

TARTANHQ <BATIK> INTERNSHIP REPORT

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

in

Computer Science and Engineering/Information Technology

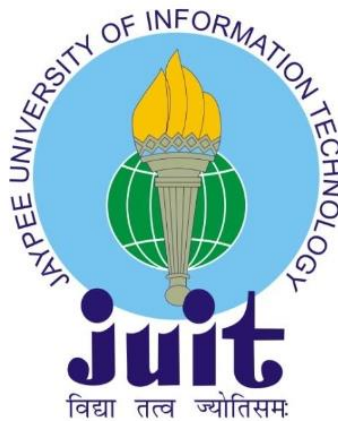
By

Pushp Jain (191396)

Under the supervision of

Dr. Pardeep Kumar

to



Department of Computer Science & Engineering and Information
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**Jaypee University of Information Technology Waknaghat, Solan-
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Candidate's Declaration

I hereby declare that the work presented in this report entitled “**TartanHQ <Batik> Internship Report**” in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Engineering/Information Technology** 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 July 2022 to May 2023 under the supervision of **Dr. Pardeep Kumar** (Associate Professor, SM-ACM and Computer Science & Engineering and Information Technology).

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

Pushp Jain, 191396

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

(Supervisor Signature)

Dr. Pardeep Kumar

Associate Professor, SM-ACM

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Dated: 13th May, 2023

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Sincerely,

Pushp Jain

191396

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LIST OF ABBREVIATIONS

Abbreviation No.	Abbreviation	Description
Abbr. 1	JSON	(JavaScript Object Notation
Abbr. 2	APIs	Application Programming Interfaces
Abbr. 3	XML	eXtensible Markup Language
Abbr. 4	REST	Representational State Transfer
Abbr. 5	HTTP	Hypertext Transfer Protocol
Abbr. 6	WWW	World Wide Web
Abbr. 7	URL	Uniform Resource Locator
Abbr. 8	SMS	Short Message Service
Abbr. 9	ccTLD	Country Code Top-Level Domain
Abbr. 10	XSS	Cross-Site Scripting
Abbr. 11	ISP	Internet Service Provider
Abbr. 12	DNS	Domain Name System
Abbr. 13	CIBIL	Credit Information Bureau (Indi) Limited

Abbr. 14	EMI	Equated Monthly Instalment
Abbr. 15	BMI	Body Mass Index
Abbr. 16	RNIs	Recommended Nutrient Intakes
Abbr. 17	DRI	Dietary Reference Intake
Abbr. 18	RDAs	Recommended Dietary Allowances
Abbr. 19	EAR	Estimated Average Requirement
Abbr. 20	AI	Adequate Intake
Abbr. 21	UAT	User Acceptance Testing
Abbr. 22	TCP/IP	Transmission Control Protocol/Internet Protocol
Abbr. 23	UNIX	UNiplexed Information Computing System
Abbr. 24	OS	Operating System
Abbr. 25	WORA	Write Once, Run Anywhere
Abbr. 26	LIFO	Last-In-First-Out
Abbr. 27	JVM	Java Virtual Machine

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Abstract

I recently had the most thrilling experience working on a technical project. I have had the opportunity to learn and explore a wide range of cutting-edge technologies as a member of the project team, from Java to Python and from microservices to API endpoints. I've challenged myself to go beyond what I thought was possible during my journey and have taken on jobs and responsibilities that have been progressively more difficult.

The creation of a machine learning model that could precisely anticipate client preferences and behaviours was one such challenge. The whole user experience was substantially improved by this functionality, which also improved our understanding of our target audience. I also helped with the creation of a notification system that gave users alerts and updates in real-time.

This function increased user loyalty and engagement. I have also tried to fix a variety of flaws and problems that came up while the project was being developed. To make sure the system was operating smoothly and effectively, this required analysing data and fixing issues. I also took on the task of connecting a number of other goods with our system, allowing us to provide our consumers with a larger choice of features and functions. Working on this project has, all in all, been a great learning experience for me. It has aided me in developing my abilities and knowledge in a number of fields, such as software development, machine learning, and data analysis. I can't wait to use what I have discovered in the future.

1. INTRODUCTION

1.1 Introduction

Employees nowadays seek more than simply a paycheck. For many professionals, the advantages of a job are the most important aspect in selecting whether or not to take it.

As a result of this trend, several firms have implemented flexible work schedules, WFH alternatives, and other comparable opportunities. The primary issues encountered by the organisation, according to 32% of HR managers, are reduced employee engagement and productivity.

Employer-provided benefits have poor participation rates in current programmes, and the absence of a centralised platform makes it difficult for companies to interact with their workforce.

Additionally, since 2015, India's inflation rate has risen by an average of 4%. At the same time, some but not all of these costs are covered by the fundamental employee benefits that businesses offer. It's possible that not all companies will be able to offer compensation to counteract this inflation rate. However, adaptable benefits programmes are required.

According to a Glassdoor poll, more than 60% of participants thought over the benefits included with the job offer before accepting it. Another 80% of those surveyed stated they would rather have more benefits from their employers than a wage increase. According to studies, stronger benefits and compensation packages can boost productivity and employee engagement more effectively than wage increases.

Employer benefits may enhance the entire employee experience. Employees are more engaged to their job and are willing to work beyond of their comfort zone as a result of the advantages. Improved experience leads to higher employee engagement, which leads to improved business outcomes.

All businesses want to make sure that their workers stick around, especially those with unique skills and skill sets. Finding innovative ways to improve the employee value proposition (EVP) is frequently required for this. By encouraging employee loyalty, flexible and competitive perks make guarantee organisations can keep this talent.

Some firms have increased innovative benefits for their staff in light of these demands.

Google is well-known for having a high staff retention rate. Google offers massage credits to its workers depending on their performance, which may be redeemed for a free 1-hour massage session with an on-campus therapist.

Employees of Facebook are eligible for survivor benefits. If an employee dies while working for Facebook, the individual's spouse and children earn three times their base salary. While there are limitations and conditions, this employee perk is critical to maintaining respectable retention rates.

Twitter offers all of its staff free lunches while on campus. Every working day, employees are entitled to up to three complimentary lunches. The business furthermore provides programmes and services including improv courses and acupuncture therapy.

Despite the fact that employee expectations are arbitrary, businesses may meet rising expectations by striking a balance between employee expectations and practical business considerations. Although the procedure could be challenging without a centralised platform, it is not impossible.

The primary goal of any perk is to enhance employee retention. Each benefit, however, has a consequence. Before deciding on the sort of employee, the company should decide what employee perks they want to give, such as financial benefits, mental health benefits, educational benefits, age-based benefits, and so on, as well as how they want to attract employee loyalty.

Finding out if the business has the resources to offer the budget for every employee is the second crucial stage. There cannot be division and demoralisation in the workplace when a new perk is offered to only a portion of the personnel.

It might also be useful in determining the requirements of the workforce. Questionnaires, interviews, and surveys are critical processes that should not be skipped.

Before the benefit is introduced, clear communication between you and your employees is critical. Providing employees with an awareness of the advantage will motivate them to stay with the company during the implementation.

Evaluations must be conducted often. In doing so, it will be possible to determine whether the implementation was effective and whether the employee perks have increased work satisfaction.

Imagine it as Amazon for employee benefits; it is a brand-new employer-employee self-serve platform. It is a three-sided marketplace where companies may offer their goods

and services so that employers can find the advantages that are appropriate for their employees.

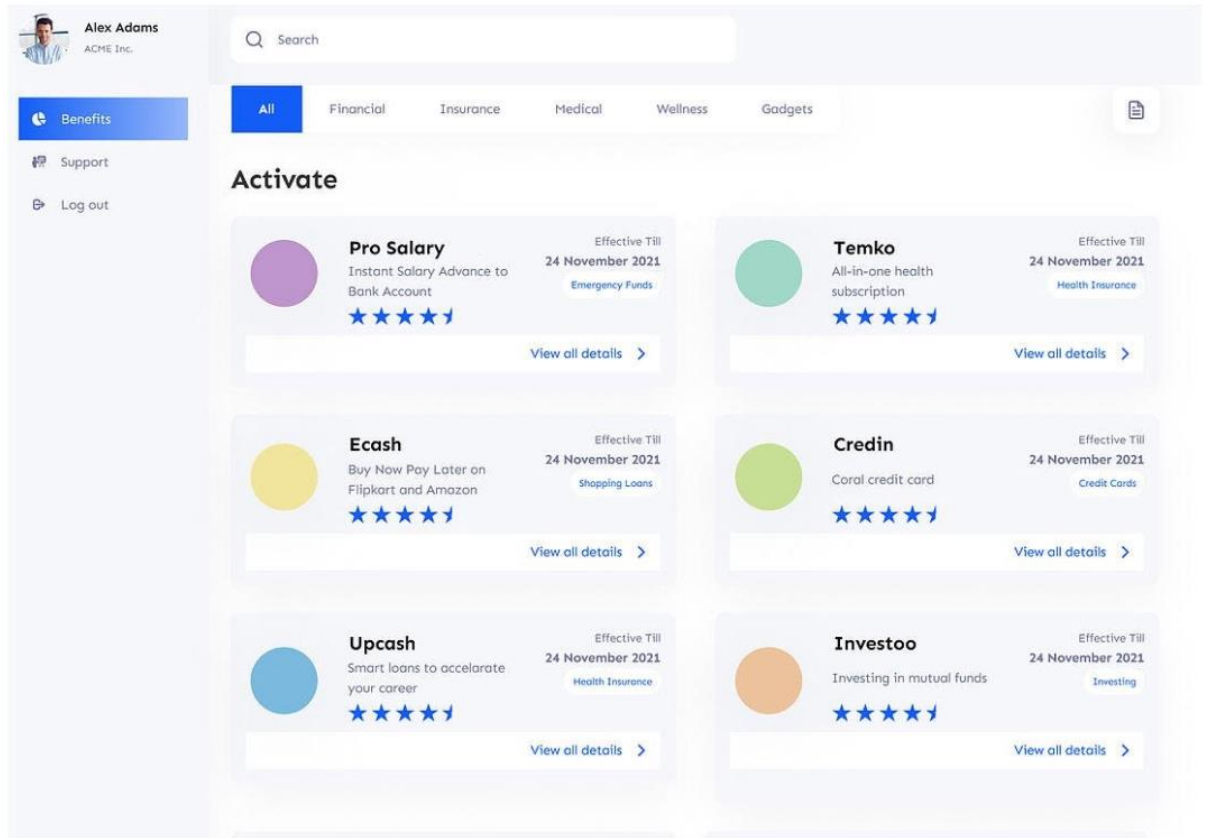


Fig.1 Batik Dashboard

Employers may effectively identify and give employee benefits with the aid of Batik Benefits, which provides a user-friendly benefits marketplace with more than 15 different sorts of perks. Employers are currently being forced to reevaluate how they attract and retain people for their organisations as a result of the worldwide pandemic, which has changed our way of life and organisational structures. As businesses alter their benefits strategies to better meet the needs of their workforce, including allowing for asynchronous work and adopting hybrid and remote work techniques for quicker digital transformation, employee benefits have become an important area of concern.

As a result of the COVID-19 pandemic, companies and workers alike are becoming more aware of the importance of providing mental health benefits in order to attract and retain top talent. According to studies, 84% of workers have dealt with at least one mental health issue, and 31% of them have seen a decline in their mental health over the last year. Focusing on health and nutrition, providing access to online fitness courses, counselling sessions, and mindfulness apps are some approaches to solving this problem.

The epidemic has also brought attention to how fragile financial stability is in the face of an impending disaster. The financial load that 63% of workers say has become worse since the pandemic began has a negative effect on worker engagement, productivity, and mental health. This stress can be reduced by providing more retirement savings, increased bill reimbursement, and money for unforeseen medical costs.

The conventional physical work structure was replaced with remote work-from-home options, and after experiencing the advantages of remote work, both companies and employees were reluctant to return to the old ways. A recent survey found that 78% of Indian workers favoured hybrid work schedules, which provide the best of both worlds. Employees who have greater freedom to choose when and where to work according to their needs produce more and experience less stress when they have a hybrid work arrangement.

With 52% of respondents in a Flexjob poll seeking to negotiate a flexible work schedule with their employer, a flexible work schedule is also growing in importance. However, for flexible work arrangements to be effective, businesses need to take a more all-encompassing approach than the traditional work-life guidelines. The benefits of granting flexibility are reciprocal, may take some time to manifest, and may need some early rewards.

JSON (JavaScript Object Notation) is a popular data transfer standard two decades after its debut. JSON can describe simple to complicated data in a form that is straightforward for both humans and machines to understand since it is flexible and language-independent. JSON is now widely used in the industry as a result of the growth of smartphones and APIs (Application programming interfaces).

JSON, although being based on JavaScript, may be used in any current language. Most data structures may be expressed using the simple, versatile JSON syntax. JSON is simple to read and write for people and robots alike. JSON is a lightweight data format with low syntactical cost when compared to more verbose data formats like XML (eXtensible Markup Language).

JSON may be formatted using only a few characters from a regular keyboard. JSON can handle far more intricate data. Even the most complex JSON structures are based on a few basic principles for the individual pieces. These guidelines—the JSON notation itself—are taken from JavaScript, the language that provided inspiration for the format.

The curly brackets and that commonly wrap JSON data or files are perhaps the most recognisable aspect of JSON. Those brackets, in fact, define an object, which is a crucial aspect of the JSON structure. Objects, however, are simply one component of a broader definition of JSON.

JSON supports four main data types as well as two data structures that may carry multiple values. When these six categories are combined, JSON may express data in a variety of ways, from simple records to sophisticated, nested documents.

A key and one or more values are associated to an object. This JSON data structure, which is also known as a hashtable or dictionary in certain programming languages, includes curly brackets to enclose the object, a colon to divide the key from the value, and commas to delimit each value.

An ordered list of values can be found in an array. Unlike objects, arrays just contain values and no keys. To separate each value in an array, use square brackets [and] with commas. Any data type, including other objects and arrays, may be used as a value in both objects and arrays.

JSON is the most used format for public APIs, exceeding XML by more than ten percent. However, when just recent data is included, the situation becomes even clearer: there are more than five times the number of JSON APIs as the next format, and APIs are twice as likely as any other format to employ the JSON content type.

Most APIs, in addition to JSON, employ REST (Representational State Transfer) or other HTTP (Hypertext Transfer Protocol)-based interfaces. There are various public APIs, GitHub examples, and API description formats.

Several REST APIs are the best practices for working with JSON data, as well as certain JSON standards, including the OpenAPI Specification, JSON Schema, and JSON API.

When a developer makes a call to your API, they will receive a response in the form of JSON text. What was once a data structure in your programming language is now serialised as a JSON string. The API consumer then parses this JSON and converts it into a native object of their language. One of the benefits of the JSON format is that your server and client do not have to use the same language or toolset.

Prior to JSON becoming the most popular data format, XML was the most often used data transfer standard. Almost every API at the time, regardless of the (typically REST or SOAP (Simple Object Access Protocol)), would offer XML replies. XML is more verbose than JSON, but it rigorously adheres to standards, which define the anticipated elements inside the data. JSON eventually required a similar approach, which resulted in the establishment of the JSON Schema definition.

JSON Schema is a specification for describing JSON documents. JSON Schema is commonly used to describe API request and response data, however any JSON file can be defined. Configuration files, for example, are another popular use of JSON Schema in which both parties must check that a file complies with the schema.

We need to use the `properties` keyword for validation. JSON Schema files contain keys that are described by validating keypairs within properties. Any number of objects that will appear in the appropriate JSON file can be described by the key. The strength of JSON Schema files comes in the ability to impose validation constraints on those keys.

It is possible to refine this ability to better specify what is permissible in the file. For all sorts of data, JSON Schema has several validation keywords. Having said that, there are several occasions when you'll want extra or perhaps unique keywords. JSON Schema offers a solution for it.

The `format` keyword is used by JSON Schema to do this. This can be used to indicate strings that have a certain semantic structure. Date formats and email addresses are among the built-in forms.

Validation using format keywords is not necessary for validators. This implies you'll need to investigate your individual validator to determine how it handles certain format keywords.

Actually, it's to provide JSON files greater flexibility. This method may also be used to target more specific terms. Perhaps your line of business has a standard format. You can simplify your JSON files as long as you use a validator that accepts custom format keywords.

The necessary validation keyword is an array that contains all of the keys that JSON files must have in order to be deemed valid. A file will now be verified only if certain prerequisites are satisfied. This enables for simple specifications. Having said that, JSON Schema also allows for the implementation of conditional needs.

There are other ways to implement dependencies as well, such as schema dependencies. This is, of course, a high-level summary of the properties that comprise JSON Schema. We are capable of much more with it.

The JSON-related API requirements discussed so far in this book are intended to serve as a record of the choices you make when creating an API. This 3rd and final JSON standard aids in your decision-making by guiding you towards industry best practices.

There are many choices you must make while creating APIs. You will need to, among other things, decide how to express pagination, name the fields, and provide error messages. Many of these choices are made for you by the, allowing you to focus on building the distinctive elements of your API.

Developers will know what to anticipate if they follow the JSON: API standards, which is another benefit. You should, at the very least, maintain consistency inside your own APIs. The conventions that many people have endorsed are much better. It prevents internal debates about the most effective format and guarantees that you'll be utilising a

style that other people will understand.

The word "properties" is perhaps the most often used keyword because objects with several properties make up the majority of JSON data. It only functions for things. If you look at the sample above, you may have observed that each property described by the term "properties" corresponds to a property in your data. Every property's value is a JSON-schema, which is a recursive standard. According to the matching schema in the "properties" keyword, each property in the data should be true. It's crucial to note that the "properties" keyword only provides schemas for the properties that are already present in the data; it does not make any attributes mandatory.

The function of the term "type" is obvious to you. Probably the most significant keyword is this one. The data type (or types), as represented by its value (a string or array of strings), determines whether the data is legitimate. The aforementioned example demonstrates that the user data must be an object. The majority of keywords only work with specific sorts of data; for instance, "properties" only works with objects, while "pattern" only works with strings.

On the WWW (World Wide Web), a URL (Uniform Resource Locator) can be significantly shortened while still pointing to the desired website by using the URL shortening technique.

This is accomplished by the use of a redirect, which leads to a web page with a lengthy URL. For example, the URL "https://facebook.com/signup/new/friend/" can be reduced to "https://fb.com/s/" and the URL "https://app.startbatik.com/signup/f69e600e-3efa-4833-be3b-119be7d1e64c" can be abbreviated to "app.startbatik.com/s/asde1dfe". The redirect domain name is frequently shorter than the original one. A friendly URL may be desired for messaging technologies that limit the number of characters in a message (such as SMS (Short Message Service)), to reduce the amount of typing required if the reader is copying a URL from a print source, to make it easier to remember, or for the purpose of a Permalink.

URL shortening can also be used to beautify a link, track clicks, or hide the underlying address. This is due to the URL shortener's ability to redirect to almost any web site, including malicious ones. As a result, while concealing the underlying address may be desirable for legitimate commercial or personal reasons, it is vulnerable to exploitation. Because of the usage of their redirect services by sites attempting to evade the same spam blocklists, certain URL shortening service providers have found themselves on spam blocklists. Some websites prohibit the use of short, redirected

URLs.

Use of URL shortening is advantageous for several reasons. Regular, unshortened links can frequently seem ugly. In order to express data hierarchies, command structures, transaction pathways, or session information, many web developers pass descriptive characteristics in the URL. This may lead to URLs with complicated character patterns and lengths of several hundred characters. Such URLs are challenging to remember, write out, or share. Long URLs must thus be copied and pasted for accuracy. Due to the need for very lengthy strings to be split up into numerous lines (as is the case with some e-mail software or internet forums) or truncated, very long strings are typically inconvenient for websites or hard copy publications (such as a printed magazine or book).

There is a character limit for messages on Twitter and some instant messaging services; however, Twitter now automatically shortens links using its own URL shortening service, t.co, so there is no need to use a separate URL shortening service just to shorten URLs in a tweet. Using a URL shortener on other similar services might permit connecting to websites that would otherwise go against this restriction. Several URL shortening services, like goo.gl, tinyurl.com, and bit.ly, can provide human-readable URLs, but the resulting strings are larger than those produced by a service that optimises for length. Compared to putting up an equally potent server-side analytics engine, URL shortening websites can be easier to use and give extensive information on the hits a link receives.

The fundamental benefit of a short connection is its brevity. Depending on the transcription, it may be easier to explain and input without error. It can, to some extent, disguise the URL's destination; this might be useful, unfavourable, or irrelevant.

Short URLs frequently avoid the intended purpose of top-level domains for showing nation of origin; domain registration in many countries needs confirmation of actual presence inside that country, but a redirected URL does not.

The use of URL shortening by spammers and others engaged in illegal online activity is possible. As a result, many have been blocked by web hosts or internet service providers or deleted from online registries.

Tonic Corporation, the registrant for .to domains, claims that it is "very serious about keeping domains spam-free" and may delist URL shortening providers from its registration if the service is misused.

Although URL shortening is convenient, it also poses potential issues, which has prompted criticism of its use. If the URL shortening provider ceases operating, for instance, all short URLs will get linkrot and become invalid. It is a valid worry that many currently available URL shortening services could not have a long-term viable

business strategy. The "Three Hundred One Works" initiatives were launched by the Internet Archive in late two thousand nine with the assistance of 21st collaborators, whose short URLs would be saved by the project.

Because shortened internet connections often utilise ccTLD (Country Code Top-Level Domain) domains, they are frequently subject to the jurisdiction of a country other than the one in which the service provider is situated. Libya, for example, used its authority over the.ly domain to shut down vb.ly in the tenth month of two thousand ten for breaking Libyan regulations. Failure to anticipate such issues with URL shorteners, as well as investment in URL shortening firms, may indicate a lack of due diligence.

Some websites prohibit the use of short, redirected URLs. TinyURL was reported to be restricted in Saudi Arabia in the fourth month of two thousand nine. TinyURLs are blocked in Yahoo! Answers, and Wikipedia does not allow URL shortening service links in its articles. The Reddit community strongly discourages – and in some subreddits, outright prohibits – the use of URL shortening services for link submissions because they conceal the origin domain name and whether the link has previously been submitted to Reddit, and there are few or no legitimate reasons to use link shorteners for Reddit link submissions.

The destination address is hidden by a short URL, which can also be used to redirect to an unexpected website. Phishing and redirection to shock websites or affiliate websites are two examples of this. The short URL makes it possible to visit restricted URLs while avoiding site blocklists; this makes it easier to steer users to restricted scam pages or pages with malware or XSS (Cross-Site Scripting) attacks. TinyURL works to prevent spam-related links from changing their URLs. However, ZoneAlarm has issued a warning to its users: TinyURL may be hazardous. It is well known that this website distributes malware. By giving users the opportunity to see a link's final destination before utilising a shortened URL, TinyURL solved this issue. Cookies are required to install this functionality on the browser via the TinyURL website.

A destination preview may also be accessed by prefixing the word view to the bitly URL; for example, typing <https://view.bitly.com/8abcd> reveals the destination of <https://bitly.com/8abcd>. Other URL shortening providers offer a destination display comparable to this. Following an incident in which a shortening site was compromised, exposing millions of users to security risks, security specialists advise users to confirm the destination of a short URL before visiting it. A shortened URL's destination URL can be shown by a number of online apps.

Although short URLs make it simpler to access what may otherwise be a very lengthy URL or user-space on an ISP (Internet Service Provider) server, they can make the process of retrieving web pages more difficult. Every access results in extra requests

being made (at least one additional HTTP/HTTPS request and one more DNS (Domain Name System) lookup, though these requests may be cached), which increases latency, the amount of time it takes to reach the website, and the possibility of failure since the shortening service could stop functioning. Another operational drawback of URL shortening services is that when a redirect occurs, browsers do not relay POST bodies. Making the service a reverse proxy or using complex systems including cookies and buffered POST bodies can solve this problem, but both methods pose security risks.

Another privacy issue is that the abbreviated URL structure of many services is tiny enough to be accessible to brute-force search. Many people use URL shorteners to share links to private content, and many web services, such as Google Maps, have automated the generation of shortened links for driving directions that reveal personal information such as home addresses and sensitive destinations such as clinics for specific diseases (including cancer and mental diseases), addiction treatment centres, abortion providers, correctional and juvenile detention facilities, payday and car-title lenders.

A loan is a sum of money borrowed for a certain length of time by a lender from a bank or financial organisation. A loan is simply a debt that must be returned with interest to the lender until the total loan amount is repaid.

Loans now play an important role in our financial and social well-being by assisting us in managing our finances. Loans are the finest means to an objective, whether it is a planned effort such as an overseas school, a dream property, or an instant necessity of finances for personal use or business growth. It is crucial to note, however, that lenders use your CIBIL (Credit Information Bureau (India) Limited) Score and Report to analyse your loan application.

The higher your credit score, the greater your chances of obtaining a loan. With your CIBIL Score and Report, you can now arrange your loan requirements in a more organised manner, whether it is for a credit card, personal loan, home loan, auto loan, or consumer durable loan.

The sum that must be paid to the bank or lender each month is known as an EMI (Equated Monthly Instalment), or equated monthly payment. It comprises of the loan principle plus interest, divided evenly by the number of months remaining on the loan term. Until the entire amount has been paid, the EMI is made on a certain day each month. Because you will know precisely how much money you need to pay each month if you calculate your EMI in advance, it might be easier to create a budget.

A loan or mortgage with a fixed interest rate remains at the specified rate for the duration of the loan. As a result, debtors can schedule their subsequent installments. Interest rates on credit cards and personal loans are typically fixed.

A floating interest rate changes in accordance with the market or an index. The prime lending rate or the base rate is used as the foundation for the calculation of the floating rate, and the interest rate paid is the prime interest rate/base rate plus a certain spread (as charged by the credit institution). Floating rates are typically given for house loans.

Borrowers can obtain an unsecured loan called a personal loan to help them with a variety of financial problems. There are instances when it is referred to as a All-purpose loan since the money can be used for any purpose.

Personal loans are used by borrowers for a variety of purposes, including paying off debt, going on vacation, decorating their houses, purchasing new appliances, funding weddings, covering school or medical costs, etc. When handled wisely, personal loans can also help you improve your financial situation and credit rating.

One of the key factors that facilitates your loan acceptance is your credit score and report. Lenders might lose money if you stop making payments because you are not required to give them a security or collateral. Consequently, before approving your loan application, lenders thoroughly review and assess your credit history. Your chances of getting a loan are increased by a high CIBIL Score.

Due to the unsecured nature of personal loans, lenders are required to confirm that applicants have a reliable source of income and have held a stable employment for the previous several years. An applicant for a personal loan who has a history of often changing employment might not be seen as the best candidate.

Another crucial element is your yearly income, which comes from your wage and other sources and shows that you have extra cash on hand to pay back your loan.

Lenders look at your EMI repayment schedule and frequency for all of your loan and credit card accounts when examining your credit report. Making on-time, consistent monthly payments shows lenders that you have good money management, which facilitates their decision-making.

Personal loans can range from rupees ten thousand to rupees three million, depending on the lender and the borrower's capacity to repay. Because it is a short-term loan, repayment choices are generally flexible and can range from twelve to sixty months, depending on the lender and the borrower's credit history.

Personal loan interest rates differ from borrower to borrower and lender to lender, based on the borrower's credit history and the amount borrowed. Get your CIBIL Score and Report from Batik, then go to mCIBIL to see what special interest rates (and other benefits) participating banks are offering based on your CIBIL Score and other characteristics.

Personal loans are disbursed at different rates depending on the lender. Depending on your qualifications, your loans might be granted in as short as twenty four hours or as long as seven working days.

If you apply for a Personal Loan, make sure you borrow within your means; otherwise, repayment will be a long and laborious procedure, which may have an impact on your credit history and CIBIL Score if you have overdue payments. Personal loans are among the most expensive types of loans accessible in the market; thus, pick wisely after completing thorough research and comprehension of the costs and rewards involved.

As the name implies, a credit card allows you to access credit facilities over and above your wage or monthly revenue. With a credit card, you have the freedom to utilise borrowed funds to pay for products and services, which you must then pay back without accruing interest.

A credit card is a plastic card (sometimes known as plastic money) provided by a bank or lender that allows the user to make purchases on credit up to a certain credit limit. The credit limit is the most money that may be spent or borrowed using a credit card. The limit differs for individual borrowers and lenders since it is dependent on the borrower's income, source of income, credit score, repayment history, and other personal information.

A credit card just indicates that your borrowing or purchasing power has grown, not that your monthly income has improved. Your credit card transactions are basically bank loans that you have taken out. You will get an itemised statement of your expenses each month, which you must pay on time or before the due date to avoid interest costs.

Having a credit card allows you to make purchases that are outside of your budget while paying back a portion of the total on a monthly basis. It is a service that allows you to borrow money quickly and repay it in installments (if necessary). A credit card also provides additional benefits in the form of reward programmes and incentives; for example, miles are granted if you spend a particular amount on airlines, reward points are awarded for spending a certain amount on shopping every month, and so on (this varies by card and lending institution). These promotions vary from time to time, but the accrued points can be redeemed for a variety of different products depending on the credit card company's policies.

A secured credit card is one for which you must first put down a predetermined deposit, which the bank will use as security in the event that you can't make your payments. People with weak credit or no credit history are more likely to utilise secured credit cards. Since there is no collateral tied to any other credit card kinds, they are all unsecured credit cards.

In order to avoid surprises and confidently apply for a credit card, it is important to first verify your CIBIL Score and Report. To examine and approve your credit card application, lenders will look at your CIBIL Score and Report. Your likelihood of being approved for the credit card of your choice is increased if you have a high CIBIL Score, no payback defaults, and a positive credit history.

If you do not make your monthly credit card payment, you will be charged interest on the outstanding balance (which may be as high as thirty six percent) as well as late payment penalties (which vary by lender).

If you do not pay the Minimum Amount Due by the due date, you may be charged late penalties as well as interest on your outstanding balance. Late payment penalties range from Rupees two hundred and fifty to Rupees one thousand, depending on the bank institution and kind of card used. Non-payment by the due date also has a negative influence on your CIBIL Score, which may impair your future borrowing and bargaining power.

If you only make the minimum payment required or make no payment at all by the deadline, the appropriate interest rate will be applied to your outstanding balance. The average daily balance approach is used by the majority of credit card companies, assuming that the payment isn't made before the grace period or the interest-free period, which is often between forty five and sixty days. This interest rate has a maximum annual cap of thirty six percent per annum.

Always make credit card payments on time since late fees are quite substantial, often fifteen percent of the minimum amount due or two and a half percent of the entire outstanding balance. Furthermore, every late or partial payment has a direct influence on your CIBIL Score, making it harder to obtain another credit line. Another issue to keep an eye out for is the closing of your credit card account; if the bank does not cancel the account, the charges will continue to rise and it may be considered as an overdue payment, which may harm your CIBIL Score and Report.

The options available to a person nowadays when selecting a credit card are virtually endless. Credit cards exist in a variety of forms, have a wide range of features and advantages, and may also be chosen depending on your lifestyle, purchasing power, and repayment ability. Understanding your needs, reviewing your current debts, and assessing your ability to repay them are the only ways to select the finest credit card. Investigate each credit card's features and advantages in-depth, paying particular attention to security features to prevent theft or fraud as well as any fees or interest rates.

The days of owning a vehicle or two wheels as a luxury are long gone. Today, having a personal automobile is a requirement for everyone. An auto loan makes it possible for

you to purchase anything, whether it's your first automobile, a costly update of an older model, a used car, a business vehicle, or a two-wheeler.

Borrowers take out auto loans to buy new, old, or both types of business or personal vehicles. Automobiles themselves are used as collateral for secured loans like auto loans. For new automobiles, secondhand cars, two-wheelers (usually referred to as a two-wheeler loan), and commercial vehicles (typically referred to as a commercial vehicle loan), lenders provide it.

A personalised AI-based diet planer for weight loss, Smart Diet Planner is situated in New Delhi. They make it simple to live a healthy lifestyle and manage weight. Based on the user's gender, height, age, weight, and lifestyle, they apply scientific computation to determine how many calories they will require. For each customer, they design a custom diet regimen that includes all the required calories and minerals. The healthy diet plan is noteworthy in that it is based on the users' dietary choices. It is based on the fundamental ideas of eminent Indian and foreign dieticians, including Dr. Manjari Chandra. "Eating right is the exact opposite of eating calories" is their fundamental thesis. Their Key Benefits: You may use a customised diet to lose weight, adopt a healthy lifestyle, boost your immunity, and reach your fitness objectives.

Based on information about your health, BMI (Body Mass Index), lifestyle, and eating preferences, they develop a customised diet chart and meal schedule for you; You can lose weight without tracking your calorie intake at meals. They suggest a diet based on information on the Indian home-cooked cuisine they frequently choose to eat; View your health information, weight reduction, fat loss, and daily calorie progress all at once. The diet planer for weight reduction breaks down the food plan in terms of nutrients such as protein, fibre, fats, and carbohydrate consumption with exact macro-nutrient mapping. This will create the habit of tracking calories without entering any data. The suggested range is modified for each meal.

Most people connect diets with rapid weight reduction and calorie restriction. A diet plan, on the other hand, is customised to a person's health state, weight, and lifestyle, as well as to their weight reduction and health objectives. The diet plan serves as a personalised guide to help you manage your eating habits, exercise routine, and lifestyle choices for maximum health and wellness.

Commercial diets frequently contain nutritionally imbalanced ingredients that result in rapid but temporary weight reduction. Depending on the nutrients you are deficient in your diet, these nutritional imbalances may potentially have additional detrimental effects on your health. This can lead to a pattern of yo-yo dieting in an effort to maintain weight loss, and this tendency might cause you to gain back what you've lost—and maybe even more. A balanced diet that has the proper ratios of several macro and micronutrients is crucial. A balanced eating plan promotes long-term, sustained weight loss and ideal health.

The Food and Nutrition Board of the Institute of Medicine launched a comprehensive initiative in nineteen ninety three to broaden the approach to the creation of dietary reference standards, which resulted in a number of publications, one of which is this report. The new categories of reference values differ significantly from the old RNIs (Recommended Nutrient Intakes) in Canada and the United States because they have specialised functions. This report's main objective is to analyse the proper use of each type of DRI (Dietary Reference Intake) value that is currently available for use in organising nutritional intakes for both groups and individuals.

Dietary Reference Intakes, as mentioned above, are a collection of at least 4 nutrient-based reference values that may be used for many different things, including planning and evaluating diets. An essential tenet of both the previous RDAs (Recommended Dietary Allowances) and Recommended Nutrition Intakes and the current Dietary Reference Intakes is that they are guidelines for healthy persons and are not suitable for sick people or for groups of people who are deficient in certain nutrients.

The average intake amount that is believed to satisfy the needs of fifty percent of healthy persons in a given life stage and gender group is known as the EAR (Estimated Average Requirement). The other half of the healthy persons in the indicated group would not have their needs satisfied at this consumption level. The EAR is based on a particular sufficiency criterion that was discovered via a thorough analysis of the literature. Reduction in illness risk is one of the health factors taken into account while choosing the criteria. According to the association between antioxidant protection and neutrophil ascorbate concentrations, the EAR for vitamin C, for instance, is based on a dose that is believed to offer protection against free radicals. The scenario for energy is a little different.

A reference intake known as an AI (Adequate Intake) may be produced in its place if adequate scientific information is not available to establish an EAR and hence calculate an RDA. The AI is a number based on experimentally determined intake levels or the mean nutrient intake of a group (or groups) of individuals who appear to be in good health and who are sustaining a specific nutritional condition or adequate intake standard. The maintenance of normal circulating nutrient levels or biochemical indices, normal development, and other aspects of nutritional well-being or general health connected to the nutrient are examples of defined nutritional states.

The issue of an AI is a sign that further study is necessary to accurately estimate the mean and distribution of nutritional needs. As soon as this study is finished, EARs and RDAs should be able to take the place of estimations of AIs.

1.2 Problem Statement

The present issue is the insufficient availability of a full platform for managing employee benefits and incentives that incorporates industry-standard URL shortening services and request body validation to streamline the signup process. Additionally, a soft pull of the CIBIL report is absent from the site, which would enable employers to have a better understanding of their workers' financial health. Additionally, a Smart Diet Planner application is required to support staff in maintaining a healthy lifestyle. These components are necessary to provide a complete platform for employee benefits and perks that simplifies benefits administration and supports employee wellbeing.

1.3 Objectives

- A. To integrate various features, partners and handle bug fixes of any kind on the Batik Platform
- B. To create a JSON Validator for validating and verifying every request body that enters the system
- C. To create an URL Shortening Service that shortens every signup URL towards the Batik platform that could be integrated to SMSs and e-mails
- D. To integrate TransUnion's soft pull of CIBIL Score and CIBIL Report
- E. To integrate Smart Diet Planner's iFrame to Batik Android and iOS Application

1.4 Methodology

Prerequisites:

The most important step in the strategy was putting everything together and learning what was needed to achieve the goals at hand. This thorough reading and examination of the issue statement provided helped identify the necessary components and value. We identified the activities that should have been completed and accurately and succinctly captured the requirements after characterising the informaton models for the Partners and Features, including database design.

Planning:

Planning for the feature integration came next. This involved defining the solicitation and reaction arrangements, differentiating the interface endpoints anticipated, and creating the system's error handling. We also made sure the setup was dependable by adhering to best practises, guiding principles, and a consistent naming system. We also considered the system's adaptability, viability, and extension.

Research and Learning:

Conducted research on the goals since it is crucial to recognise and develop the issues that are important and pertinent to the project. Gathering background data was the next stage once the problems had been identified. This was accomplished using a range of resources, including dictionaries, textbooks, and encyclopaedias. The internet was also a helpful tool for research, but it's vital to exercise caution and assess the validity and dependability of the data. Websites were rated according to details including the author, publisher, publication date, and references referenced. It was crucial to stay away from erroneous or shaky sources.

Develop the feature:

The core of our undertaking was creating and developing code. It required comprehending, translating, and executing our algorithms into Java and Springboot. The project's success depended heavily on the calibre of the code I developed. It was essential to have well-written code that was clear to read and comprehend, effective, and capable of being modified as necessary. Poorly written code that could be demanding to comprehend, prone to mistakes, and challenging to alter or grow the project in the future is absolutely avoided. Writing code was a crucial part of the project, and in order to make sure it was successful, it was important to take the time to produce clear, effective, and maintainable code.

Test and remove bugs:

The goal was to develop an application with no bugs. Once I discovered issues throughout the testing phase, I had to totally remove them. The majority of the blame for any software's poor performance lies with its flaws. I greatly reduced the bug prevalence by utilising a creative testing approach. Bugs have a strong sense of community. I employed bug-screening techniques when creating any programme in order to prevent errors when development. Various unrealistic inputs that I provided helped me progress. This enabled the discovery of several undiscovered and concealed bugs. I never hesitated to ask my superiors at TartanHQ for help and direction if I was having a problem. They were always willing to assist.

Production release:

The most important phase was the production release. Making a plan was the first step. I chose the features to be included and the anticipated delivery date in collaboration with the team. The programme was then created. The team then conducted UAT (User Acceptance Testing). It assisted in finding any flaws or problems that could have gone unnoticed throughout development. After that, we prepared the release by composing a release notes paper and documenting the modifications.

2. LITERATURE SURVEY

2.1 Java

James Gosling created Java, a high-level, all-purpose, object-oriented, and secure programming language, at Sun Microsystems, Inc. in nineteen ninety one. Its official name is OAK. Sun Microsystem renamed the programme Java in nineteen ninety five. Sun Microsystem was acquired by Oracle Corporation in two thousand nine.

Java is an easy language to learn because of its clear, concise, and basic grammar. In Java, difficult and unclear C++ ideas are either dropped or reimplemmented. For instance, Java does not employ pointer overloading or operator overloading.

Everything in Java takes the form of an object. It implies that it contains some data and behaviour. At least one class and object must be present in a programme. Java makes an effort to detect errors both during runtime and during compilation. It employs a powerful memory management technique known as garbage collector. Its exceptional handling and trash collecton capabilities make it powerful.

Because Java operates on a virtual computer and without explicit pointers, it is a secure programming language. A security manager for Java classes is present and controls access. Java offers the assurance that code may be written once and executed anywhere. Any machine may execute this platform-neutral byte code.

Code written in Java Byte can run on any platform. No features that depend on the implementation. The size of primitive data types, for instance, is fixed, as is everything else related to storage. An interpreted language is Java. Java uses the Just-In-Time compiler to achieve excellent speed.

Java provides networking capabilities as well. Because it supports the TCP/IP (Transmission Control Protocol/Internet Protocol) protocol, it is made for the distributed internet environment. It is capable of operating online. To build a distributed system, EJB and RMI are utilised. Java also allows for many threads. It refers to managing many tasks at once.

A large problem may be solved with object-oriented programming by being divided into smaller, more manageable problems. A thing in the actual world is an object. Using an object makes the process of developing a programme simpler. In OOPs, we use clas and oboect in an organised way to develop programmes.

The data members and methods of an object are defined by a class, which is a prototype, blueprint, or template. A class instance is a physical thing. Using the class keyword, we can define a class. An identifiable physical thing in the world is called an object. An object may be a desk or a circle, for instance. Each behaviour, identity, and state of an item is distinct. The state of an object (also known as its characteristics or attributes) is represented by the current values of data fields.

An abstraction is a technique for concealing unimportant information from the user. For example, a driver simply needs to know how to operate a car; he or she does not need to know how the automobile works. Using the term abstract, we can create a class abstract. To accomplish abstraction in Java, we employ abstract classes and interfaces. The technique of combining data and functions into a single unit is known as encapsulation. Encapsulation is demonstrated via a class. A Java bean is a completely enclosed class in Java. Inheritance is the technique through which one class acquires all of the characteristics of another. Using the extends keyword, we can accomplish inheritance. It improves the code's reusability.

The capacity to manifest in several ways is known as polymorphism. In other words, performing a same action in several ways. For instance, a boy acts like a student in class and like a son at home. Run-time polymorphism and compile-time polymorphism are the two different forms of polymorphism.

Sun Microsystems first launched Java, a well-known high-level, class-based object-oriented programming language, in nineteen ninety five. Currently, more than three billion devices use Java, which is owned by Oracle. Java is compatible with several operating systems, including Windows, Mac OS (Operating System), and numerous UNIX (UNiplexed Information Computing System) variants. Numerous forms of software applications, including mobile apps, web apps, desktop apps, games, and much more, are created using Java.

The goal of the general-purpose programming language Java is to enable WORA (write once, run everywhere) for programmers. This implies that Java code that has been compiled can execute without needing to be recompiled on any platform that supports Java.

Although the Enumeration interface is not a data structure in and of itself, it plays a crucial role in the context of other data structures. A method of extracting consecutive elements from a data structure is defined by the Enumeration interface.

To acquire the next element in a data structure with numerous elements, for instance, Enumeration offers a method called nextElement. A collection of bits or flags that may be individually set and cleared is implemented by the BitSet class. When managing a set of Boolean values, this class comes in quite handy since all you have to do is assign a bit to each value and set or clear it as necessary.

The LIFO (last-in-first-out) stack of items is implemented by the Stack class. A stack may be visualised as a vertical stack of items; each new element is added on top of the previous ones. An element comes off the top of the stack when you remove it. To put it another way, the last item you added to the stack is the first to be removed again. A data structure for relating keys to values is defined by the abstract Dictionary class. This is helpful when you'd want to utilise a specific key to retrieve data rather than an integer index. The Dictionary class merely offers the framework for a key-mapped data structure because it is abstract.

Data may be organised using the Hashtable class using a user-defined key structure.

For instance, instead of using a person's name to store and arrange the data in an address list hashtable, you may use a key like the ZIP code.

The use of the hashtable and the data it includes completely determine the precise meaning of keys in terms of hash tables. Hashtable has a subclass called Properties. It is employed to preserve lists of values when the key and value are both strings.

Numerous additional Java classes make use of the Properties class. When retrieving environmental data, for instance, it is the kind of object returned by `System.getProperties()`.

Ad hoc classes like Dictionary, Vector, Stack, and Properties were available in Java before Java 2 to store and handle groupings of objects. These classes were really helpful, however they lacked a single, overarching concept. As a result, you utilised Vector in a different manner than you did Properties.

There has to be a high-performance framework. The primary collections (dynamic arrays, linked lists, trees, and hash tables) were to have extremely effective implementations. The framework needed to support the operation of many types of collections with a high level of interoperability. The structure needed to quickly change and/or enhance a collection.

The whole collections framework is built around a set of common interfaces in order to do this. You may use a number of the standard implementations of these interfaces—including `LinkedList`, `HashSet`, and `TreeSet`—as-is or, if you prefer, construct your own collection.

A unified architecture for representing and working with collections is known as a collections framework. These abstract data types serve as collections representations. Collections may be manipulated via interfaces regardless of the specifics of their representation. Interfaces in object-oriented languages typically have a hierarchy. These are actual examples of how the collection interfaces are implemented. They are essentially reusable data structures. These are the procedures that carry out practical operations on objects that implement collection interfaces, such as searching and sorting.

The framework offers a number of map interfaces and classes in addition to collections. Key/value pairs are kept in maps. Maps are completely interwoven with collections even if they aren't technically collections in the traditional sense of the word.

Collection interfaces are implemented by a set of standard collection classes in Java. Some of the classes give complete implementations that may be used directly, while others are abstract classes that provide skeleton implementations that can be used as starting points for developing concrete collections.

Standard collection classes that implement Collection interfaces are available in Java. Others are abstract classes that offer skeleton implementations that are used as jumping-off points for building actual collections. Some of the classes include entire implementations that may be utilised immediately.

Several algorithms that may be used with collections and maps are defined in the collections framework. The Collections class defines these algorithms as static methods. A few of the methods have the potential to raise an UnsupportedOperationException or a ClassCastException when trying to compare types that are incompatible or change an immutable collection, respectively.

EMPTYSET, EMPTYLIST, and EMPTYMAP are the three static variables that Collections declares. All are unchangeable.

2.2 SpringBoot

Java Spring Framework (Spring Framework) is a well-liked open source, enterprise-level framework for building independent, high-quality Java Virtual Machine (JVM) applications. Through its three main features, Java Spring Boot (Spring Boot) is a solution that accelerates and simplifies the development of web applications and microservices using the Spring Framework.

Dependency injection is a feature of the Spring Framework that enables objects to specify their own dependencies, which the Spring container will subsequently inject into them. As a result, programmers may construct modular programmes with loosely linked components that are perfect for distributed network applications and microservices.

Typical activities that an application must do, including as data binding, type conversion, validation, exception handling, resource and event management, internationalisation, and more, are also supported natively by the Spring Framework. It interfaces with a number of Java EE technologies, including Java Web Services, AMQP (Advanced Message Queuing Protocol), and RMI (Remote Method Invocation). In conclusion, Spring Framework gives programmers all the capabilities and tools they

require to build loosely connected, cross-platform Java EE applications that function in any setting.

Even though the Spring Framework is powerful and complete, configuring, setting up, and deploying Spring applications still takes a lot of effort and expertise. Spring Boot reduces this work with three crucial features.

Applications are initialised with pre-set dependencies using autoconfiguration so you don't have to explicitly setup them. The built-in autoconfiguration features of Java Spring Boot enable it to automatically configure the underlying Spring Framework and third-party packages in accordance with your preferences (and in accordance with best practises, which helps prevent mistakes). Despite the fact that you may change these settings once initialization is finished, Java Spring Boot's autoconfiguration feature makes it easier for you to get started creating Spring-based apps quickly and lowers the likelihood of human mistake.

Based on the requirements of your project, Spring Boot takes an opinionated approach to adding and setting startup dependencies. Instead of having you to make all those selections and configure everything manually, Spring Boot decides which packages to instal and which default settings to use.

During the startup phase, when you select from a variety of beginning dependencies known as Spring Starters that address common use cases, you may specify the requirements of your project. You may use Spring Boot Initializr without writing any code by completing a short online form. Over 50 Spring Starters are included with Spring Boot, and there are many more third-party starters available.

Spring Boot assists developers in creating apps that just execute. It allows you to construct standalone apps that operate without the need for an external web server by embedding a web server like Tomcat or Netty within your app during the startup phase. Therefore, we may use the Run command to launch your programme on any platform. (You may disable this capability if you want to create apps without an integrated Web server.)

Again, simplicity of use and quicker development are the main benefits of Spring Boot over Spring Framework alone. The increased freedom you have from interacting directly with Spring Framework is theoretically sacrificed in order to achieve this.

But in reality, adopting Spring Boot is with the sacrifice unless you want or want to develop a really special setup. You may still make advantage of the well regarded annotation system in the Spring Framework, which makes it simple to add additional dependences (not covered by Spring Starters) to your application. Additionally, you continue to have access to all of the features of the Spring Framework, such as simple event handling, validation, data binding, type conversion, built-in security, and testing

capability. If Spring Boot can handle the breadth of your project, development can be greatly accelerated.

Spring Boot configures your application automatically depending on the dependencies you add to the project using the `@EnableAutoConfiguration` annotation. For example, if the MySQL database is in your classpath but no database connection is specified, Spring Boot will auto-configure an in-memory database.

The class that has the `@SpringBootApplication` annotation and the main function is the spring boot application's entry point.

By utilising the `@ComponentScan` annotation, Spring Boot automatically scans all of the project's components.

Managing dependencies is a challenging challenge for large projects. Spring Boot overcomes this problem by offering a set of dependencies for the convenience of developers. For example, if you wish to utilise Spring with JPA for database access, including the `spring-boot-starter-data-jpa` requirement in your project is sufficient.

We are able to produce a war file to deploy into the web server by utilising the Spring Boot application. The Spring Boot Application `@SpringBootApplication` class extends the `SpringBootServletInitializer` class in the conventional deployment method. When an application is launched using a Servlet Container, you may configure it using the Spring Boot Servlet Initializer class file. To allow WAR file deployment, the class `SpringBootServletInitializer` has to be extended. The primary class that should launch in Spring Boot must be mentioned in the build file.

To specify our beans and their dependency injection in Spring Boot, we may utilise the Spring Framework. To locate beans and the related `@Autowired` annotation-injected beans, use the `@ComponentScan` annotation. Spring Beans automatically registers all component class files.

Application properties enable us to operate in a variety of settings. The command line properties are converted into Spring Boot Environment properties by the Spring Boot programme. All other property sources are subordinate to command line properties. Spring Boot starts the Tomcat server by default using port 8080. To execute the programme in a different environment, properties files are used to store 'N' number of properties in a single file. Properties are stored in the application in Spring Boot file called properties in the classpath.

The `src/main/resources` directory contains the `application.properties` file. To launch the application, Spring Boot supports YAML-based property settings. We may use the `application.yml` file in place of the `application.properties` file. Additionally, this YAML file has to be kept on the classpath.

2.3 JSON

JavaScript Object Notation, or JSON, is the contemporary alternative to XML for data interchange. JSON is small, minifies well, and can be interpreted quickly. JSON avoids the complexity of other data-interchange formats by basing itself on straightforward, nearly universal data structures. Object-Oriented Principles have a big impact on JSON.

JSON is used by almost all REST APIs. JSON is used by most online applications. JSON is supported by every single current browser. Practically anything web-based that is even remotely contemporary supports it. Many microservice designs use REST APIs, which generally interact using JSON. JSON provides access to practically all current APIs and online services.

Both of the fundamental data structure types that make up JSON are found in every contemporary computer language. The data is put up as key-value pairs. Standard objects typically consist of a single key and value or a group of keys and values that, in most languages, correspond to a hash table. Similar to an array, data may also be arranged.

JSON is significantly simpler to analyse and comprehend since it is more strict than XML. There may be more than 1 method to accomplish a task, but a JSON implementation of an exact table layout will only change slightly from another. The components' placement might change.

We have a few keys with a simple value immediately after them. JSON supports a variety of scalars, often known as primitives in various languages. Strings, numbers, integers, booleans, and null values are all supported by JSON. Numbers and integers differ little in terms of implementation, but they have an impact on highly typed languages such as C or Java.

Take care of the commas as well; you shouldn't conclude a sentence with one if nothing else does. It isn't in the specification, although certain parsers do support it. No quotations are required around numbers, booleans, or null values. Collections of other objects, arrays, and scalars are all that objects and arrays are. In JSON, you don't have to specify the type you're working with.

When read, objects can appear in any sequence. Because we ostensibly care about the order of the email, we utilised our arrays above. Although some languages could deliver the data in the same order as the JSON, objects do not require order. If you observe this behaviour, do not rely on it. For instance, because of the way Perl handles hashes, you may iterate through them repeatedly until something random changes, either in the file or somewhere else in the code.

If the code accessing the object understands what to do, standardising and populating it is not required. To know what you're dealing with, it's best if you either specify a field or have each item be the same.

eXtensible Markup Language is known as XML. Although XML is incredibly versatile, it is infamously hard to parse. An immensely widespread technology that is XML is HTML, for all intents and purposes.

In contrast to JSON, which lacks flexibility, XML employs tags to specify where a section starts. You can notice from a few of the comparative examples that XML is frequently a little lengthy compared to JSON. Scalars can also be used in tags in XML, adding to the complexity.

Although JSON loses some human readability for far higher machine readability, both are equally legitimate for use. The flexibility of XML makes it slower and more challenging to sanely scan for RFC conforming code. Many languages have unfinished XML parsers with confusing or missing functionality.

Because XML is so complex, I'd rather develop a single JSON parser in each and every programming language I've ever tried than a single XML parser in my finest language.

JSON is straightforward, portable, and machine-readable. Before being minified, it is easily readable since it is basic enough. JSON restricts your flexibility and forces routines.

Almost every current language includes a number of JSON parsing libraries that are LGPL or MIT licenced, and many more that are available under other licences (such as the GPL for FOSS). With careful JSON preparation, you can essentially swap out the parser by yourself to replace the XML handling code with JSON code. Many parsers return comparable fundamental structures in both cases (often a generic tree object), and it is possible to have them style the structures similarly.

JSON eliminates the XML's complexity issue and places restrictions on its syntax to produce more consistent data. JSON is incredibly powerful for managing data and is simple to understand. It is easier for a computer to parse and has about the same readability as XML in a smaller container.

JSON, often referred to as the JavaScript Object Notation, is one of the most widely used formats for data exchange. It is a lightweight text-based format for data exchanges. Douglas Crockford created the original JSON format.

Because it is text-based, this format is simpler for users to read or write while also being a stress-free option for machines to produce or deconstruct. Although it is essentially a

subset of JavaScript, JSON is completely independent of any computer language used because practically all of them can readily analyse text.

It is the perfect contender for data-exchange activities because of its distinctive qualities, such as text-based, lightweight, and language independence, among others.

JSON is mainly categorised by the fact that it is composed of two structural components. They consist of an ordered list of values and a collection of name, value pairs.

Since they are supported by the majority of the computer languages now in use, JSON is a universal data format. Having a data type that can be used interchangeably across languages makes a programmer's job much simpler.

2.4 Hashing

Any key or string of characters can be transformed into another value via hashing. The original string is often represented with a shorter, fixed-length value or key that makes it simpler to locate or use.

Implementing hash tables is the most well-liked use of hashing. Key and value pairs are kept in a list that can be accessed using a hash table's index. The hash function will map the keys to the size of the table since key and value pairs are infinite. The index for a given element is then changed to a hash value.

A hash value, also known as a hash, is created by a hash function and is based on a mathematical hashing method. A good hash always employs a one-way hashing technique to avoid the conversion of the hash back into the original key. Data indexing and retrieval, digital signatures, cybersecurity, and cryptography are a few areas where hashing is significant.

Utilising algorithms or functions, hashing converts object data into a useful integer value. The search for these objects on that object data map may then be honed using a hash.

Developers store data, such as a customer record, as key and value pairs, for instance, in hash tables. The hash code or the integer is then mapped to a predetermined size, while the key aids in data identification and serves as an input to the hashing method.

Hashing aids in the encryption and decryption of digital signatures needed to authenticate message senders and recipients in addition to enabling quick data retrieval. In this case, the digital signature is changed by a hash function before the hashed value and the signature are transmitted separately to the recipient.

When a message is received, the same hash function uses the signature to create the message digest, which is then compared to the message digest that was broadcast to make sure they are identical. The hash function indexes the initial value or key and makes data linked to a particular value or key that is retrieved accessible in a one-way hashing process.

Dewey For many years, libraries have used decimal categorization, and the basic idea is still applicable to computer science. Software developers can reduce the original data assets and input strings to brief alphanumeric hash keys to save both file space and processing time.

Hashing assists in focusing a search for a particular item on a data map. Hash codes create an index to hold values in this case. As a result, hashing is employed here to index and retrieve data from a database in order to speed up the procedure because it is much simpler to discover an item using its shorter hashed key than its original value.

In cybersecurity, hashing requires unidirectional procedures that employ a one-way hashing algorithm. It is a critical step in preventing threat actors from reverting a hash to its original state. Two keys can yield an identical hash at the same moment. This is referred to as a collision.

A decent hash function never returns the same hash result when given two distinct inputs. As a result, a hash function with an extremely minimal probability of collision is deemed acceptable.

When collisions occur, open addressing and independent chaining are two methods for dealing with them. Open addressing avoids collisions by putting all data in the hash table and then seeking availability in the algorithm's next location.

Cybersecurity experts can also include random data in the hash algorithm to further assure the uniqueness of encrypted outputs. This method, referred to as "salting," ensures a distinct result even when the inputs are the same.

Bad actors are prevented from accessing non-unique passwords through salting. This is so because, even when people reuse their passwords, each hash value is distinct. For further protection against rainbow table assaults, salting is used.

When analysing or preventing file manipulation, hashing is also employed. The reason for this is that each original file creates a hash and saves it in the file's data. The hash is examined when a receiver receives the file and hash combined to see if the file was hacked. The hash would show the change if the file was altered.

3. SYSTEM DESIGN AND DEVELOPMENT

3.1 JSON Validator

The development of the Batik platform has been a major endeavour that has involved several teams and close cooperation in order to produce a comprehensive solution that satisfies our users' expectations. I got the chance to work on a number of important additions as part of this project, which improved the platform's functionality and usability.

The JSON Validator tool, which enables customers to effortlessly validate for request bodies even if they make any errors in their request body, was one of the most important things I created. The difficulty of processing a broad variety of request bodies made it difficult to deploy this feature, but it has finally dramatically enhanced the experience for our users.

It's critical to have a solid grasp of the kinds and data structures you're working with while developing code. You may prevent mistakes and make sure that you code operates as intended by being aware of exactly what you are modifying in it. Your IDE's intellisense, which may offer suggestions and autocompletion depending on the types you're working with, is a helpful tool for this. By assisting you in finding the appropriate methods and attributes for a certain type fast, this may save time and minimise mistakes.

Annotations are a further means of modifying the behaviour of your types. You may add information to your code with annotations, which may change how it is compiled or run.

JSON Schema is a potent tool for flexible and extendable JSON data validation. The adaptability of JSON Schema is one of its important characteristics. You may create intricate validation rules using JSON Schema based on a wide range of factors, such as conditionals on subschemas, regular expressions, ranges, and more. This offers you complete control over the validation of your JSON data and enables you to modify the validation to meet the unique requirements of your application.

JSON Schema has the additional benefit of not being restricted to static types. JSON Schema may be utilised with both statically and dynamically typed languages, including Java, Python, and JavaScript, unlike many other validation tools.

As a result, JSON Schema is a flexible tool that may be applied to a number of applications and situations. The ability to change the validation without changing the code is perhaps one of JSON Schema's most powerful capabilities. This implies that

you may alter the JSON data validation criteria without modifying the code that creates or uses the JSON data. This may be particularly helpful when you have many services or apps that rely on the same JSON data but have various validation needs. Overall, JSON Schema is a strong and adaptable tool that may assist you make sure your JSON data is accurate and consistent, regardless of whether you are dealing with a tiny application or a big distributed system.

If your use case doesn't fit the json-schema spec, you must hope that the library you use lets you to add your own custom keywords to the schema. If you don't organise your schema using separate subschema files and \$ref, it may grow fast and become difficult to understand. However, libraries are finicky when handling \$ref schemas. If you want to record detail problems with information gathered at various hierarchical levels in the json, we will need to put in some effort.

3.2 URL Shortener

A programme called a URL shortener aids in the creation of shorter, easier-to-manage links for lengthy URLs. These shortened links may be shared on social media, used to cut down on the number of characters needed in text messages, and even help users remember URLs. Typically, a URL shortener will take a lengthy URL and generate a new, shorter URL that points back to the original URL. The original URL is automatically forwarded to when someone clicks on the short link.

Most of the time, there are a few stages involved in establishing a short URL. The user begins by entering the lengthy URL they wish to shorten into the URL shortener tool.

The app then uses a special algorithm to build a new, shorter URL. Usually, the original URL is substantially longer than the new URL, which makes it simpler to share and remember. The user may share the short URL on social media, email, or any other platform after it has been produced. The original URL is automatically forwarded to when someone clicks on the short link. A web page will automatically reroute to another page, a technique known as URL redirection, to accomplish this. In order for URL redirection to really operate, a server-side script must be used to make a request to the original URL.

The material is then retrieved from the original URL by the script and sent back to the user's browser. The material from the original URL is then shown in the user's browser as though they had viewed it directly. Now there are several different kinds of URL shorteners out there, both free and paid. Basic capabilities like the ability to generate a short link and measure the amount of hits it receives are frequently provided by free URL shorteners. Paid URL shorteners sometimes include more sophisticated services, such as the ability to generate short links with custom domains and statistics. The ease of sharing URLs on social media is one of the key benefits of utilising a URL shortener.

Character restrictions on social networking sites like Twitter may make it challenging to communicate lengthy URLs. Users may cut down on the number of characters in their links and make them easier to distribute by utilising a URL shortener. Utilising a URL shortener has the added benefit of enhancing SEO. In general, shorter URLs are simpler for search engines to index, which can increase a website's exposure in search results. Other capabilities that some URL shorteners offer include analytics and tracking, which may give important information about how visitors are interacting with a website. In conclusion, a URL shortener is a practical tool that may make lengthy URLs easier to handle and distribute.

Following is the database structure that I have created for storing the URLs along with their hashes:

	id	original_url	short_url
▶	30875		24cc14ff
	30876		704a8d89
	30877		284279bc
	30878		ce08014e
	30879		40f927d1

Table 1. URL Shortner Database Structure

In order to create a short URL, a lengthy URL is often entered into a tool that creates a new, shorter URL that points back to the original URL. When a user clicks on the short link, URL redirection is utilised to send them back to the original URL. Both free and paid solutions are offered, and each has a unique set of features. All things considered, a URL shortener is a useful tool for anyone trying to distribute URLs more successfully.

To sum up, URL shorteners are now a necessary tool for everyone trying to distribute URLs more successfully. They have several benefits, including enhancing a website's exposure in search results, making it simpler to share links on social media, and making long URLs more manageable. A short URL may be easily created by using a programme that generates a new, shorter URL that points back to the old URL. When a user clicks on the short link, URL redirection is utilised to send them back to the original URL.

There are both free and premium URL shorteners, each with a unique set of functions.

Paid URL shorteners frequently provide more sophisticated services like custom domains, analytics, and the option to build branded short links, whereas free URL

shorteners typically just offer basic capabilities like the ability to generate a short link and monitor clicks. Making sure the service is dependable and trustworthy is crucial when utilising a URL shortener. It is crucial to pick a URL shortener with a solid reputation and a long history. The possible dangers of utilising URL shorteners, such as the chance of being routed to a rogue website, must also be understood. All things considered, URL shorteners are a useful tool for anyone trying to distribute URLs more successfully.

They are simple to use, have a lot of benefits, and come in both free and paid versions. Users may benefit from shorter, more manageable connections without the dangers associated with rogue websites by selecting a reputable and trustworthy URL shortener.

3.3 CIBIL Score

Anyone intending to apply for loans or credit cards must understand how to examine their CIBIL score because it is a significant indicator of their creditworthiness. Fortunately, there are a number of simple ways to see your CIBIL score. Visit the official website of the credit bureau that handles the maintenance of your credit report as one option. You must register for an account on the website and enter certain personal data, like your name, address, and PAN number. You may access your credit record and CIBIL score after your account is created.

A credit monitoring service is another option to examine your CIBIL score.

You may normally access your CIBIL score and credit report throughout the free trial term of these services. You will have to pay a charge to use the service once the trial has ended. In addition, several banks and financial organisations provide free access to their customers' CIBIL scores. You can find out if a certain institution offers this service and how to use it if you have a bank account or credit card with them. While checking your CIBIL score is an excellent method to keep track of your creditworthiness, it should be noted that lenders don't just look at your score when deciding whether to approve your loan or credit card application.

Database structure:

client_key	request_key	partner_customer_id	date_of_birth	email							
[Redacted]											
gender	forename	surname	identifier_name	id	street_address	city	postal_code	region	address_type	number	user_id
[Redacted]											
risk_score	inquiry_date	order_id	request_json	challenge_config_guid	question_key	answer_key	retry_count	created_at	updated_at		
[Redacted]											
request_json	challenge_config_guid	question_key	answer_key	retry_count	created_at	updated_at	created_by	updated_by	auth_flow_type		
[Redacted]											

Table 2. CIBIL Score Integration Database Structure

Additionally, lenders take into account things like income, job history, and current debt levels. Paying your payments on time, not maxing out your credit cards, and limiting the amount of credit applications you submit are all crucial for maintaining a high CIBIL score. You may gradually raise your CIBIL score and raise your chances of getting approved for loans and credit cards with favourable conditions by using credit responsibly. In conclusion, keeping excellent creditworthiness requires understanding how to examine your CIBIL score. The process is rather basic and easy to follow, whether you decide to examine it through an official credit bureau website, a credit monitoring service, or through your bank or financial institution.

But it's vital to keep in mind that lenders only take your CIBIL score into account when reviewing your loan or credit card applications. You may increase your chances of being approved for credit with favourable conditions by using credit responsibly and having a solid credit history.

In conclusion, maintaining high creditworthiness requires understanding your CIBIL score and how to evaluate it. You may find any mistakes or problems that might be adversely affecting your creditworthiness by routinely reviewing your credit score and report and taking action to correct them. Your bank or other financial institution, a credit monitoring service, or the official credit bureau website are just a few of the places you may check your CIBIL score.

It is crucial to remember that, although your CIBIL score is a crucial consideration in figuring out your creditworthiness, it is not the only one. When analysing a loan or credit card application, lenders often take into account additional aspects including income, job history, and debt levels.

However, a high CIBIL score might increase your likelihood of receiving loans with favourable conditions. Utilising credit responsibly and making payments on time are

essential for maintaining a high CIBIL score. Limit the amount of credit applications you submit, avoid maxing out your credit cards, and make sure to pay your payments on time. You may raise your CIBIL score over time by doing this, which will boost your likelihood of getting authorised for credit with favourable terms. It's critical to frequently check your credit report for mistakes or inconsistencies in addition to keeping an eye on your CIBIL score. You can get in touch with the credit bureau to get any errors fixed if you find any. By doing this, you can raise your credit standing and gain access to credit with better conditions.

Last but not least, keep in mind that maintaining excellent creditworthiness is a continuous activity. You may build and maintain good creditworthiness over time by keeping a close eye on your CIBIL score and credit record, using credit responsibly, and taking care of any problems as they come up. You can acquire financing on favourable conditions and reach your financial objectives if you have a solid credit history and CIBIL score.

3.4 Smart Diet Planner

There are a few crucial measures to do in order to construct an intelligent diet planner programme utilising Java and Spring Boot. You must first specify the features and prerequisites for the software. You will be able to enter food choices, monitor your daily caloric consumption, and create meal plans based on your dietary objectives and constraints.

The software architecture and database schema need to be designed next. In order to record information on food products, meals, and dietary objectives, it will be necessary to define the entities and relationships that will be utilised. You should also think about how user authentication and authorisation will be handled by the programme.

Following is the database structure that I have created for storing the Smart Diet Planner Details for the User:

id	sdp_user_id	repeat_count	created_at	updated_at	created_by	updated_by	
▶							
int	created_at	updated_at	created_by	updated_by	event_name	event_details	date_time
▶							

Table 3. Smart Diet Planner Database Structure

Java and Spring Boot may be used to start building the programme after you have a clear design in place.

The REST endpoints that will be used to communicate with the programme must be defined, and the business logic must be implemented for each endpoint. This might entail connecting with external APIs to get nutrition information for food products and

putting algorithms in place to create meal plans depending on user preferences. You must utilise HTML, CSS, and JavaScript to build a web-based frontend for the software in order to make sure it is user-friendly. Users will be able to interact with the frontend and check their daily caloric consumption and food planning. Additionally, you'll need to integrate validation and error handling to make sure users submit accurate data and get straightforward error messages when something goes wrong.

Finally, you must extensively test the programme to make sure it performs as planned. Both manual and automated testing using software like JUnit will be required for this. When you are convinced the programme is operating successfully, you may deploy it to a production environment and keep an eye on it to make sure it keeps working appropriately. Overall, a thorough grasp of software design concepts, database schema design, and web development are needed to create a smart diet planner application utilising Java and Spring Boot. It is possible to develop a potent tool that aids users in achieving their nutritional objectives and sustaining a healthy lifestyle with careful design and attention to detail.

Conclusion: Using Java and Spring Boot to create a smart diet planner software is a challenging process that needs careful planning, design, and execution. You may develop a potent tool that aids users in achieving their nutritional objectives by identifying the needs and features of the programme, creating a crystal-clear architecture and database schema, and implementing the product using Java and Spring Boot.

The programme must be user-friendly and effective in order for users to register food choices, monitor daily calorie consumption, and create meal plans based on their dietary objectives and limits. Users may easily interact with the programme and examine their meal plans and daily calorie intake by building a web-based interface using HTML, CSS, and JavaScript.

It is crucial to properly test the software using both human and automated testing techniques in order to make sure that it is dependable and efficient. Before deploying the programme to a production environment, you may find any problems or flaws by testing the software and making the required corrections. The programme must be monitored once it is installed in order for it to keep working effectively. You may spot any flaws or performance difficulties by monitoring the programme and then take the necessary measures to fix them. Overall, combining Java with Spring Boot to create a smart diet planning programme needs a high degree of understanding and competence in software design and development. But you may build a potent instrument with careful preparation and attention to detail.

4. EXPERIMENTS AND RESULT ANALYSIS

4.1 JSON Validator

A JSON request body validator is a tool that developers may use to validate the structure and content of JSON data sent in HTTP requests to a REST API. Given its many benefits, which may improve software quality, reliability, and security generally, this tool is a useful addition to any software development project.

One of the key benefits of a JSON request body validator is its ability to confirm that incoming data is in the right format and complies with certain standards. By doing this, it may be possible to prevent software errors and blunders caused by incomplete or erroneous data. If a particular API endpoint expects to receive a JSON object with certain attributes and values, the validator can verify whether the incoming data matches that expectation.

If the data is incorrect, the validator may send an error message to the client, halting further processing and perhaps resulting in problems in the future. A JSON request body validator also aids in preventing security flaws, which is another advantage. The validator can thwart attacks like injection attacks or assaults using malformed data by confirming the structure and contents of incoming data. A rogue client could provide a script that is performed when the data is processed, but an API endpoint only expects a string value. In this case, the validator might identify this and refuse the request, stopping the script from being executed.

A JSON request body validator can enhance the software's overall quality and dependability in addition to enhancing security and reducing mistakes. The validator can avoid inconsistent or inaccurate data that might cause problems later on by enforcing rigorous data standards and making sure that incoming data complies with those criteria. This can assist to guarantee that the programme is operating properly and that the data is dependable and accurate. A JSON request body validator can also enhance developers' overall working environment. Developers may find and fix problems with incoming data more rapidly with the validator's assistance by giving them with clear error messages and feedback.

Developers can more readily find and repair flaws before they become a problem, which can save time and effort during the development process. An additional helpful tool for documentation and communication is a JSON request body validator. For developers and other stakeholders, the validator may act as documentation by outlining the anticipated format and contents of JSON data for each API endpoint. This may make sure that everyone working on the project is aware of how the API should be used and what kind of data should be provided. In conclusion, a JSON request body validator is a useful tool for any REST API-related software development project.

A JSON request body validator can aid in ensuring that the API works properly and that incoming data is accurate and trustworthy by enforcing stringent data requirements, preventing errors and security vulnerabilities, improving the overall quality and reliability of the software, and giving developers clear feedback.

Following are how the responses have been:

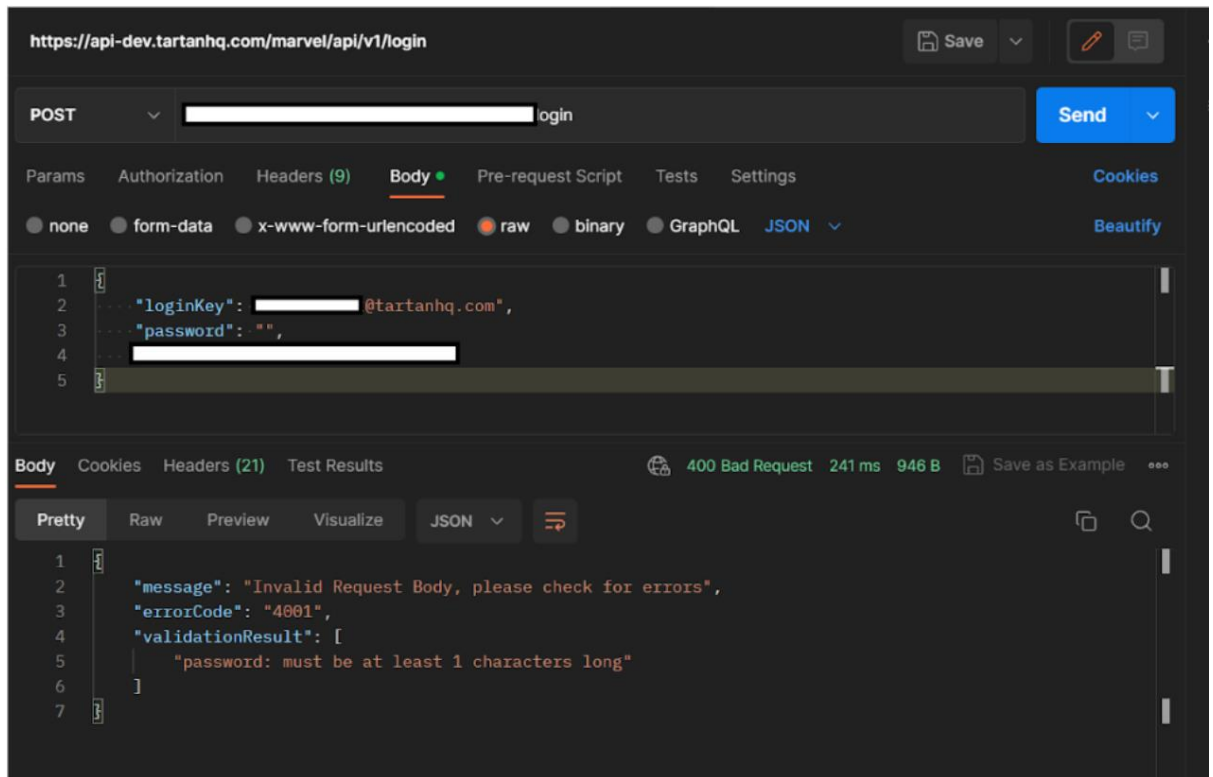


Fig.2 JSON Validator API Call


```
{
  "$schema": "https://json-schema.org/draft/2019-09/schema#",
  "title": "Categories Display Status",
  "type": "object",
  "additionalProperties": false,
  "required": [
    "categories"
  ],
  "properties": {
    "categories": {
      "type": "array",
      "items": {
        "type": "string"
      },
      "minItems": 1
    }
  }
}
```

Fig.3 Sample JSON Validator Schema

4.2 URL Shortener

A technology called a URL shortener transforms large, complicated URLs into shorter, easier-to-manage ones. There are several advantages to using a URL shortener in your software's registration and benefit links, including how it may boost security, the user experience overall, and monitoring and analytics capabilities.

Making URLs easy to share and remember is one of the main advantages of utilising a URL shortener. Long and complicated URLs can be challenging to read and remember, which can discourage consumers from clicking the link or spreading it around. You may make URLs that are simpler to read and remember by using a URL shortener to make them shorter and more user-friendly.

The exposure and reach of the registration and benefit links for your product may be expanded by encouraging users to click on the link and share it with others. Another advantage of employing a URL shortener is that it might enhance user experience in general. Shorter links can make it simpler for consumers to locate what they're searching for by lowering the amount of scrolling and clicking necessary to reach a particular site. This can assist to improve user happiness and engagement while decreasing the chance that users will leave the page out of annoyance or difficulties

reaching the required resource. A URL shortener's advantages can also be seen in terms of security.

Long and complicated URLs may include sensitive information or be challenging to verify, making them open to phishing attempts and other security risks. By hiding the underlying URL and making it harder for attackers to target your users, URL shorteners can help you lower the chance of security issues. Using a URL shortener can improve tracking and analytics capabilities, which is another advantage. The majority of URL shorteners include analytics and monitoring tools that let you keep track of click statistics, including how frequently a link was clicked, when it was clicked, and where the clicks came from. This can give you insightful information about user behaviour and preferences, enabling you to maximise the efficacy of the registration and benefit links for your programme.

Using a URL shortener can also be advantageous for branding and marketing in addition to these advantages. In marketing materials like social media postings or email campaigns, shorter links might be more aesthetically pleasing and simpler to include. This may support your brand identity and messaging while boosting the visibility and impact of the registration and benefit links for your product. Overall, there are several advantages to implementing a URL shortener in your software's registration and benefit links that may improve security, the user experience, and tracking and analytics capabilities.

Your software's registration and benefit links may be made more visible and accessible while also lowering the risk of security attacks, improving monitoring and analytics capabilities, and making them simpler to share and remember. A URL shortener is a useful tool for every software development project since it also has marketing and branding advantages.

The following are some example API requests and responses:

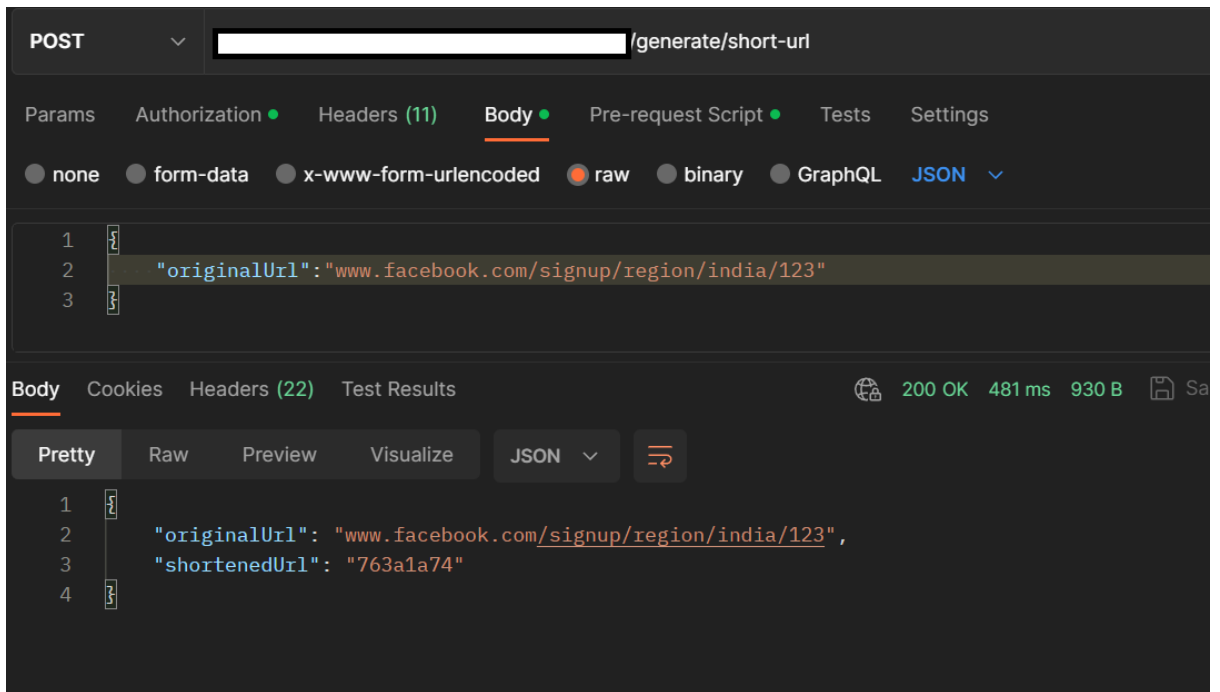


Fig.4 URL Shortener API Response (i)

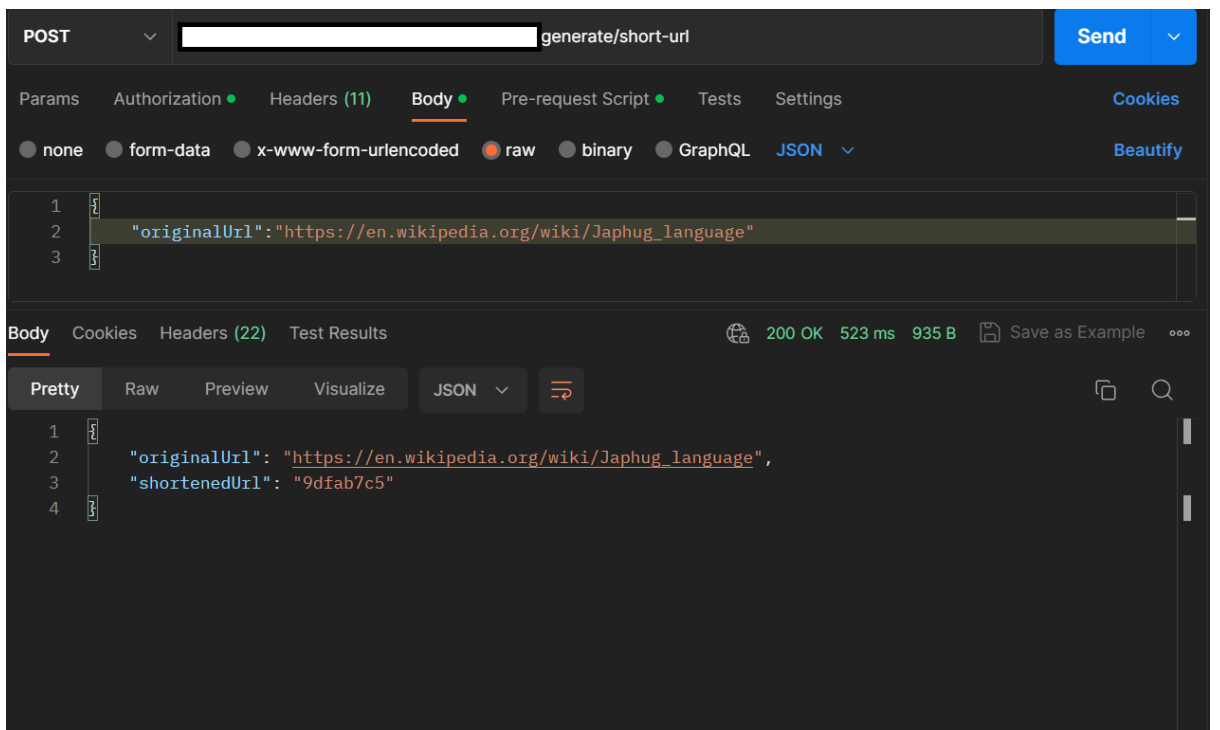


Fig.5 URL Shortener API Response (ii)

4.3 CIBIL Score

The official CIBIL portal's APIs may be used to integrate the soft pull of a user's CIBIL Score, which has several advantages for both individuals and enterprises. Some of the main advantages of this integration are as follows:

Users are now empowered to monitor their credit health and take necessary action to enhance it thanks to the integration of the soft pull of their CIBIL Score, which allows them to check their CIBIL Score and comprehensive report at any time. This gives customers the ability to make well-informed financial choices depending on their creditworthiness, such as applying for loans, credit cards, or other financial goods.

Enhances Creditworthiness: One's creditworthiness may be improved by learning and knowing their CIBIL Score. The integration of CIBIL's soft pull APIs enables users to quickly obtain their CIBIL Score and Report and take the required steps to raise it, such as paying off past-due payments, lowering their credit utilisation, and removing inaccuracies from their credit report.

Improves Transparency: Organisations may make the loan process more transparent by including the soft pull of a user's CIBIL Score. Now that lenders have access to a user's credit record to assess their creditworthiness, this has made it easier for them to make wise loan selections. The user experience is enhanced by this connection, which enables companies to provide consumers more tailored offers based on their credit score and report.

Increasing Efficiency: Businesses may simplify the loan process by integrating the soft pull of a user's CIBIL Score. Lenders can decide on loan applications more quickly and accurately if they have access to a user's credit record, which saves time and effort compared to manually reviewing credit reports.

Reduces Risk: Businesses may minimise risk by spotting possible fraudulent activity and individuals who have a high possibility of defaulting on loans or other financial commitments by gaining access to a user's credit record using CIBIL's soft pull APIs. This can assist companies in reducing risk and losses while also enhancing the overall health of their loan portfolio.

Enhances User Experience: Integrating a user's CIBIL Score can assist organisations enhance the overall user experience. Businesses may provide a more individualised and effective financing experience by making it simple for users to get their credit score and report. Customers' trust and loyalty may rise as a result, boosting sales and business growth.

Aids Companies to Remain Compliant: In order to access a customer's credit record, companies must abide by data privacy and protection rules. Businesses may minimise

their risk of legal action and fines by integrating CIBIL's soft pull APIs to guarantee that they are adhering to all pertinent legislation and recommendations.

Finally, integrating the soft pull of a user's CIBIL Score utilising the official CIBIL portal's APIs offers a wide range of advantages to both individuals and enterprises. Users can now keep track of their credit standing and take the necessary steps to improve it, while companies may expedite the loan process, lower risk, and enhance user experience overall. Additionally, companies may make sure that they are abiding by all pertinent laws and policies when gaining access to a user's credit report, assisting them in remaining compliant and avoiding fines and legal action. Overall, this connection is a useful tool for companies wishing to enhance their lending procedures and give their users a more customised and effective lending experience.

Following is the CIBIL journey integrated on Batik:

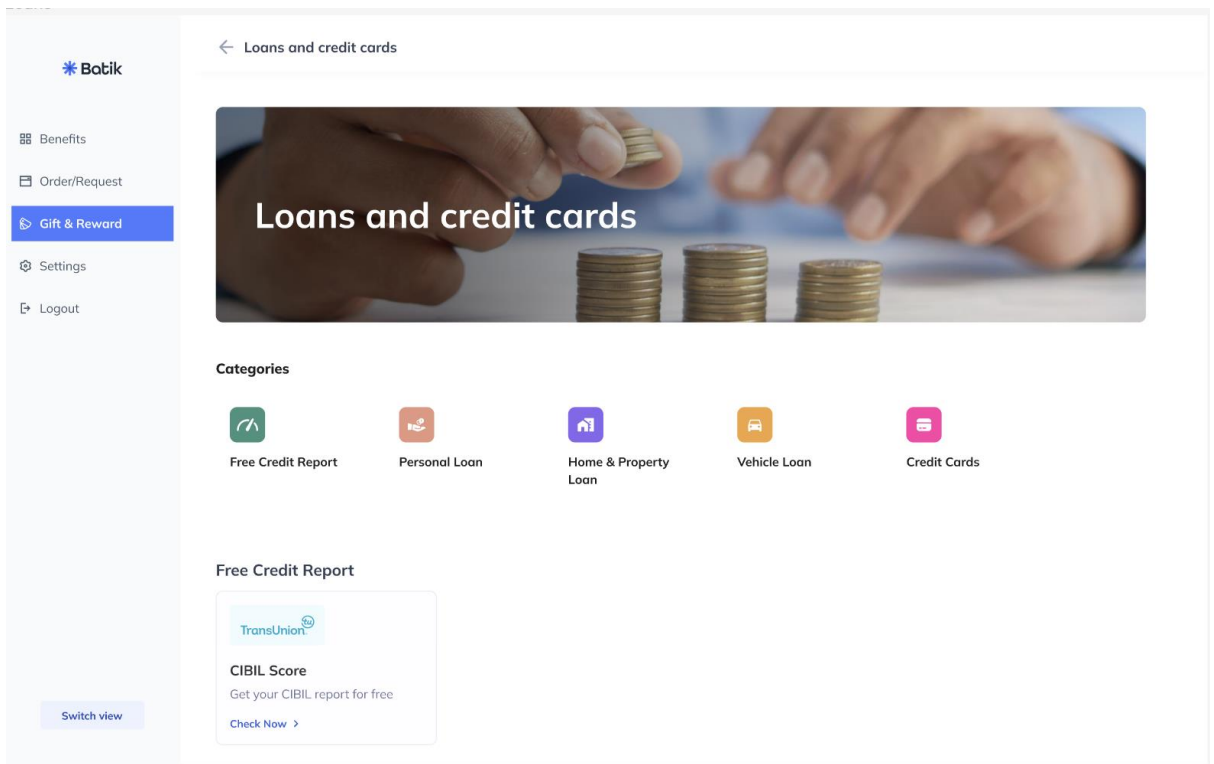


Fig.6 CIBIL \diamond Batik journey (i)

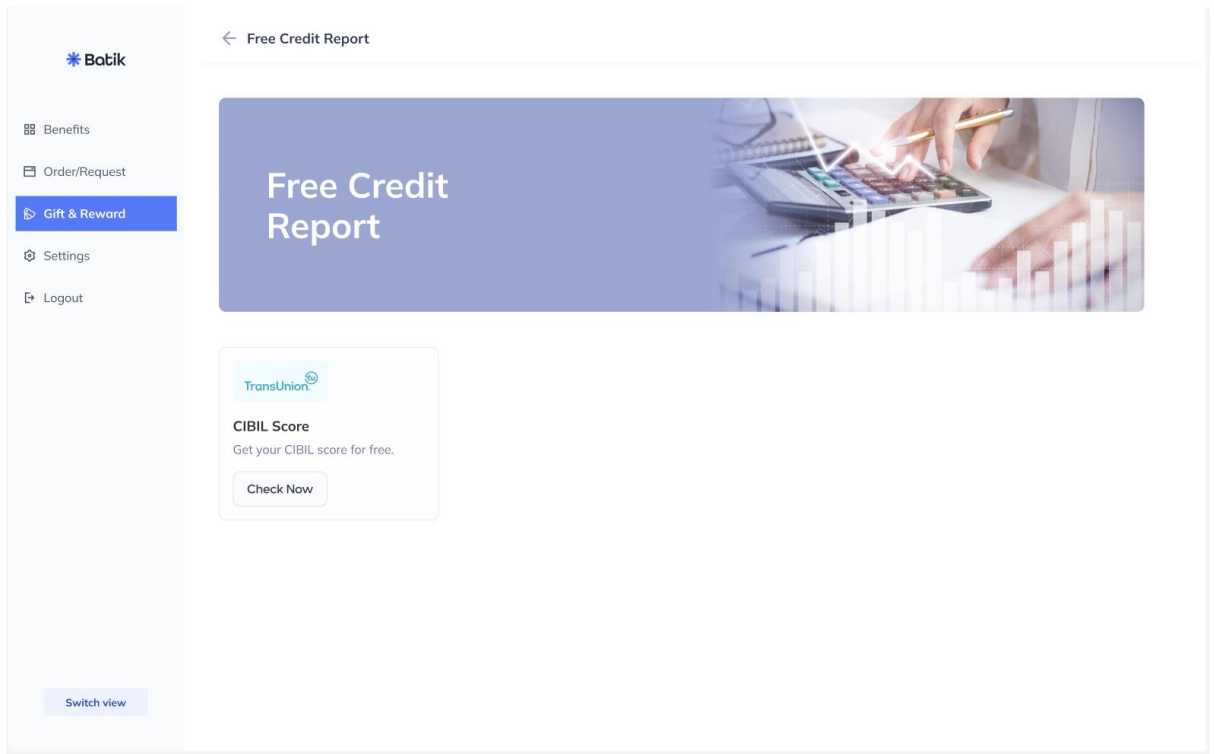


Fig.7 CIBIL <> Batik journey (ii)

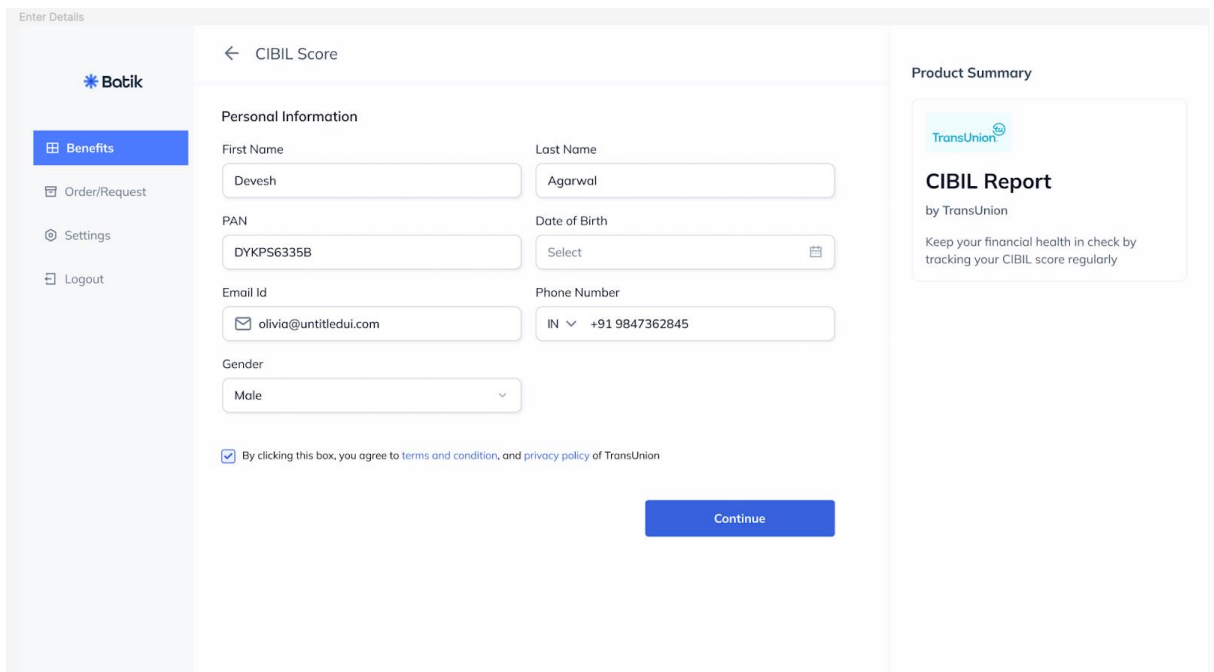


Fig.8 CIBIL <> Batik journey (iii)

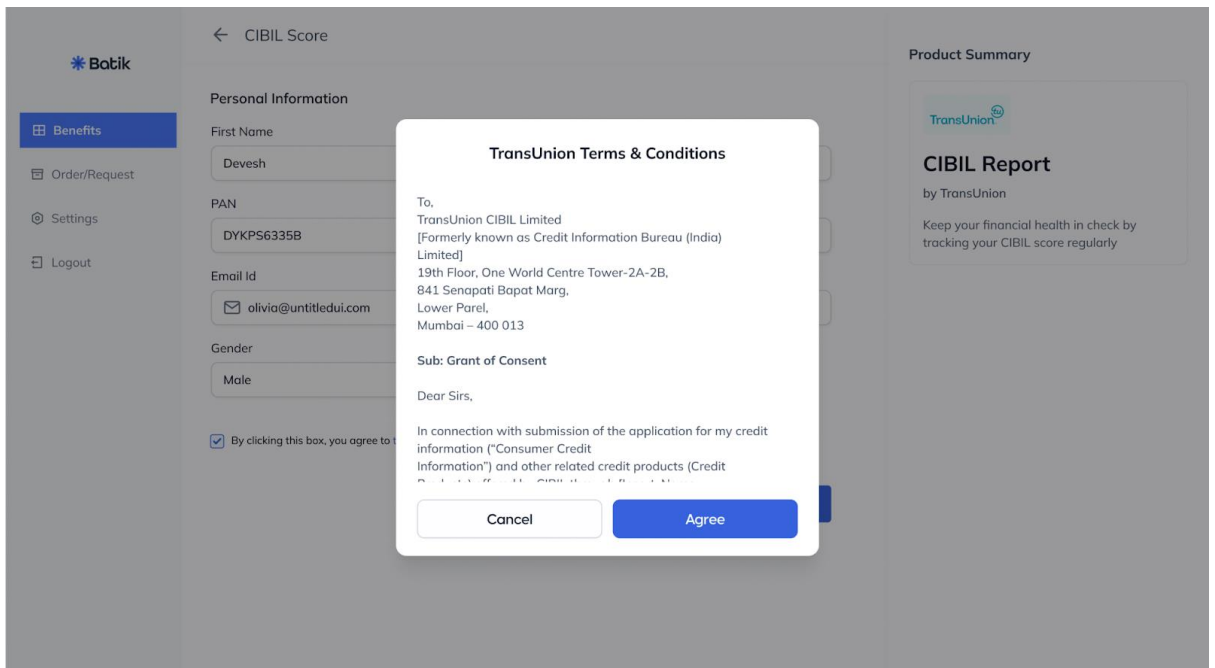


Fig.9 CIBIL <> Batik journey (iv)

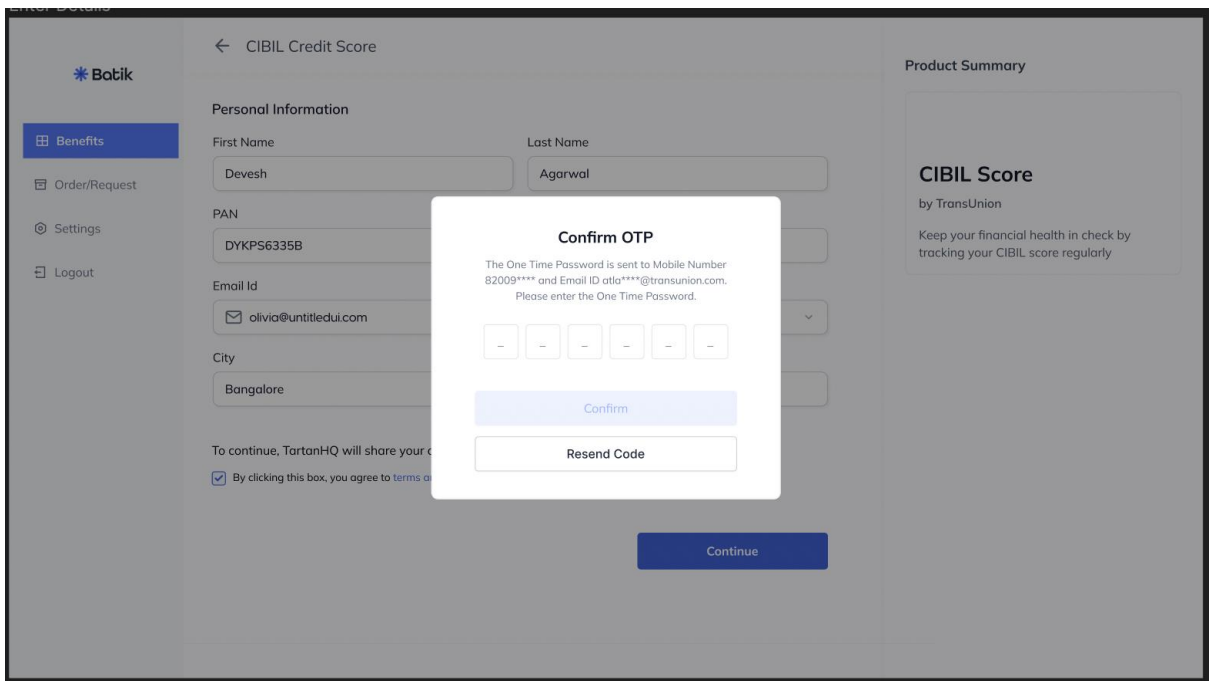


Fig.10 CIBIL <> Batik journey (v)

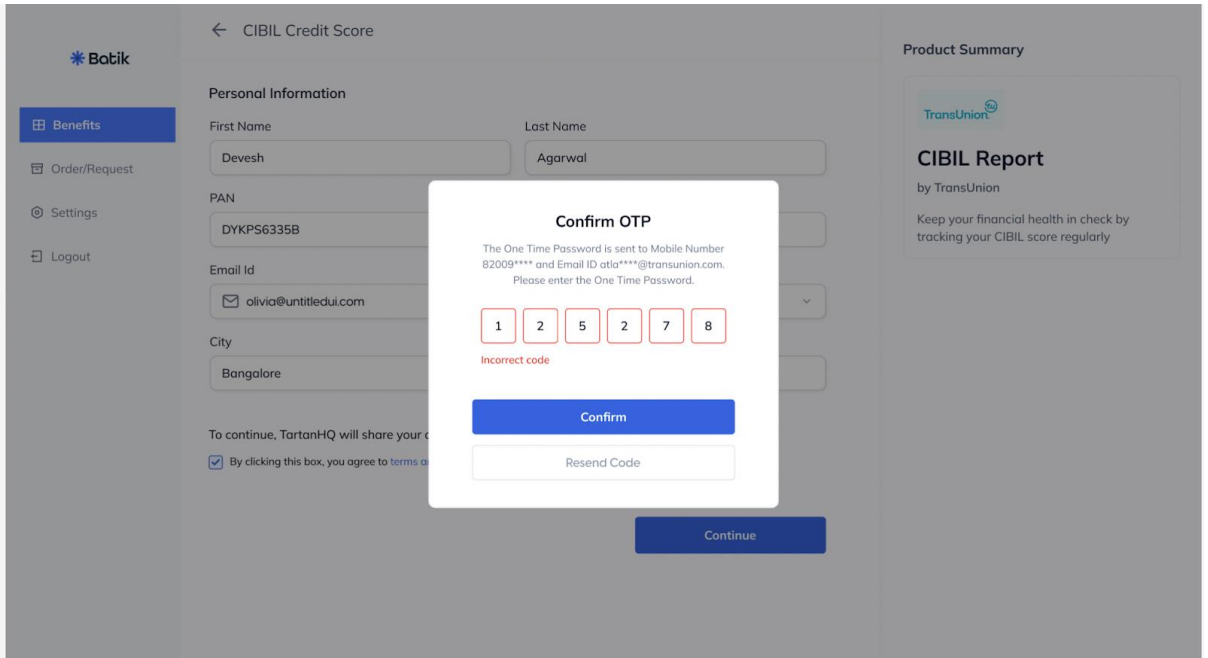


Fig.11 CIBIL <> Batik journey (vi)

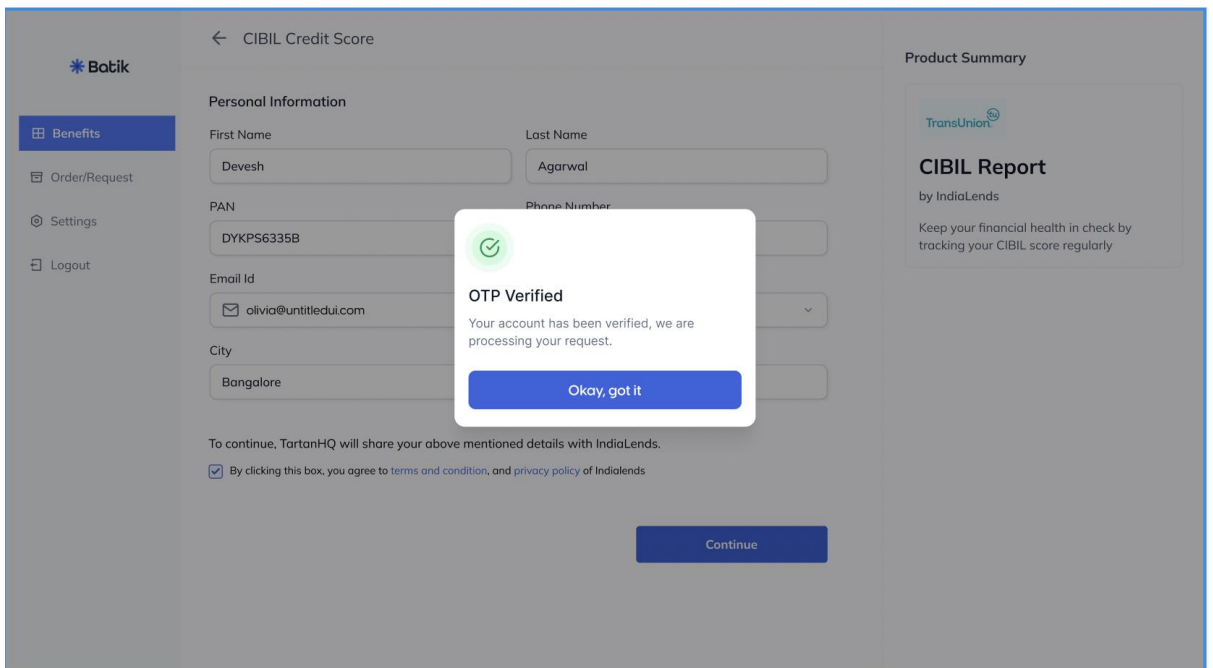


Fig.12 CIBIL <> Batik journey (vii)

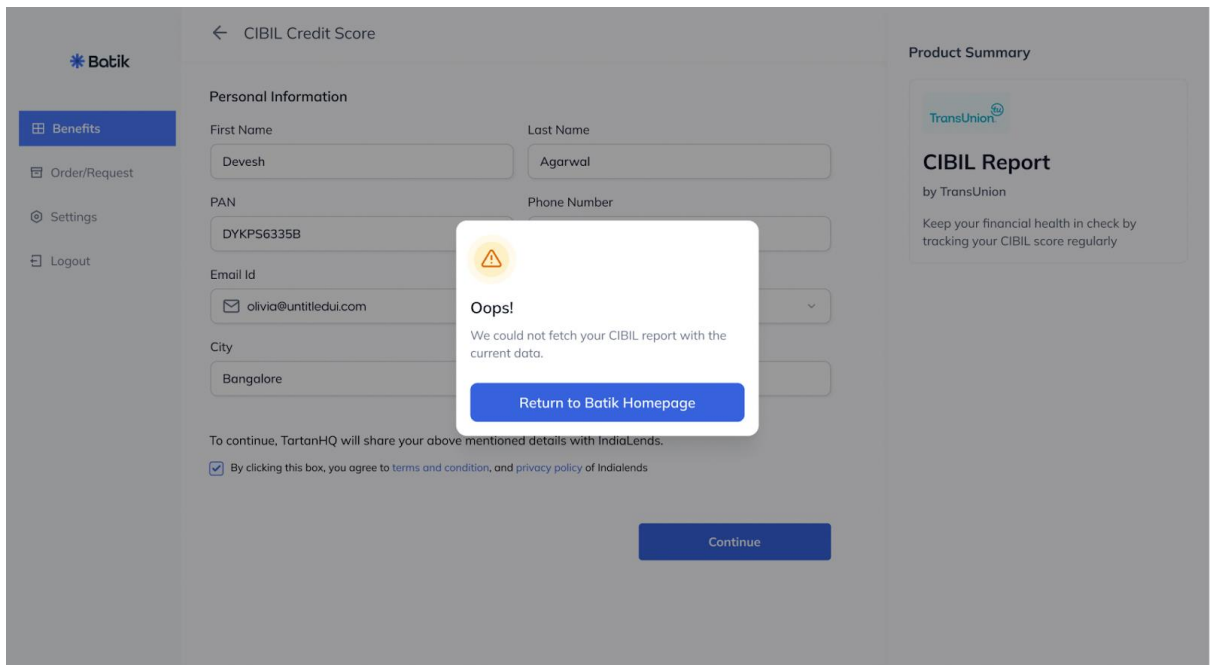


Fig.13 CIBIL <> Batik journey (viii)

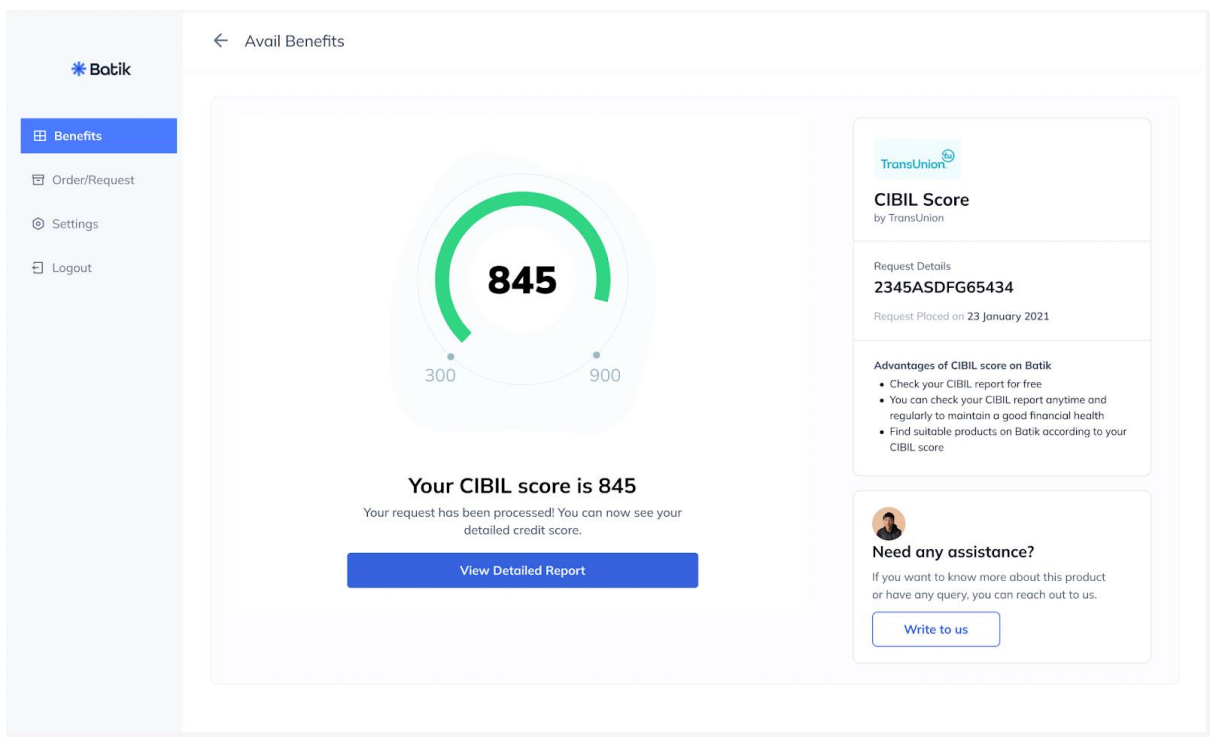


Fig.14 CIBIL <> Batik journey (ix)

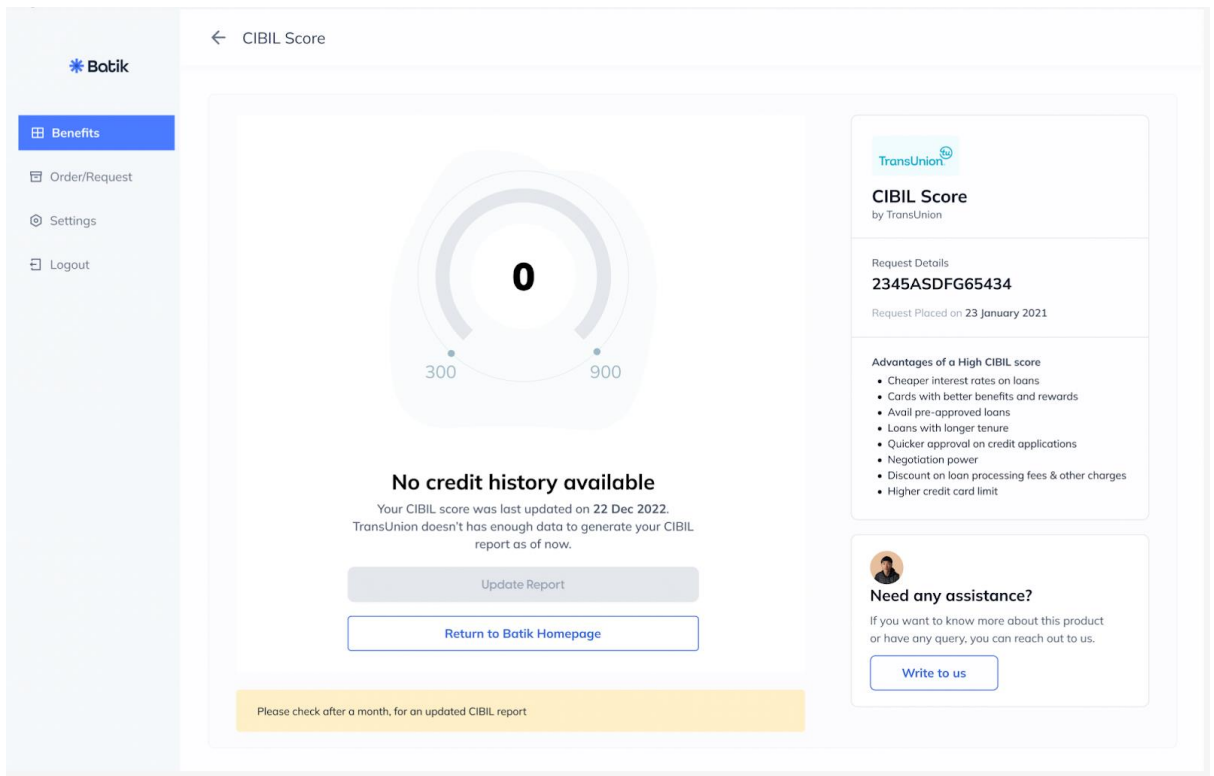


Fig.15 CIBIL <> Batik journey (x)

4.4 Smart Diet Planner

There are several advantages for both employees and businesses in integrating a smart diet planner into an employee benefits provider software. Some of the main advantages of this integration are as follows:

One of the biggest advantages of including a smart diet planner into an employee benefits provider software is that it encourages good eating habits. Employees may measure their food intake, plan meals, and choose healthier foods with the aid of an intelligent diet planner. It may also result in weight loss, lowered cholesterol levels, and a lower chance of developing chronic illnesses including diabetes and heart disease.

Enhances staff wellbeing: A clever diet planner may enhance staff wellbeing by encouraging wholesome eating practises. Employees who are healthier are less likely to miss work because of sickness, which can enhance productivity and save healthcare expenses for companies.

Adaptable to Different demands: A smart diet planner may be adapted to various staff members' demands. For instance, it can be modified to satisfy the nutritional needs of workers with certain medical problems, including celiac disease or diabetes. Employees' individual nutritional demands may be met while simultaneously achieving their health objectives thanks to this personalization.

Increases Employee Engagement: Offering a clever diet planner as a perk to employees can raise engagement. Employees are more likely to be engaged and dedicated to their work if they believe that their company is concerned about their health and wellbeing. Additionally, happier and healthier workers are more likely to have higher levels of confidence and self-esteem, which can lead to increased work output.

Enhances corporate Branding: Giving employees access to a clever diet planner can improve corporate branding. A business that is dedicated to encouraging wholesome food and worker wellbeing is probably going to be thought of as a socially responsible one. This can increase employee retention rates and help recruit top talent.


Easy to utilise: Even non-technical staff members may easily utilise a smart diet planner. It is handy for employees to use on the go because it can be accessed from a computer or a mobile device.

Cost-Effective: A clever diet planner is a cheap method to encourage staff wellbeing. Offering conventional wellness programmes, which may be costly and time-consuming, including gym memberships or dietary counselling, is far more expensive than doing so.

Offers Useful Insights: A clever diet planner can offer helpful insights into staff members' eating patterns. Employers may create initiatives to encourage staff to eat well by analysing data from the diet planner to spot trends in eating patterns.

Enhances Employee Morale: Offering a clever diet planner as a perk to employees can boost morale. Employees are more likely to be pleased with their jobs and more devoted to their employers if they believe that their employers are concerned about their health and wellbeing. In summary, including a smart diet planner in an employee benefits provider software has several advantages for both workers and businesses. It encourages good eating practises, enhances employee wellbeing, and may be tailored to meet various demands. Additionally, it improves corporate branding, increases staff engagement, and is simple to use and affordable. It also offers insightful information about the eating habits of the workforce and raises morale. An intelligent diet planner

is a useful tool for businesses that want to encourage employee wellness and a healthier work environment overall.



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Fig.16 Smart Diet Planner <> Batik journey (i)

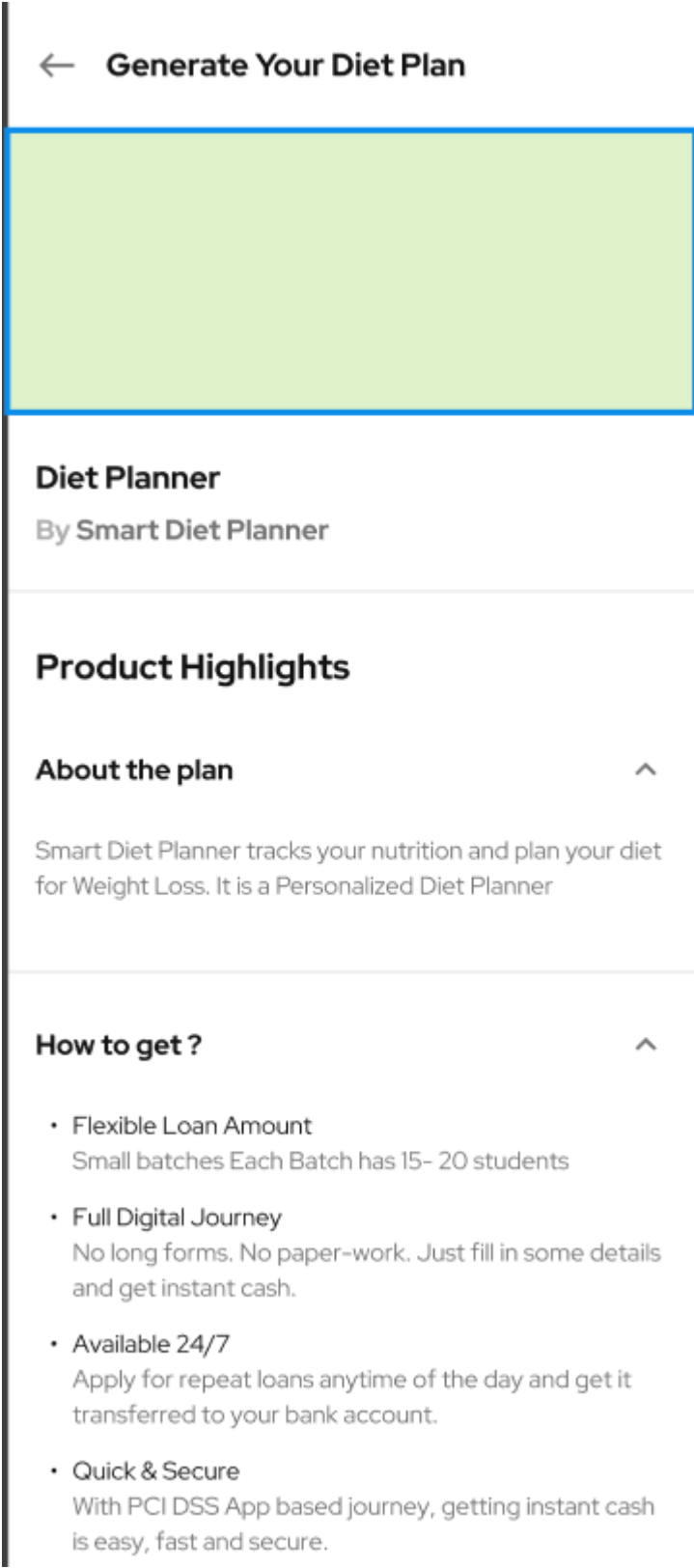


Fig.17 Smart Diet Planner <> Batik journey (ii)

5. CONCLUSIONS

5.1 JSON Validator

In conclusion, including a JSON request body validator into a REST API has several advantages for both consumers and developers. In order to maintain data integrity and avoid introducing mistakes into the system, the validator makes sure that all incoming requests are checked against a predetermined schema. Developers may also lessen the possibility of security flaws like injection attacks by validating the request body. These attacks can be expensive to resolve and do serious harm to the system.

Additionally, adding a JSON request body validator can enhance the API's quality and the user experience. Developers may guarantee that the API only takes acceptable inputs by applying stringent data validation rules, which can stop inaccurate data from being handled.

This can therefore enhance the API's general usability and dependability, increasing user satisfaction. A JSON request body validator also has the ability to streamline the development process. Complex data validation responsibilities can be delegated to the validator by developers, freeing up their time to work on other system components. This may result in shorter development cycles and more effective workflows, which eventually produce products of greater quality. A system can also be future-proofed by implementing a JSON request body validator. It's crucial to make sure that any system modifications don't unintentionally destroy current functionality since APIs develop over time.

Developers may guarantee that any new modifications are correctly verified against the current schema by utilising a request body validator, avoiding any unexpected problems. Overall, any developer working on a REST API needs a JSON request body validator. It offers a number of advantages, including as enhanced data integrity, better user experience, stronger security, streamlined development, and future-proofing. Developers may make sure that their APIs are dependable, safe, and simple to use by taking the effort to integrate a request body validator, which can increase user satisfaction and eventually result in a more successful product. The addition of a JSON request body validator can also enhance the system's overall speed and scalability.

Implementing a JSON request body validator also has the advantage of enhancing the system's overall speed and scalability. The validator can increase system speed and efficiency by implementing stringent data validation standards and minimising the amount of pointless data processing that takes place. This is crucial for systems that handle huge amounts of data since even tiny performance gains may have a big impact on the throughput of the system as a whole.

Additionally, a JSON request body validator can give developers insightful data on how users are using the system. Developers may get a better picture of how users are utilising the system by keeping an eye on the sorts of data being provided and the frequency of validation mistakes.

A JSON request body validator may also assist in ensuring compliance with industry norms and best practises, which is another advantage. Strict data validation standards must be satisfied in many businesses, especially those involved in banking, healthcare, and government, in order to adhere to rules and uphold data confidentiality and privacy. Developers may make sure that their system complies with these standards and that user data is adequately safeguarded by putting in place a request body validator that enforces these requirements.

The entire cost of software development and maintenance can be decreased with the aid of a JSON request body validator. Developers may cut back on the time and resources needed to find and resolve problems by spotting faults early in the development process.

Since the system is more dependable and less prone to mistakes, this might eventually result in shorter development cycles and cheaper maintenance costs. A JSON request body validator is an essential part of every REST API, to sum up. It offers a host of advantages, including greater data integrity, increased security, improved user experience, streamlined development, future-proofing, improved performance and scalability, price savings throughout development and maintenance, and useful insights. Developers may guarantee that their API is dependable, safe, and user-friendly by taking the effort to install a request body validator, which can eventually result in higher customer satisfaction and a more successful product.

5.2 URL Shortener

In conclusion, including a URL shortener into your programme may have a significant positive impact on your company. You may optimise user experience, boost click-through rates, and strengthen your brand's online visibility by giving consumers a shorter, clearer link to reach your website or other resources. Utilising a URL shortener can also assist to reduce the risks of malicious attacks and safeguard your website from potential security problems.

The ability to monitor clicks and user interaction is one of the main advantages of URL shorteners. You may track user behaviour and the success of your marketing campaigns or other activities by utilising a bespoke short link. This might assist you in maximising your marketing efforts and making sure your targeting is accurate.

The capacity to design unique connections that are shareable and memorable is another advantage of a URL shortener. This is particularly helpful for social media marketing campaigns since the length of a URL has an effect on how well your work turns out.

You may increase the possibility that your users will click through to your website or other resources by establishing a shorter, more succinct link, which will boost engagement and encourage conversions.

Additionally, utilising a URL shortener might help your website become more secure. Your website's whole URL can be obscured to lessen the chance of harmful attempts like phishing or cross-site scripting. This can assist in safeguarding the private information of your users and maintaining the security of your website.

Last but not least, using a URL shortener can enhance how users interact with your website or application as a whole. You may enhance engagement and happiness by giving consumers an easier time accessing your website or other resources by offering a shorter, more succinct link.

In conclusion, incorporating a URL shortener into your software is a straightforward yet efficient approach to boost user experience, engagement, and your brand's online exposure. An URL shortener is a useful tool that may assist you in achieving your objectives and fostering company success, whether you're trying to increase the efficiency of your marketing efforts or safeguard your website from security risks.

5.3 CIBIL Score

Using the official CIBIL portal's APIs to integrate the soft pull of a user's CIBIL score is a crucial and beneficial feature for any business that handles financial transactions. Both the company and the users may benefit in a number of ways from this integration.

First off, enabling consumers to see their CIBIL score and complete report will help them better understand their financial situation and make wise judgements about loans and credit cards. Both the borrower and the lender may profit from increased financial understanding and appropriate borrowing techniques.

Second, adding the CIBIL score function can aid companies in improving their loan choices. The lender can more accurately determine the user's creditworthiness and possibility of loan payback by reviewing the user's credit score and report. As a result, the risk of default can be decreased, and the lender's overall financial performance can be enhanced.

Additionally, adding the CIBIL score option can increase client happiness and loyalty. Giving customers easy access to their credit record and score may improve their relationship with the company as a whole, increasing happiness and loyalty. Additionally, this may result in improved reputation and favourable word-of-mouth recommendations.

The possibility for cost reduction is another benefit of adding the CIBIL score function. Businesses may save time, money, and the risk of mistakes by automating the process of examining credit scores and reports. Long-term cost reductions and increased efficiency are possible outcomes of this.

Incorporating the CIBIL score function might also assist organisations in meeting regulatory obligations. Before making a loan, lenders must in certain nations examine borrowers' credit ratings. Businesses may adhere to these rules and stay out of trouble by including this functionality into their software.

Finally, integrating the soft pull of a user's CIBIL score utilising the official CIBIL portal's APIs can have a number of advantages for both the user and the company. Improved financial literacy, prudent borrowing habits, better loan choices, more customer happiness and loyalty, significant cost savings, and regulatory compliance can all be a result of this feature. Overall, this connection is a useful tool for any company that conducts financial transactions and may assist both the company and the consumer achieve better financial results.

5.4 Smart Diet Planner

In conclusion, including a clever diet planner into a software programme for an employee benefits provider can have a number of advantages for both the employee and the business. This feature may result in better employee health and wellness, higher output, lower healthcare expenses, and a more positive workplace culture.

First off, giving workers a smart diet planner might encourage them to make better food choices and enhance their general wellbeing. Employees may better control their weight and lower their chance of acquiring chronic diseases like diabetes, heart disease, and obesity by documenting their meals and setting dietary objectives. This may result in higher productivity, less absenteeism, and better mental wellness.

Second, including a clever diet planner into the software used by an employee benefits provider may assist firms in lowering their healthcare expenses. Employers may lower their healthcare costs and improve their bottom line by promoting healthy eating habits and avoiding chronic diseases. Additionally, it may result in lower staff churn and higher employee retention.

Additionally, supplying staff with a clever diet planner might improve workplace culture. Employers may show their dedication to their workers' wellbeing and foster a great work environment by encouraging healthy eating and wellness. This may result in better staff engagement, higher work satisfaction, and higher employee morale.

Customization options are another benefit of incorporating a smart diet planner. Employers can alter the planner to match their own requirements and tastes, such as adding company-sponsored healthy food alternatives or introducing rewards for achieving dietary targets. This might improve the planner's efficiency and increase staff participation and engagement.

Additionally, using a smart diet planner can assist companies in adhering to legal standards. In certain nations, companies are compelled to encourage their staff to participate in wellness initiatives and adopt good eating practises. Employers may abide with these laws and stay out of trouble by including a smart diet planner into their software.

In conclusion, including a clever diet planner into a software programme for an employee benefits provider can have a number of advantages for both the employee and the business. This feature can promote better employee health and wellness, more output, lower healthcare expenses, a more positive workplace culture, customisation possibilities, and regulatory compliance. Overall, this integration is a useful tool for any organisation trying to enhance the wellbeing of their workers and foster a pleasant workplace culture.

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