An Undergraduate Internship Report

on

At

DataSoft Systems Bangladesh Limited

By

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May 25, 2021

Attestation

I certify that this report is my own work, based on my personal work by me during my Internship. And that I have acknowledged all material and sources used in this report.

I also certify that this report has not previously been submitted for assessment in any other unit and that I have not plagiarized the work of other students or persons.

However, following the internationally accepted academic guideline of using other's written work and/or software (in the form of code) in my University project is properly cited if used in any part of this work.

Signature: …………………………………..

Name: ………………………………….

Acknowledgement

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Letter of Transmittal

25 May 2021

Ajmiri Sabrina Khan

Lecturer,

Department of Computer Science and Engineering,

Independent University, Bangladesh

Subject: Letter of Transmittal for Internship Report, Autum'2020.

It is a great pleasure for me to submit the final Internship Report REMIT365 at DataSoft Systems Bangladesh Limited. Which is a requirement for my CSE499: Internship Program.

This report is based on my best to present all my experiences, learning, and outcome of my three months internship period experience on DataSoft Systems Limited. The Primary goal of my internship is to understand industry level system and how to develop and document it.

Over the period of my internship, I have learnt a lot of new technology and new software practice. I would be glad if you accept this report and provide your precious judgment.

Sincerely,

Sarder Safa Bin Salam

1531087

Evaluation Committee

Signature _____

Name: _____

Supervisor: _____

Signature _____

Name: _____

Internal Supervisor: _____

Signature _____

Name: _____

External Supervisor: _____

Signature _____

Name: _____

Convener: _____

Abstract

I carried out my Internship at DataSoft Systems Bangladesh Limited, this Internship gave me a chance to work with a real-life software application. This report is about remittance management system REMIT365.

REMIT365 makes a difference in this digital developing Bangladesh. This system will be going to maintain and manage remittance very easily along with Anti-Money Laundering screening facility. Bank will receive money from the senders and bank will check, validate, and disburse the money to its receivers along with the incentive of 2% which Bangladesh Bank provides.

The internship was 3 months period the report mainly has been documented based on my overall work in the company as an Intern.

1. Introduction

1.1. Background

The communication system of the world is rapidly increasing day by day. People can move from one place to another even from one country to another easily. With this rapidly increasing communication system people often goes from country to another for work. Workers, employee send money to their friends/family which is known as remittance. But sending remittance is a kind of long process to solve this process issue REMIT365 has been developed to handle these long issues with just few clicks.

1.2. Objective

This app saves time a lot of time as its online and there's no physical exchange of report excepts online exchange of reports. With this app, bank and also Bangladesh Bank can keep a track of their incentive of 2% which they provide to everyone.

1.3. Scope

- Establishing easy way to send remittance.

- Providing time efficient reporting and data checking.

- Anti-Money Laundering AML screening to keep you on the right side of anti-money laundering regulations.

- Money Transfer Operator (MTO)

1.4. Company Profile

1.4.1. Company Background

DataSoft has been a CMMI level 5, ISO 9001:2015 certified leading software product and services company in Bangladesh. Since 1998, DataSoft has successful track record of delivering innovative and cost-effective technical services to customers in both Corporate and public sectors undertakings.

1.4.2. Company Product

- **Financial Ecosystem:**

- The AML Solution Suite

- Pay 365

- MicroFin360

- Co-Op360

- Core Banking Solution

- Central Bank Reporting

- **ERM- Smart Enterprise**

  - Smart HRM

  - Smart Payroll

  - Smart Benefits

  - Smart Asset

  - Smart Accounts

  - Smart Vehicle

- **Port & Logistics**

  - Terminal Information Management System (TIMS)

  - Land Port Management System (LPMS)

- **Virtual Reality**

- **Market Place**

  - E-micromela

- **Mobile App**

2. Literature Review

2.1. Relation with Undergraduate course

The 300 and 400 level senior courses at Independent University, Bangladesh. Database Management, Web Application, System Analysis and Design, Software Engineering courses helped me to documented and implemented my task in the Internship program. In my project, I have implemented what I have learned in these respective courses. The programming languages, the management system of the database helped me a lot to develop this project.

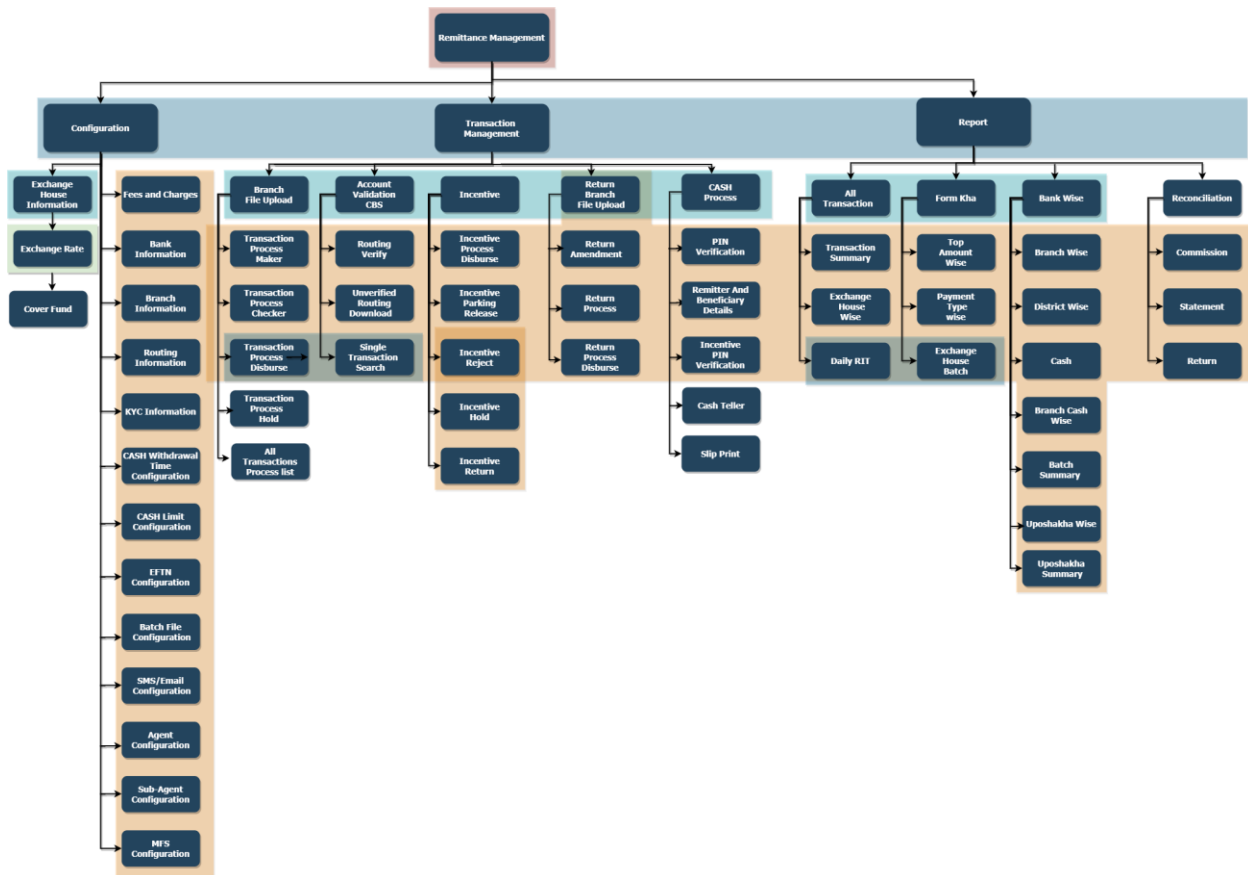# 3. Project Management & Financing

3.1. Work Break Down Structure

Figure 1: Work Breakdown Structure

3.2. Estimate Costing

There was not specific information about costing as the company do not disclose the product price. But, as far I have know the installation fees was about 50,000 BDT.

4. Methodology

Agile

AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. In the Agile model, both development and testing activities are concurrent The Agile software development methodology is one of the simplest and effective processes to turn a vision for a business need into software solutions. Agile is a term used to describe software development approaches that employ continual planning, learning, improvement, team collaboration, evolutionary development, and early delivery. It encourages flexible responses to change.

Agile software development emphasizes on four core values.

1. Individual and team interactions over processes and tools

2. Working software over comprehensive documentation

3. Customer collaboration over contract negotiation

4. Responding to change over following a plan

5. Body of The Project

5.1. Work Description

The remit365 is a web-based application for remittance management. The system has been designed with following features

1. Dashboard Driven

2. System User Management

3. Transaction Management

4. Money Transfer Operator (MTO)

5. AML screening to keep you on the right side of anti-money laundering regulations.

6. Fund transfer (GL account)

7. BEFTN Outward Payment

8. RTGS Outward Payment

9. Cash Payment

10. Cash Incentive Calculation

11. Cash Incentive 2%

12. Reconciliation

13. Data Amendment and Cancel with Approval

14. Configuration and Integration

15. Administrative Module

16. Robust and reliable security system.

17. Customizable and Parameterized Reports

5.2. System Design
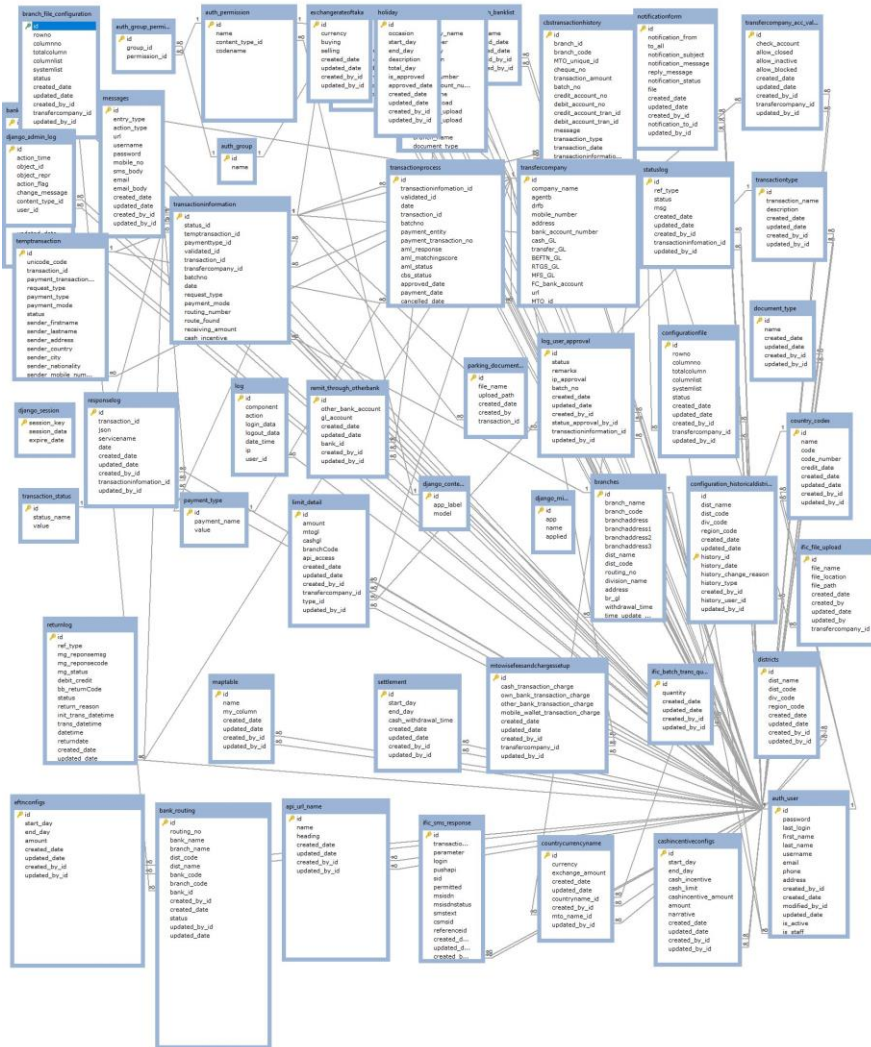
5.2.1. Entity Relation Diagram

Figure 2: Entity Relationship Diagram

5.2   Development Tool Uses

5.2.2   Django

Figure 3: Django Logo

Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design

5.2.3   Django REST Framework

Figure 4: Django REST framework Logo

Django REST framework is a powerful and flexible toolkit for building Web APIs. Django REST framework which works with standard Django models to build a flexible and powerful API for your project
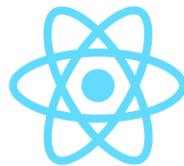
5.2.4   React

Figure 5: React Logo

React is an open-source front-end JavaScript library for building user interfaces or UI components. Developers Build encapsulated components that manage their own state, then compose them to make complex UIs.

5.2.5 MySQL

Figure 6: MySQL Logo

MySQL is an open-source relational database management system

5.2.6 Postman

Figure 7: Postman Logo

Postman: Postman is an API (application programming interface) development tool which helps to build, test and modify APIs. t has the ability to make various types of HTTP requests (GET, POST, PUT, PATCH), saving environments for later use.

6   Result & Analysis

The functionality has been developed by Django and API has been generated by Django REST Framework. The front-end has been developed by REACT. Both front and backend has been developed separately. Where is front end itself is a standalone app and also backend is a standalone app.

6.2   Result

6.2.2   API's

User has to login to the app and after login the API will response with token for accessing the rest of the app. The API URL is **URL**: *<baseURL>/api/<API end point>*

API example:

URL: <baseURL>/api/token

Body:

Figure 8: Login API post data

Reponse:

Figure 9: Login API Response data

6.2.3 Front End

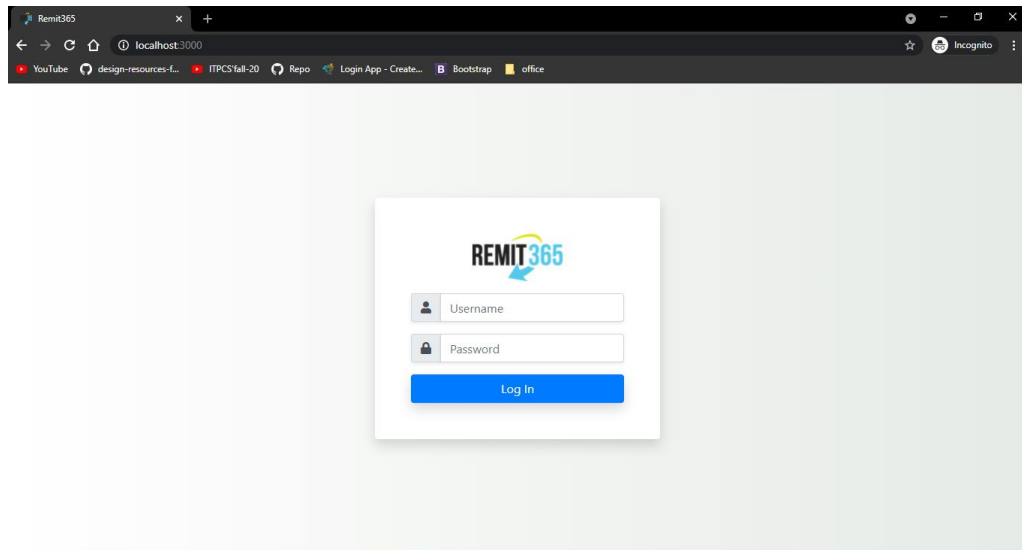## 6.2.3.1   Log in

Figure 10 Login UI

6.2.3.2   Dashboard

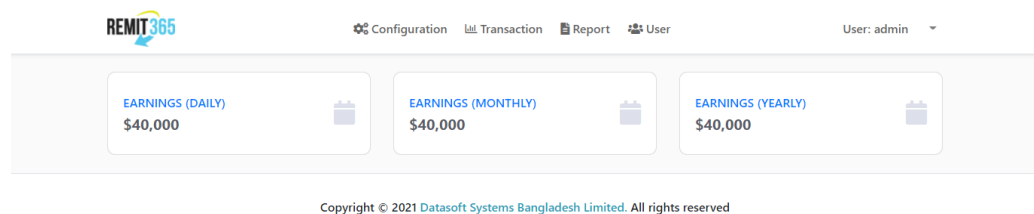The dashboard component is under development.

Figure 11: Dashboard

6.2.3.3   Configuration

The Configuaration module role is to setup and configure different type of transaction type, user, transfercompant etc
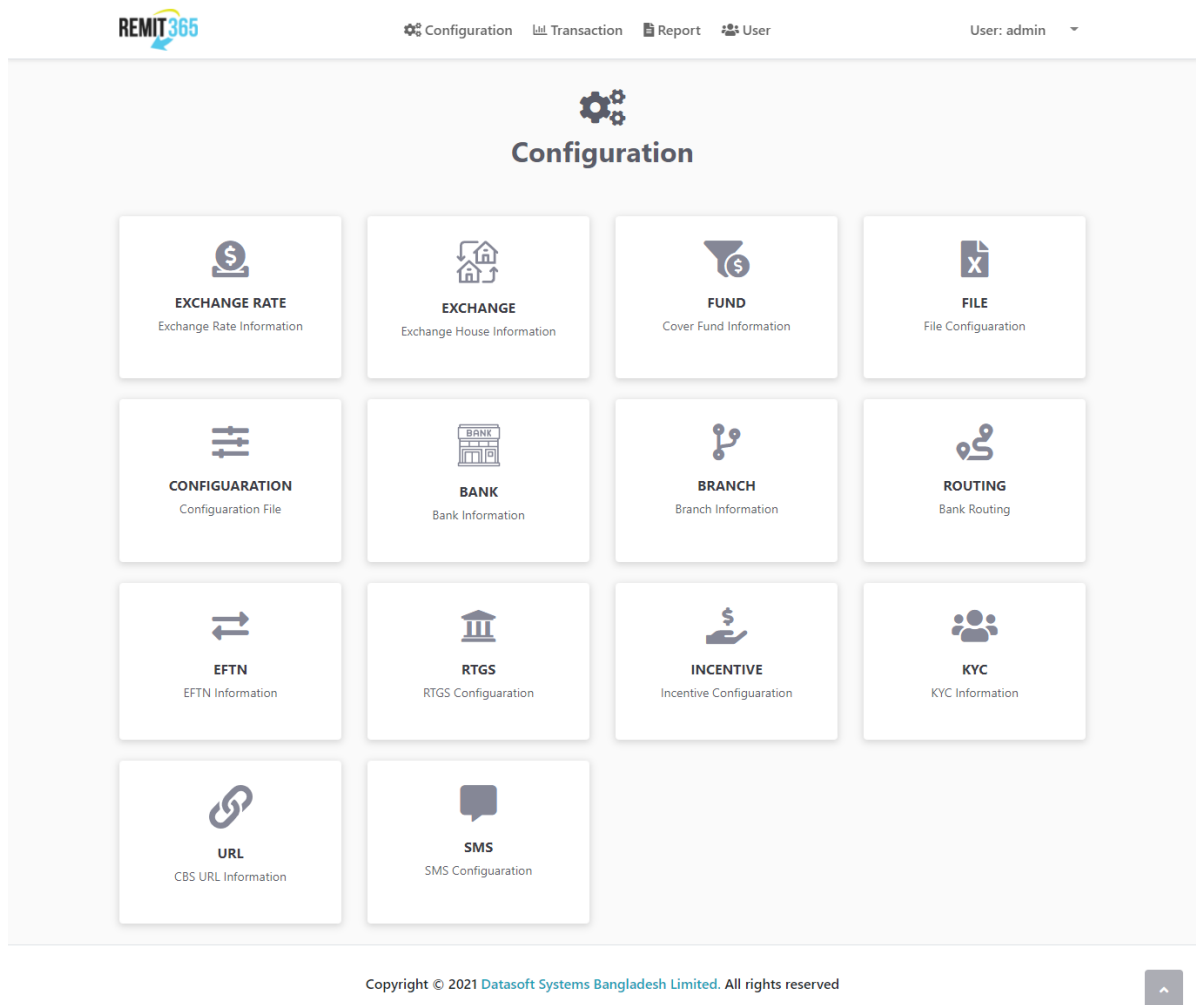
Figure 12: Configuration Module

6.2.3.4 Transaction

The Transaction module plays the main role, the transacion and incentive management of remittance. It has been divided into two part Transaction management and Incentive Management. In both parts there's been divided into its corresponding List, Hold, Confirm, Varifinaction data tables. Along with raw file upload functionality and duplicate slipprint.
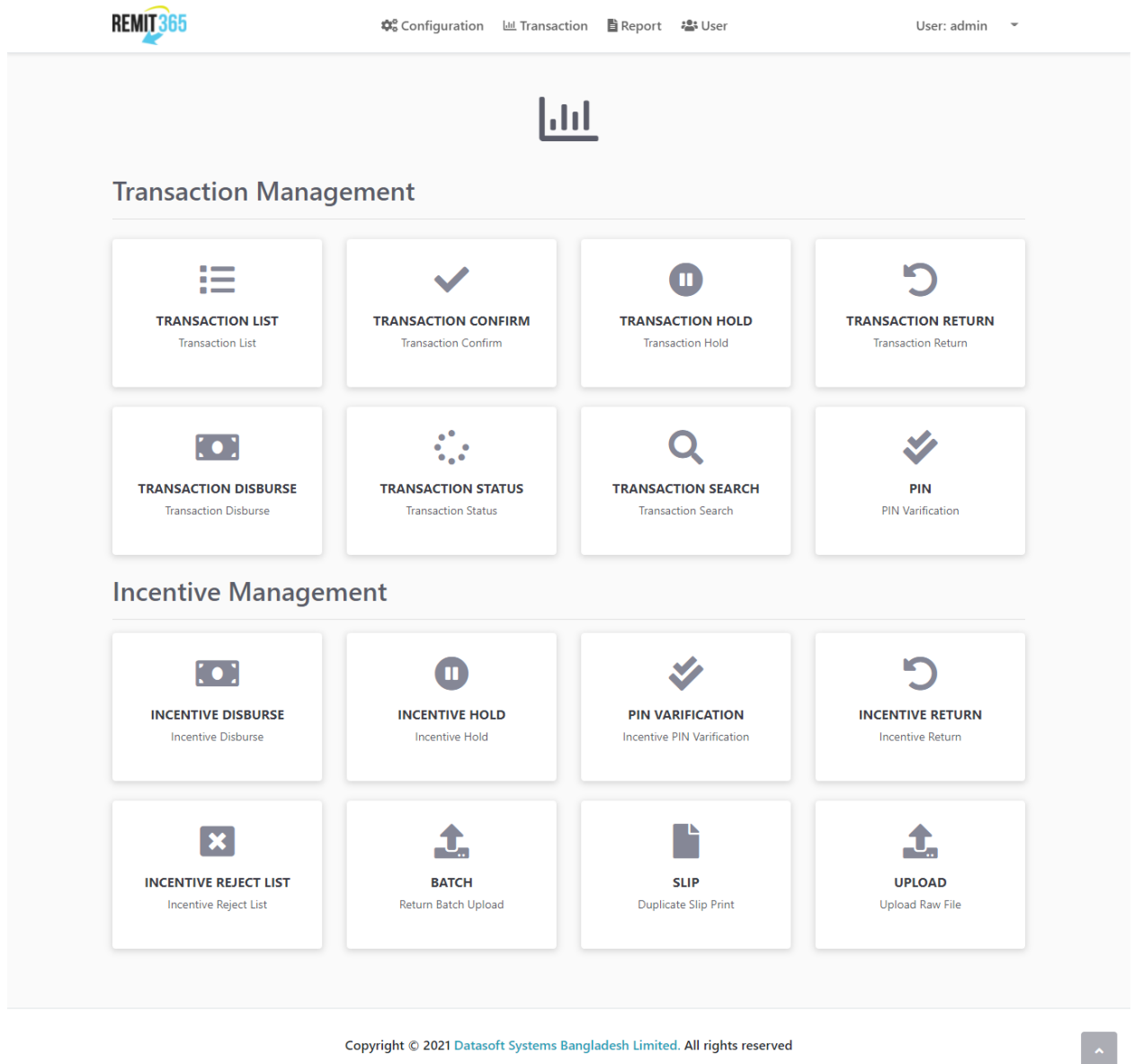
Figure 13: Transaction Module

6.2.3.5   Report

The Report Module containts different types of reports depending on clients requirement

Figure 14: Report Module

7 Engineering Problem Analysis

7.2 Sustainability of The Project

After generating API in JSON format, data handling and manipulation has been seamless and more accurate and safer, which helps the developer community in future works. Because of REST API, the scale of the datasets are not a constraint on the handling of the data and can be error free.

7.3 Addressing Ethics & Ethical Issues

7.3.2 Collecting only Relevant Data

The app Remit365 does not collect personal data other than that which is strictly relevant to the site, and which users will put on their own consent.

7.3.3 **Not Sharing or Selling any User Data**

The system does not let any service, any application or any third party have access to the data collected.

7.4 Challenges Faced

During my internship period I have face many challenges that I have overcome

7.4.2 Covid-19

As the pandemic is still at large, it has caused a lot of travel restrictions and weariness to avail public transportations. Thus, it had been very restrictive to travel to and from work every day. Also, the economic shock due to the pandemic has caused the work environment to be off dire situations

7.4.3 **Adaptation**

As a new to the real-world scenario, I was quite confused and having a rough time to cope up with the speed with my team and understanding the business logic, development criteria. Learning new framework and new technology everyday and implementing along with performance test was really tough but also fun at the same time

8   Lesson Learned

8.2   Problems Faced During this Period

During my internship I have face many challenges and problems. A solution is not as easy as it seems. I have pointed out some of the most difficult part of problem

- Dealing with large data

- Optimizing app with large data

- Authentication and user wise URL permission

- Error handling of APIs

8.3   Solution of those Problems

- Dealing with large data is a stressful job. Especially when a developer has to render it on frontend. Where the developer has to render as much data as possible within as less time. So, solve that I along with the backend engineer come to conclusion that server-side pagination would be a good choice. Here the whole data has been broken into few chunks and has been send from API. The data loads faster than usual.

- Authentication has always been a major headache for developer. With today's modern world, breaching into a system is much easier. So that, a secure protection is required for a financial system. We have used Json Web Token widely known as JWT for our systems authentication. It's sends a token every time user logs into the system. We have used its secure encryption algorithm for tokenizing and make a secure way of transaction.

- Each user has its own role in this system. From super admin to branch user, from accessing all functionality to getting access to only 4 functionalities. Dividing and blocking other on based on user role was quite hassling. We have to build another API with having the URL or functionality accessibility to each user. According to user's role, user will see the module user has access to.

- Getting error from system is quite easy. Sometime API validation. Input requirement was changed after building the API and I have to handle the errors from client ends. Here i have used concept from data structure like POP/PUSH etc. to prevent unnecessary post to API

9   Future Work & Conclusion

9.2   Future Works

The future of API based application is really demanding as it gives lots of frontend technology option to integrate with. Also, making it more optimized and sophisticated application with top edge technology with blazing fast response and less bandwidth consuming

9.3   Conclusion

It was a wonderful experience working with DataSoft Systems Bangladesh Limited as an intern. During the internship period I have learnt and applied a great deal. I have learned a lot about developing different kinds of applications also about various development styles. I was pushed to adapt to changes rapidly and come up with logical solutions. During my project, I cooperated with my mentors and seniors to solve the challenges faced. Despite their workload, my supervisors were always there to answer any queries and help me settle nicely. This internship opportunity has paved the way to investigate the development environment and marketplace. I would like to appreciate once again everyone who has made my life as an intern such a great experience.