A Mini Project Report on

Reimbursement Service

T.E. - I.T Engineering

Submitted By

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CERTIFICATE

This to certify that the Mini Project report on Reimbursement has been submitted by **Rahul Kumar Yadav** (20104093), **Mansi Viramgama** (20104115) and **Mayank Viramgama** (20104119) who are a Bonafede students of A. P. Shah Institute of Technology, Thane, Mumbai, as a partial fulfilment of the requirement for the degree in **Information Technology**, during the academic year **2022-23** in the satisfactory manner as per the curriculum laid down by University of Mumbai.

Prof. Yaminee Patil
 Guide

Prof. Kiran Deshpande   Dr. Uttam D.Kolekar
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1.
2.

Place: A.P. Shah Institute of Technology, Thane
Date:

ACKNOWLEDGEMENT

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Introduction

Reimbursement is when a organization pays back an employee, client, or other people for money they spent out of their pocket or for overpaid money. Some examples are getting money back for business costs, insurance premiums, and overpaid taxes. In our project Reimbursement is a student benefit through which a college pays for a pre-determined amount of continuing education credits or college coursework to be applied toward a degree. These programs are intended for employees looking to advance their education as it relates to their current career track, offering the chance to increase their industry knowledge and develop advanced skills.

1.1) Purpose

Reimbursement is compensation paid by an organization for out-of-pocket expenses incurred or overpayment made by an employee, customer, or another party. The Expense Reimbursement System (ERS) manages the process of reimbursing students and staff for expenses incurred while on completing interesting course. All students can log in, submit reimbursement requests, and view their past and pending requests.

A dedicated expense reimbursement software practically pays for itself. Alongside saving a ton of time, costs, and staff hours, it ensures management of reimbursement is ever compliant - with little to no manual intervention.

1.2) Problem Statement:

Difficulty keeping records of expenses spent on courses provided by the college. It became hectic to do a manual management for applying reimbursement for thousands of Students. Managing records of completion of certification of courses is also a hectic task. When employees incur expenses on behalf of your company, they'll occasionally need to spend their own money. It is both morally and legally required that the company reimburses them for these payments promptly and in full.

But this doesn't mean that employees get to claim reimbursement for every payment they make. To keep things fair and transparent, you need to set clear rules for what counts as a reimbursable expense.

1.3) Objectives

The main objective of this is to provide an overview and generate a report of all the approved reimbursements given to their students and teachers. Since previously all things were done manually, our next objective is to reduce manual work and paper works and also help maintain safe records. Another objective should be that through our application the applicant should have an easy-to-apply and keep a track of the applied reimbursement.

Another objective is to allow the admin to export the data depending on the given condition, such as Downloading CSV of approved request and export CSV of IT department, and many more.

1.4) Scope

- Can be applied to any organization that wants to keep a record of their reimbursement.

- Can be helpful for organizations to get visual analyses of records by filtering them year-wise, department-wise, etc.

- Can be applied to any organization that wants to make the Reimbursement process easy to apply and keep track of their applied reimbursement etc.

Chp:2 Literature Review

Research and Analysis of Electronic Cash Payment System
Authors: Da-Xing Wang, Ji-Kai Teng.

A variety of on-line businesses are rapidly emerging over the Internet, which is believed to be one of the most efficient ways to provide all electronic services. An electronic and secure electronic cash ("e-cash" in short) system plays an important role to support these businesses safely as a trustful payment over the Internet. We describe the problems faced by previous e-cash system. Based on these problems, we will propose a new electronic cash model based on bilinear pairings. The security of the new system is under the computational Diffie-Hellman problem in the random oracle model. Analysis showed that the proposed model is superior to the related system in the area of electronic cash's security, anonymity, unforgeability, communication round, and computational cost.

Research on the Payment Service E-commerce Model Based on reputation mechanism (10.1109/ICCSE.2012.6295140).

Author: Wei Feifei

This paper designs an improved E-commerce model and adds logistics provider to the traditional E-commerce model, puts emphasis on the mutual supervision of the third-party payment and logistics provider with reputation mechanism in order to reduce the service risks especially the payment risks in network transaction.

The core idea of trust mechanism based on reputation is that the trust mechanism assigns a trust value to any node name N in the E-commerce system according to its history transaction conditions and transaction behaviors evaluation of the other nodes for node N in order to support the decision whether the other nodes make a bargain with node N. The application of reputation mechanism in E-commerce can improve supervision mechanism for both sides of buyer and sellers especially the seller and provide a kind of suggestion and instruction information for the buyer to search and select provider of commodities or service. A number of scholars have pointed out that reputation is very important for any party to select partner in transaction especially in E-commerce environment.

Research on Online Payment Mode of E-commerce (10.1109/ICSESS.2010.5552440)

Author: Yongqiang He, Yanrong Shi, Aixiang He

E-commerce is highlighted in the present Internet development, among which payment is its core issue. This paper, after analyzing the characteristics of online payment, gives a common online payment system model with emphasis on the discussion of the electronic credit card, electronic cash, and electronic check of three online payment modes a

Chp3: Proposed System

3.1) Features and Functions

- Can log in and Signup

  To apply for reimbursement user, need to initially log in and if the user is not registered user one needs to Sign up by providing personal details such as name, email address, password, etc.

- Apply For Reimbursement

One can apply for the interested course he is willing to do.

- Overview of Past Records

  Users can get information on past reimbursement at any time.

- Add Reimbursement.

  Admin can make a new reimbursement entry.

- View Dashboard (User)

  Here user can view applied reimbursement history, status and bank details.

- View Dashboard (Admin)

  Here admin can see a number of reimbursement requests pending and approved.

- Upload Certificate

  While filling particular reimbursement user can upload the completion certificate of the course or examination.

Chp4: Requirement Analysis

•Admin:

 Add user to the portal:

- Firstly, users have to enroll themselves in the portal and which is approved by the admin whether the enrolled user is a valid user or not.

- Further admin will be able to add the users themselves.

- Keep records:

    Admin will be able to keep record summaries on a CSV file or a downloadable file.

    - Admin will also be able to get the graphical representation of all records

 - Users:

    - Add new reimbursements:

    - Users will be able to add new reimbursements according to their needs and which will be further approved by the admin.

    - Reimbursement status:

    - Users will be able to see their reimbursement status.

    - previous reimbursement status.
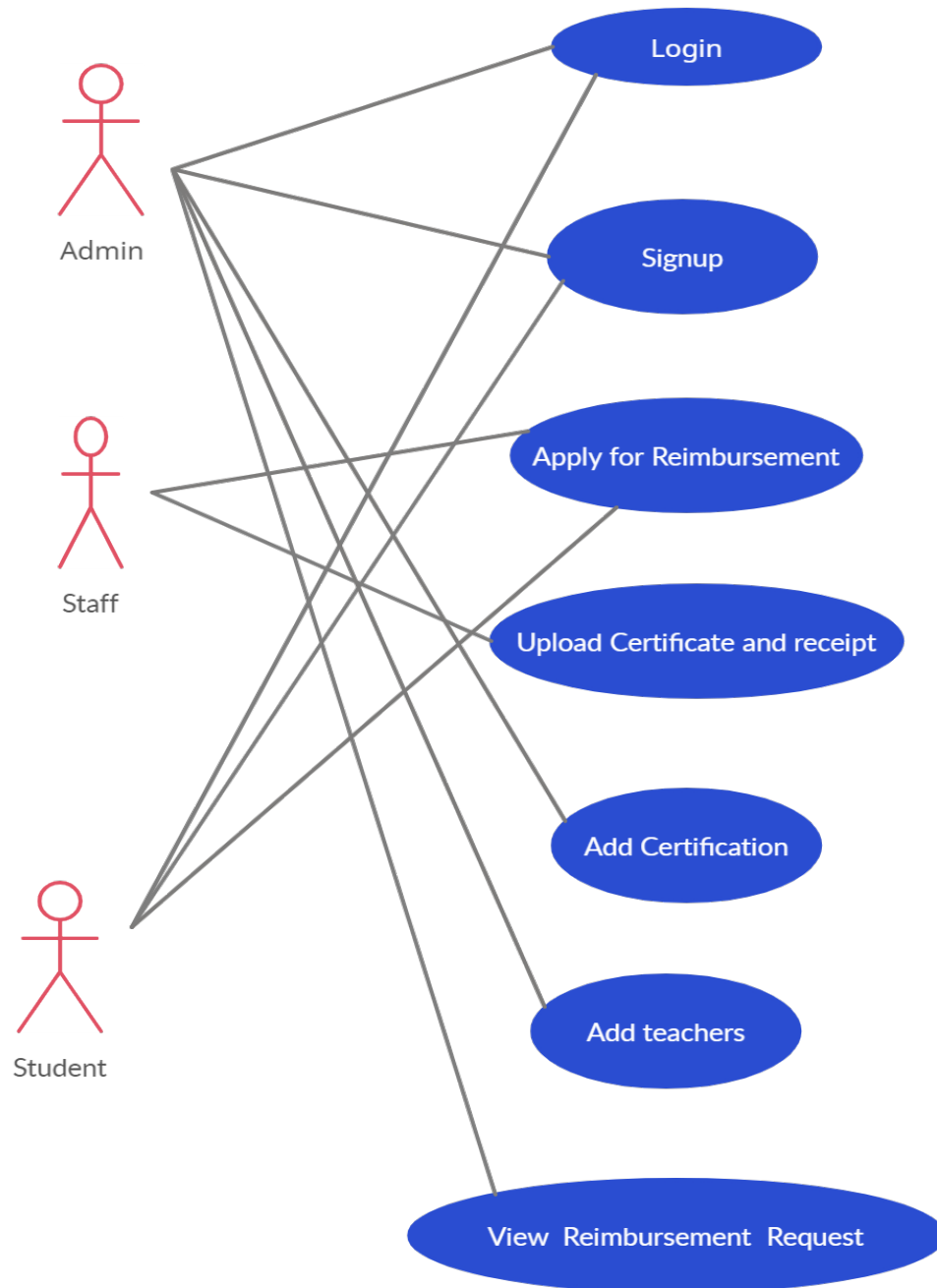
Chapter 5: Project Design

5.1) User Case Diagram
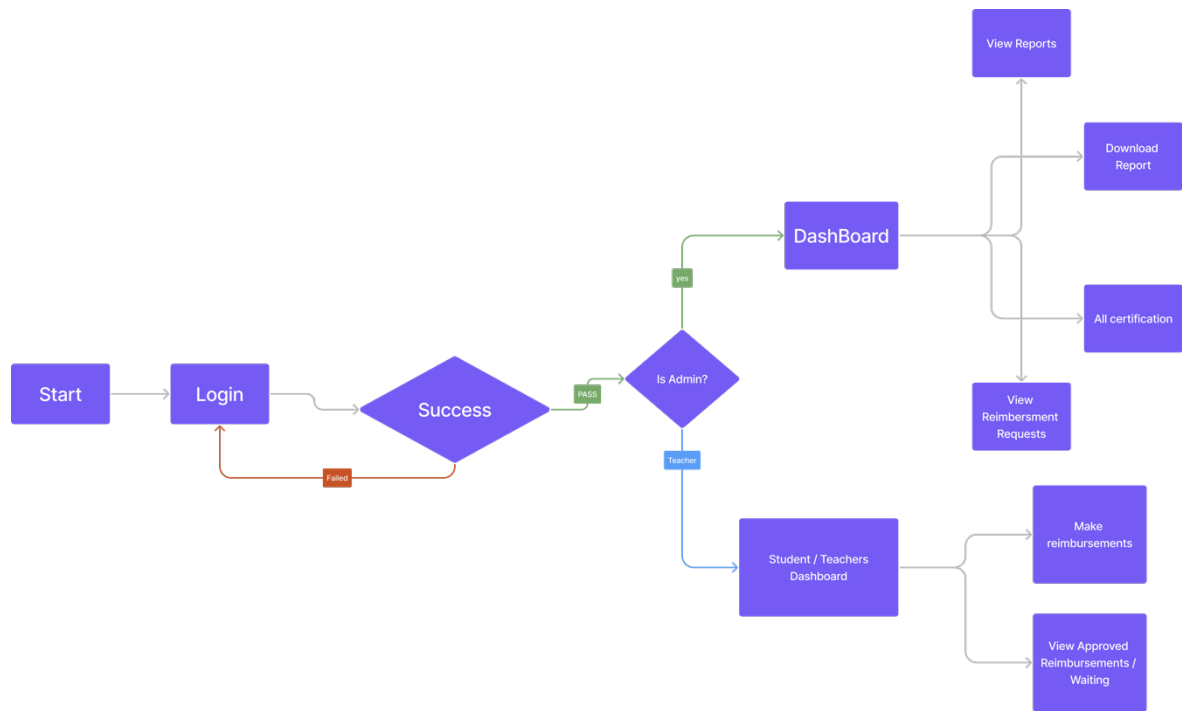

Fig: 5.1

5.2) DFD (Data Flow Diagram)

Fig: 5.2.1

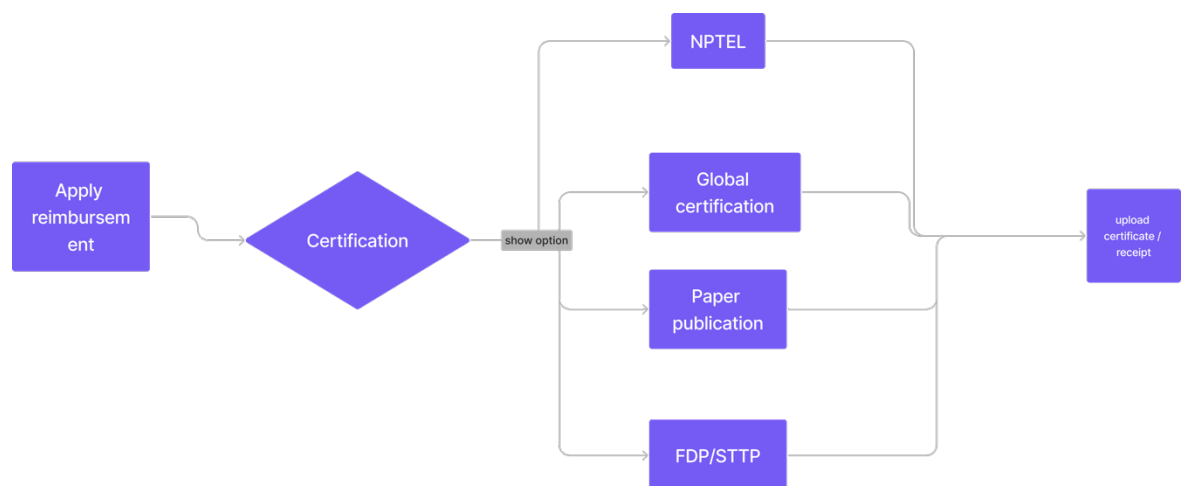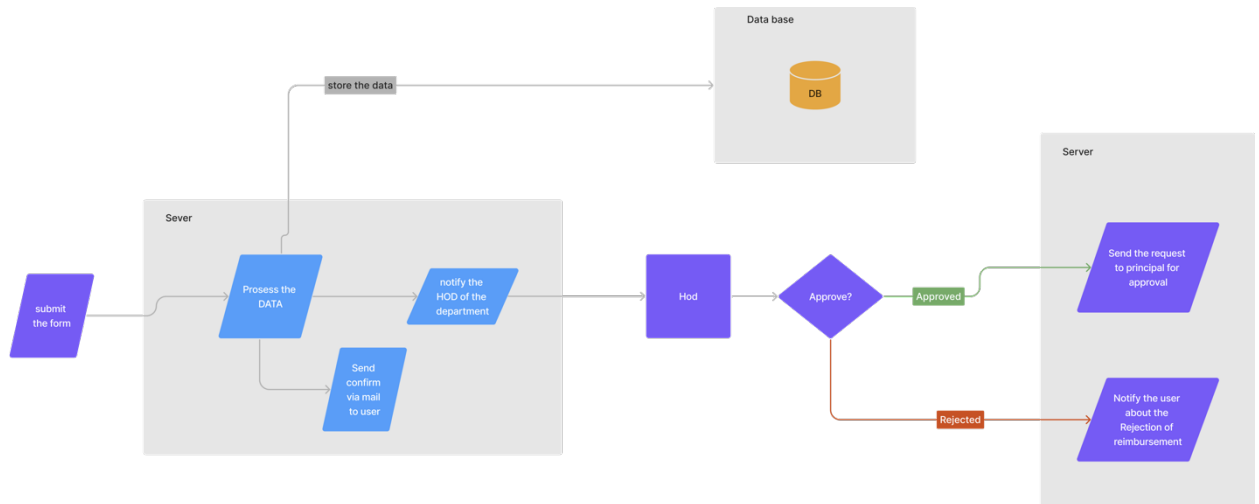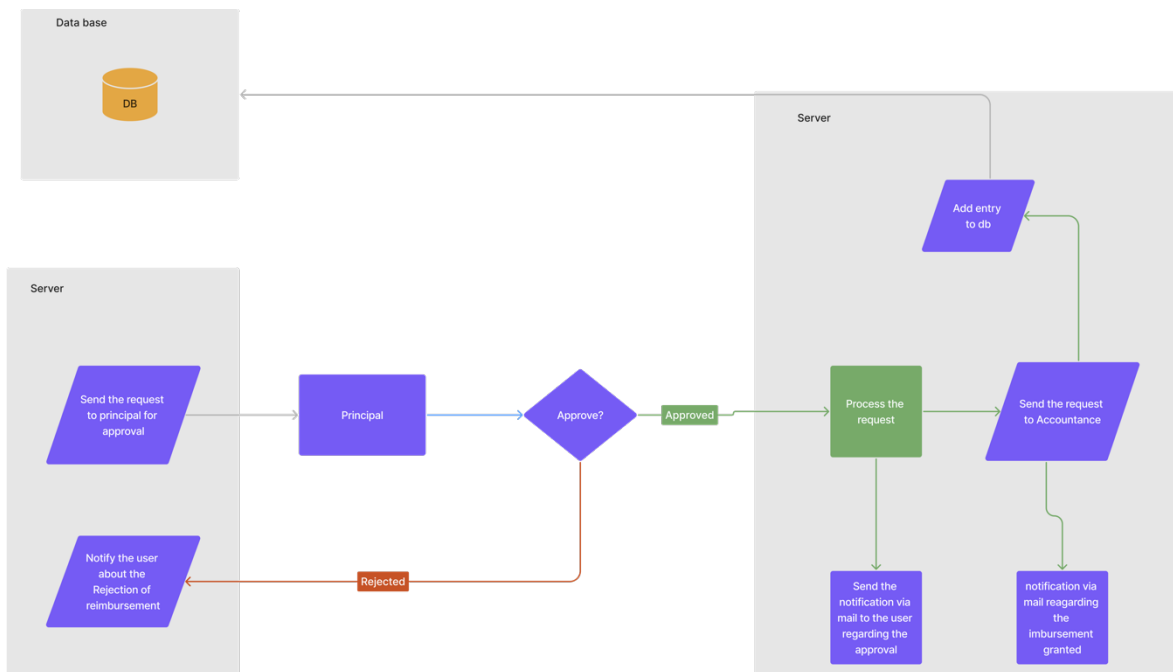## 5.3) System Architecture

Fig: 5.3.1

Fig: 5.3.2

Fig: 5.3.3

Chapter 6: Technical Specification

- **Next-Js (Frontend)**: Next.js is a framework that will help you to build your project with ease (production-ready). Next.js is also a full-stack framework that acts as a front-end framework that builds the interface of a website and also acts as a back-end framework that handles the rendering process and database management.

- **NodeJs (Backend)**: It is used for server-side programming, and primarily deployed for non-blocking, event-driven servers, such as traditional websites and back-end API services, but was originally designed with real-time, push-based architectures in mind. Every browser has its own version of a JS engine, and node.js is built on Google Chrome's V8 JavaScript engine.

- **Material-Ui (CSS Framework)**: Material UI is an open-source, front-end framework for React components. Material UI is based on Google's Material Design to provide a high-quality, digital experience while developing front-end graphics. Material Design focuses on providing bold and crisp designs – it builds textures by focusing on how the components cast shadows and reflect light.

- **Express-Js (To set Backend Rest API Framework)**: Restful API is very popular and commonly used to create APIs for web-based applications. Express is a back-end web application framework of node js, and with the help of express, we can create an API very easily.

- **S3 Bucket (to store user certificates)**: A bucket is a container for objects stored in Amazon S3. You can store any number of objects in a bucket and can have up to 100 buckets in your account. To request an increase, visit the Service Quotas Console. Every object is contained in a bucket.

Chapter 7: Project Scheduling

Sr. No	Group Member	Time duration	Work to be done
1	**Rahul Yadav**	1st Week of July	Planning of Project workflow
		2nd week of August to October	Started Setting up the Backend and Provide functionality to different URL pages and integrated API.
2	**Mansi Viramgama**	3rd week of August to October	Started making different URLs for different pages and Report documentation work.
3	**Mayank Viramgama**	3rd week of August to October	Started making different URL for different pages and Project Presentation.

Chapter 8: Implementation

```javascript
_handleFile(req, file, cb) {
        console.log(req.user._id.toString());
        console.log(file.size);
        const upload = stream.upload({
            Bucket: "rahulsreimbursement",
            Key:
`docs/${req.user._id.toString()}_${file.originalname}`,

        file.stream.pipe(upload);

        upload.on("error", function (error) {
            console.log(error);
            cb(error);
        });

        upload.on(" part", function (details) {
            console.log(details);
        });
        upload.on("uploaded", function (details) {
            console.log(details);
            cb(null, { details: details });
        });
    }
```

Fig: 8.1 Code for uploading files to AWS s3 bucket
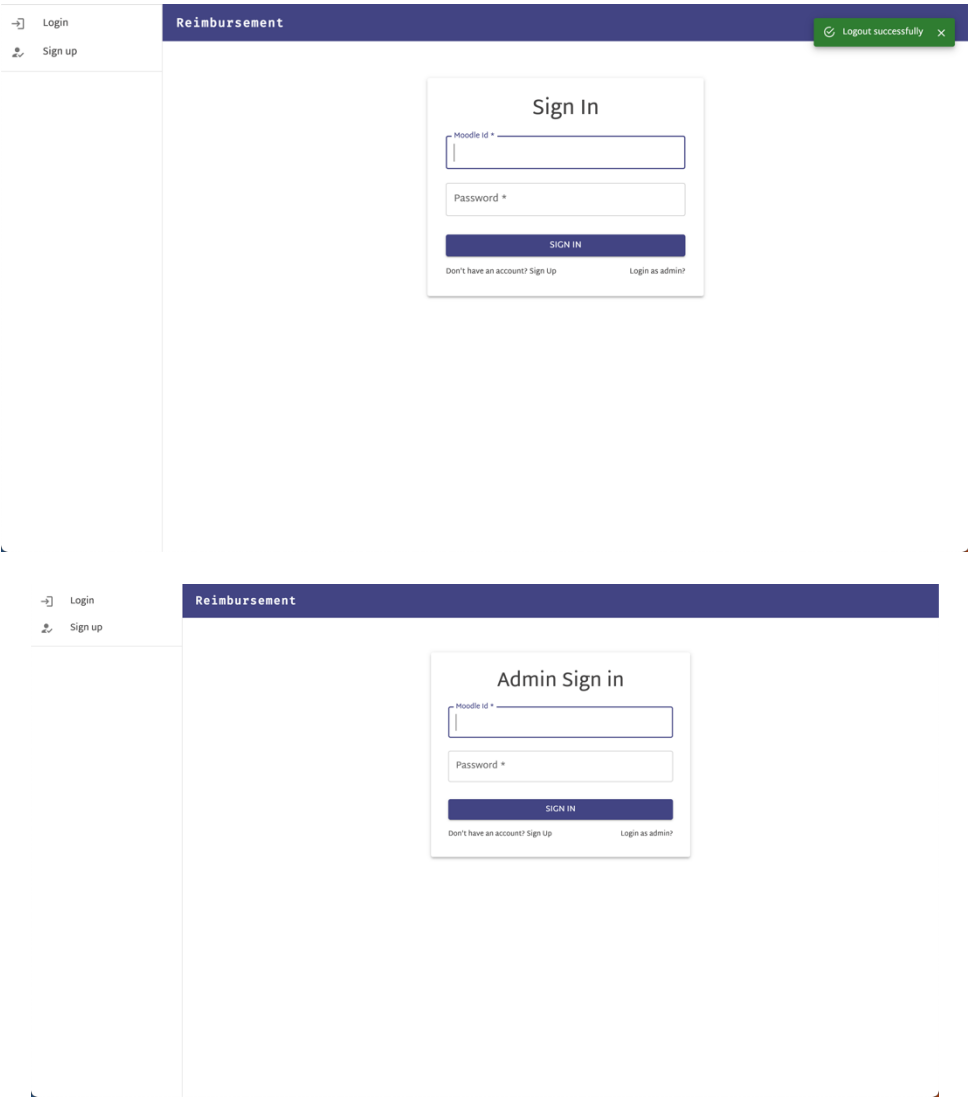
```javascript
if (!fs.existsSync(process.cwd() + "/compress/")) {
    fs.mkdir(process.cwd() + "/compress", (err) => {
        // => [Error: EPERM: operation not permitted, mkdir 'C:\']);
        console.log(err);
    });
}
if (!fs.existsSync(process.cwd() + "/uploads/")) {
    fs.mkdir(process.cwd() + "/uploads", (err) => {
        // => [Error: EPERM: operation not permitted, mkdir 'C:\']);
        console.log(err);
    });
}

console.log(req.file);
const timeStamp = new Date().toISOString();
const tmp_path = req.file.path; //        tmp/filename
const target_path = "uploads/" + req.file.originalname.replace(/\s/g, "");
const src = fs.createReadStream(tmp_path);
const dest = fs.createWriteStream(target_path);
src.pipe(dest);

const command =
    "gs -sDEVICE=pdfwrite -dNOPAUSE -dQUIET -dBATCH -dPDFSETTINGS=/screen -dCompatibilityLevel=1.4 -
sOutputFile=" +
    "compress/" +
    timeStamp +
    ".pdf " +
    "uploads/" +
    req.file.originalname.replace(/\s/g, "");
exec(command, (error, stdout, stderr) => {
    if (error) {
        console.log(error);
    }
    if (stderr) {
        console.log(stderr);
    }
    console.log(stdout);
    cleanupFunction("tmp");
    cleanupFunction("uploads");
    res.download("compress/" + timeStamp + ".pdf");
    cleanupFunction("compress");
    return;
});
```

Fig: 8.2 Code for compressing Files

Chapter 9: Result and Discussion

12345

- Dashboard
- Reset Password
- Log-out

- View Request
- Add Users

Reimbursement Request

OPEN REQUEST PAGE

Certificate Name	Apply At	Amount	Status	Account Number	IFSCode	Action
NPTEL	26/10/2022	1234	PENDING	1231234567	BAN1234	VIEW REQUEST
FTTP / STP	26/10/2022	2131	PENDING	1231234567	BAN1234	VIEW REQUEST
NPTEL	26/10/2022	12343	PENDING	1234567890	SBIN000123	VIEW REQUEST
NPTEL	29/10/2022	131	PENDING	1234567890	SBIN00001234	VIEW REQUEST
NPTEL	29/10/2022	3000	PENDING	1234567890	SBIN00001234	VIEW REQUEST
Paper Publication	29/10/2022	1234	PENDING	1231234567	BAN1234	VIEW REQUEST

Rows per page: 10 ▾   0–0 of 0   ‹ ›

Summary

Reimbursement

12345

- Dashboard
- Reset Password
- Log-out

- View Request
- Add Users

Reimbursement Requests

EXPORT

Certificate Name	Apply At	Applied by	Moodle Id	Amount	Status	Account Nu
NPTEL	26/10/2022	Rahul	1234	1234	PENDING	1231234
FTTP / STP	26/10/2022	Rahul	1234	2131	PENDING	1231234
NPTEL	26/10/2022	Rahul 1	20104093	12343	PENDING	1234567
NPTEL	29/10/2022	Rahul 1	20104093	131	PENDING	1234567
NPTEL	29/10/2022	Rahul 1	20104093	3000	PENDING	1234567
Paper Publication	29/10/2022	Rahul 2	20104094	1234	PENDING	1231234

Rows per page: 10 ▾   0–0 of 0   ‹ ›

Reimbursement

Reimbursement details

12345

- Dashboard
- Reset Password
- Log-out

- View Request
- Add Users

Reimbursement F

EXPORT

certificate Name
NPTEL

Reimbursement Amount
1234

courseName
JAVA

academic_Year
First Half

courseStartDate
2022-10-13

courseEndDate
2022-10-13

examDate
2022-10-08

Class
Elite

first_name
Rahul

Account Number
1231234567

	mber	IFSCode	Actions
	67	BAN1234	VIEW REQUEST
	67	BAN1234	VIEW REQUEST
	90	SBIN000123	VIEW REQUEST
	90	SBIN00001234	VIEW REQUEST
	90	SBIN00001234	VIEW REQUEST
	67	BAN1234	VIEW REQUEST

Rows per page: 10 ▾   0–0 of 0   ‹ ›

DOWNLOAD CERTIFICATE   APPROVE

Reimbursement

Rahul
1234

- Dashboard
- Reset Password
- Log-out

- Apply new Request
- Compress Pdf

PENDING REQUEST	APPROVED REQUEST	ALL REQUEST

PENDING Requests

Certificate Name	Apply At	Amount	Status	Account Number	IFSCode	Action
NPTEL	26/10/2022	1234	PENDING	1231234567	BAN1234	VIEW REQUEST
FTTP / STP	26/10/2022	2131	PENDING	1231234567	BAN1234	VIEW REQUEST

Rows per page: 10 ▾   0–0 of 0   ‹ ›

Reimbursement

Rahul
1234

- Dashboard
- Reset Password
- Log-out
- Apply new Request
- Compress Pdf

APPROVED Requests

Certificate Name	Apply At	Amount	Status	Account Number	IFSCode	Action
NPTEL	26/10/2022	1234	Approved	1231234567	BAN1234	VIEW REQUEST

Rows per page: 10 ▾   0–0 of 0   ‹ ›

Reimbursement

Rahul
1234

- Dashboard
- Reset Password
- Log-out
- Apply new Request
- Compress Pdf

All Requests

Certificate Name	Apply At	Amount	Status	Account Number	IFSCode	Action
NPTEL	26/10/2022	1234	Approved	1231234567	BAN1234	VIEW REQUEST
NPTEL	26/10/2022	1234	PENDING	1231234567	BAN1234	VIEW REQUEST
FTTP / STP	26/10/2022	2131	PENDING	1231234567	BAN1234	VIEW REQUEST

Rows per page: 10 ▾   0–0 of 0   ‹ ›

Reimbursement details

Rahul
1234

Dashboard
Reset Password
Log-out

Apply new Request
Compress Pdf

All Requests

Certificate Name		Number	IFSCode	Action
NPTEL		4567	BAN1234	VIEW REQUEST
NPTEL		4567	BAN1234	VIEW REQUEST
FTTP / STP		4567	BAN1234	VIEW REQUEST

Rows per page: 10   0–0 of 0 < >

certificate Name
NPTEL

Reimbursement Amount
1234

courseName
JAVA

academic_Year
First Half

courseStartDate
2022-10-01

courseEndDate
2022-10-15

examDate
2022-10-13

Class
Elite

first_name
Rahul

Account Number
1231234567

DOWNLOAD CERTIFICATE

Reimbursement

Rahul
1234

Dashboard
Reset Password
Log-out

Apply new Request
Compress Pdf

Apply for Reimbursement

Select Role
Student

Student Name *
Rahul

Email *
yadavrahul8141@yahoo.co

Select Certificate
NPTEL

Course Name *
JAVA

Academic Year
First Half

Duration

Course Start Date *
29/09/2022

Course End Date *
12/10/2022

Exam Date *
05/10/2022

Class Received(if any)
Elite

Reimbursement Amount *
1234

Account Number *
1231234567

IFSCode *
BAN1234

Upload your Certificate

Choose file   No file chosen

SUBMIT

Rahul

1234

Dashboard

Reset Password

Log-out

Apply new Request

Compress Pdf

Compress Your PDF

Select your Certificate

Choose file   No file chosen

COMPRESS

Chapter 10: Conclusion and Future Scope.

Our project is only a humble venture to satisfy the needs to manage their project work. Several user-friendly coding has also adopted. This package shall prove to be a powerful package in satisfying all the requirements of the school. The objective of software planning is to provide a frame work that enables the manger to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progress.

The application has a simple user interface and easy to use. The scope of the project has been defined in such a way that it can be submitted as a Master's project. We can also extend some functionality in the project, which will be described in detail in the following section.

The following functionalities can be added onto the existing system

Import data from the existing system into the new database with any dependencies identified and prevent loss of data. Integrate the current application into the firm's financial application to streamline the reimbursement process. The firm plans to provide its employees with corporate travel credit cards that could be used on business trips. The current application could be extended to simplify the employee expense process by integrating credit card accounts. We can also add a super-admin given the power to add another sub-admin, and receptionist. Which helps the organization distribute the workload and have an organized flow.

Chapter 11: Reference.

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