API.

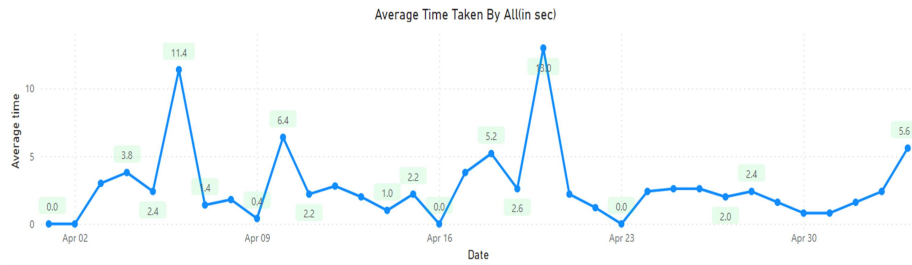


Figure 24: All partner time

From these graphs we can conclude that on particular day Average time taken is high, So we check on backend what is the reason behind this, which will help us to find reason in backend and further try to resolve issue on our end.

Partner:-Selected Partner is IGL(India Gold Loan).

API:-Using LoanACtAdd custom API.

Date:-1st april 2023 -04 may 2023.

1st graph showing the time taken by IGL to hit API.

2nd graph showing the average time taken of all partners to hit that API.

Partner/Integration Touch Point: IGL

API: LoanAcctAdd

Date: 4/1/2023 to 5/4/2023

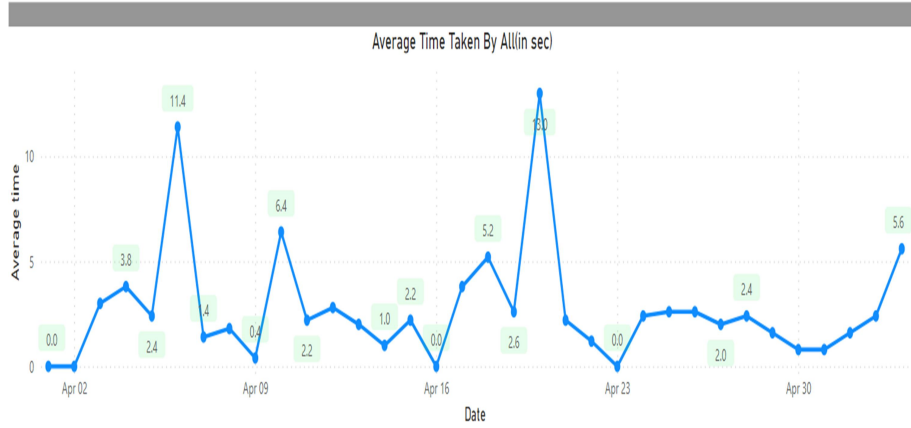
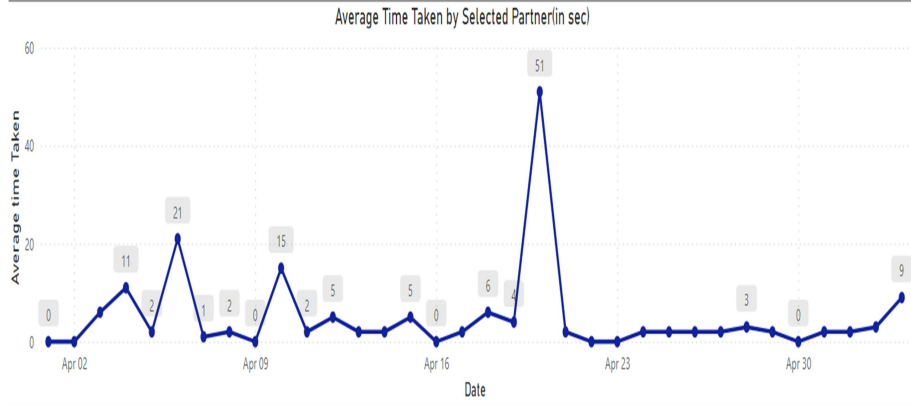


Figure 25: Paginated Report 2

CHAPTER 05

CONCLUSION

Report writers may make better use of tools like Q&A and exporting to enhance their reports and get analytical insights into their data. In order to extract value, you will carefully assess the information and Power BI outputs in this part before doing a more in-depth analysis. You'll learn how to arrange the data and present the report clearly as well. You'll learn how to get your data's statistical breakdown and how to export data from Power BI. In order to develop deeper and more insightful data understandings, you will also use and implement complex analytics on the report.

Predictive analytics, on the other hand, is given priority in business analytics since it employs data mining, modelling, and machine learning (ML) to estimate the likelihood of future events. BA provides an explanation for the "why" so that it can anticipate future events more accurately. By using BA, you may foresee modifications that are required for success.

When thinking about data management, attempting to distinguish between business analytics and intelligence is useless. In reality, a company needs both business intelligence and business analytics, including descriptive and predictive analytics, to succeed. Additionally, people frequently use these terms to refer to a variety of things in the business world, so you should focus on what you need the data system to do rather than whether it is BI or BA when choosing the type of technology, tools, and expertise you want to invest in. A critical first step in implementing a BI system is creating a business intelligence plan.

Any advantage that may be obtained is needed by today's enterprises. Because of difficulties including rapidly changing markets, erratic economic situations, shifting political landscapes, picky consumer attitudes, and even global pandemics, businesses today operate with tighter margins for mistake.

For firms that wish to continue operating and expanding, making informed judgements while addressing the question "What is data analysis?" might improve chances of success. How then do individuals or groups make decisions? They gather as much essential information as they can and use it as a basis for decision-making.

This strategy makes sense and may be applied in both private and public settings. Nobody ever makes important decisions without first taking into account the pertinent concerns, benefits and drawbacks, and prospective outcomes. Likewise, no company that wants to succeed shouldn't base decisions on false information. Data and information are needed by organisations. Data analytics or data analysis is used in this situation.

Data is necessary to make educated judgements, but there are more factors to take into account. The relevant data must be accurate. Businesses can employ data analysis to gather vital, accurate information that can later be used to create marketing strategies, business plans, and realign the company's mission or vision.

Data visualisation is a fancy way of saying, "Graphically show your information in a way that people can read and understand it." There are many other methods that may be employed, including maps, graphs, charts, and bullet points. Visualisation assists in drawing meaningful conclusions by letting you compare datasets and identify relationships.

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