

A
Project Report
on
"Corporate Plus – Administering Expertly"

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A Report Submitted to
Charotar University of Science and Technology
for Partial Fulfillment of the Requirements for the
Degree of Bachelor of Technology
in Information Technology
(8th Semester Software Project Major-IT407)

Submitted at



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At: Changa, Dist: Anand – 388421
April 2020

CANDIDATES' DECLARATION

We hereby declare that the project entitled “Corporate Plus – Administering Expertly” is our own work conducted under the guidance of Mr. Priteshkumar Prajapati and Mr. Bhavin Patel.

We further declare that to the best of our knowledge, the project for B. Tech does not contain any part of the work, which has been submitted for the award of any degree either in this University or in other University without proper citation.

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CERTIFICATE

This is to certify that the report entitled "**Corporate Plus – Administering Expertly**" is a bonafied work carried out by **Mr. Rahul R. Brahmbhatt (16IT013)**, **Mr. Harsh N. Patel (16IT073)** & **Mr. Rahul B. Tiwari (16IT139)** under the guidance and supervision of **Mr. Priteshkumar Prajapati & Mr. Bhavin Patel** for the subject **Software Project Major (IT407)** of 8th Semester of Bachelor of Technology in **Information Technology** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidates themselves, have duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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ABSTRACT

In this era of technology, the human life is made more comfortable and fuller of ease due to the rapid development in the technology and science sector. Managing the business manually in today's time where the technology is constantly evolving is difficult. Also, maintaining separate systems for traditional business functions like Manufacturing, Sales, Finance, Human Resources, etc. is cumbersome. Therefore, there is a need of an Enterprise Resource Planning (ERP) system which integrates all the traditional business functions into one centralized system. An ERP system is used by organizations looking to manage their business functions, companies working on manufacturing of products and its supplies, healthcare domain, hospitality services, organizations for managing their staff, customers and inventory and many more. In fact, an ERP system can be utilized by different number of industries and domains as per their requirements. The best part about an ERP system is that it stores all the data in a single database, which allows all the different departments of an organization/company to work with the same information. Moreover, the stored data can be further analysed by generating reports and figures. An ERP system can be undoubtedly said to be an ultimate system to manage data from different sources at a single space.

For this project, we have built an ERP system as a web application called 'Corporate Plus' and an informational website with the same name by using html, CSS, Bootstrap, jQuery and PHP by following Model-View-Controller (MVC) architecture. The ERP system that we designed is dedicated to an organization which has different departments like Manufacturing, Inventory, Sales, Human Resources, Finance (Accounts) and Service. All the departments of the organization are integrated into this centralized system and are managed efficiently. The website majorly focuses on displaying the products manufactured by the organization which can help any person on the internet to view them alongside an option to inquire about them and then purchase it from the organization. Even sky is not the limit when it comes to expand an ERP system. An ERP system can always be made better than the existing ones as the requirements of the users and technology keeps evolving. Therefore, there is always a room for expansion while working with an ERP system.

ACKNOWLEDGEMENT

Our Team have contributed earnestly in developing this project. However, it would not have been possible without the kind support and help of many hands. We would like to extend my sincere thanks to all of them.

We are highly indebted to **Mr. Priteshkumar Prajapati** for providing guidance and constant supervision as well as for imparting necessary information regarding the project & also for lending support in completing the project.

We are grateful to our external guide **Mr. Bhavin Patel** at Tech Elecon Pvt. Ltd. for giving us the support and encouragement that was necessary for the completion of this project.

We would like to express our gratitude to **H.O.D. Dr. Parth Shah** and we are also grateful to all our faculty members of Chandubhai S. Patel Institute of Technology for their kind co-operation and encouragement which helped us in completion of this project and preparing the report.

"Talent wins games, but teamwork and intelligence win championships."

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Chapter – 1: INTRODUCTION

1.1 PROJECT OVERVIEW

Corporate Plus is an Enterprise Resource Planning web application that helps an organization to manage its different departments like Manufacturing, Inventory, Sales, Customers, Service, Accounts, Human Resources and many more from a centralized module. Also, the informational website gives any outsider an overview of the products the organization manufactures and sells, the functionality regarding applying for a job at the organization and also contacting the organization regarding any query can all be accomplished through the website module.

Corporate Plus covers the following modules and functionalities:

- **Manufacturing Department** - This module will help in managing the product development and its production. The requested product after getting approved for production will be manufactured under this department. All the rights for accomplishing the task will be provided to the authorized personnel in the system. Manufacturing department will check for the raw materials of the product with the Inventory department. Then, if the material is available it will be brought to Manufacturing department for the production. If the materials are not available in the Inventory, the request for the raw material will be sent to the Vendors. Thus, a product will be manufactured under the Manufacturing department. Manufacturing Engineer can make raw materials request through make request feature to the Inventory Manager. At the same time, it can manage any product request coming from any Sales Manager
- **Sales Department** - Sales department will deal with sales and returns of the products manufactured and sold by the organization. Also, it will manage the Service Level Agreements set by an organization. (Generating invoice)
- **Accounts Department** - In our system, this module is responsible for the managing the organization's finances, also the personnel given the access to this department are in charge for approving or rejecting the fund request made by any other user (any other designation) from the system through make request functionality. When any user makes any fund request with their reason, the

personnel granted access to this department will receive a notification regarding the same.

- **Human Resources Department** - In our system, the HR Department is responsible for recruitment of new employees. The personnel with HR designation is responsible for filling the required details and uploading educational documents for the same regarding any applicant when he/she visits the organization for personal interview. Also, for making this process online the informational website provides the facility to submit the application online and the application will be received by the HR department and the respective applicant will be then called for personal interview round.
- **Inventory Management** – In our system, Inventory management has the role to provide the users visibility over stock. This department exchanges its data with manufacturing and sales record. Whenever manufacturing any product the availability of raw materials will be checked and then only the manufacture of that product will be allowed and the same is when adding any new sales record, the system will allow the entry of only the products which are available in stock else it won't allow for the entry. Inventory Manager can manage raw material request coming from any Manufacturing Engineer in the system.
- **Service Management** – For the products sold by the company and in the warranty period, if any technical fault arises in the product and the product is to be serviced then the request will be served by this department's designated user (Service Engineer). Product service is provided only for the products bought from that particular organization.
- **ERP Database** - Database is very crucial while developing an ERP web application system, hence for developing such system, a central database is created which ensures that all the department's designated users are operating and working on the same set of information.
- **ERP Administrator** - In our system, the Administrator has the key role as this user has the authority to assign the priority and access to other designation users of various other departments in the system. Alongside, Admin will possess all the rights to the system.

The Designed Dashboard for the system provides various functionalities including the basic ones such as login/logout, additionally it allows the logged in user to alter their

profile. Forms (functionality) related to any designation user are displayed according to their department and access rights. Also, various charts like Pie chart, Bar chart, Line Graph are displayed on the dashboard which are related to the sales of product in current week, month or year, new products manufactured, number of active users. Feature like “to-do-list” is also appended to the dashboard giving the information about the tasks to be accomplished with mentioning their deadlines. “Recently added products” canvas displays the newly added products in the system.

An Android Application for the same ERP application is created with the help of Android WebView which allows to display online content in android activity. The same ERP Web Application that is being operated with computers and laptops can function in similar way under the Corporate Plus mobile app. All the functionalities and features for the system remains the same and are fully functional according to the designation.

Informational website is linked with the Corporate Plus ERP Web application so that whenever the organization adds new product category along with its related products, they can be displayed on the website and any user interested to inquire or buy any of the them can contact the organization by filling the web inquiry form. That inquiry is then received by the ERP system and allocated to respective inquiry taker and the inquirer is notified about the status through e-mail. Similarly, for applying at the organization for job, the applicant must fill the required details under the apply now page in the website and afterwards the application is submitted to the ERP system and the applicant is notified regarding the personal interview round through e-mail.

1.2 OBJECTIVE

Any organization dedicated to specific domain has multiple departments with their own significance, given this situation without having any centralized system to which all the departments are linked, it becomes laborious to manage the organization. If there are no connections set between the operations of multiple departments in the system, not having a centralized database will create the situation where the employees will find it tedious to maintain the functioning of the organization.

All these difficulties can be solved by designing a centralized system which can manage all the departments and can set connection wherever needed through the help of a centralized database which will be shared amongst the employees in the organization which will lead to increased efficiency and transparency.

- The project is to create such an ERP Web application that monitors and connects all the departments in any organization. Same ERP Web application will be shared between all the employees of the organization but the respective designation will have pre-defined access and only those functionalities will be visible and accessible to that user.
- Administrator of the system will have all the rights in the system and only he/she can modify the system or add any new users to the system according to the departments in the organization. All the data related to the departments will be sent to one common database through which it can be accessed by any official according to their need.
- The main purpose of the project is to streamline and improve the business operations of an organization by implementing Enterprise Resource Planning System. It will help in eliminating redundancy in the data management system and increase flexibility of operations with improved rate of production.
- The informational website shall provide the overview of the organization with presenting the details of product categories along with the product the organization manufactures, from that point the website user can inquire about any interested product with that inquiry being sent to the ERP Web Application and being allocated to any designated user for further process, if

satisfactory information is not being delivered to the website user during first onsite inquiry, he/she can opt for subsequent follow ups till the time they wish to buy the respective product and become customer for the organization, all these functionalities including generating the invoice for the product and providing the service for the same till the product is under the warranty period are intention for this project.

1.3 SCOPE

- Presently, the scope of this project is to manage various departments under any particular organization, it allows the organization's departments to function under one centralized system, with allowing the Administrator to add new designations to the system according to the organization, allowing any user from the system to access the Web application according to their access rights and priorities, they can modify their profile, by using the functionalities provided under their designation they can add or update/delete any existing record from the shared database.
- For instance, consider manufacturing engineer under the manufacturing department, he/she will have the rights to view the raw materials in the system along with their available stock, also the vendor information will be provided so that at the time of raw material requirement, the respective vendor can be searched and contacted.
- Along with this, the manufacturing engineer can view the list of ordered materials along with its order information and also the list of returned raw materials due to any defect can be viewed. This designation has access to add new product categories and make the entries of the products the company manufactures along with its related information and this all can be updated anytime.
- So, in similar manner every designation has its functionalities under this system. Also, the dashboard displays various charts and graphs representing the different entities and elements dynamically in the system.

- The informational website displays the product categories along with the products that the company manufactures and all the information is fetched dynamically from the database, the web portal provides option for any user to inquire for particular product.
- However, the scope of the project can be extended to include the regular backup of the shared database in order to prevent loss of data due to any technical issues, also the ERP Web Application does not have the functionality that it can be integrated with any existing Web Application, at this point of time integration with any existing system is out of scope.

1.4 TOOLS AND TECHNOLOGY (PROJECT DEVELOPMENT)

1.4.1 PHP

PHP (recursive acronym for PHP: Hypertext Preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML. One can even configure their web server to process all their HTML files with PHP. PHP is mainly focused on server-side scripting, so one can do anything any other CGI program can do, such as collect form data, generate dynamic page content, or send and receive cookies. But PHP can do much more.

There are three main areas where PHP scripts are used:

1. Server-side scripting: This is the most traditional and main target field for PHP. One needs three things to make this work: the PHP parser (CGI or server module), a web server and a web browser. One needs to run the web server, with a connected PHP installation. One can access the PHP program output with a web browser, viewing the PHP page through the server.
2. Command line scripting: One can make a PHP script to run it without any server or browser. One only needs the PHP parser to use it this way. This type of usage is ideal for scripts regularly executed using cron (on *nix or Linux) or Task Scheduler (on Windows). These scripts can also be used for simple text processing tasks.

3. Writing desktop applications: PHP is probably not the very best language to create a desktop application with a graphical user interface, but if one knows PHP very well, and would like to use some advanced PHP features in their client-side applications they can also use PHP-GTK to write such programs.

The reasons for using PHP in this project are that it supports cross platform availability, it is web oriented, has a wide range of community and resources both online and offline, has a wide range of frameworks and we have a good experience on working with PHP.

1.4.2 The Model-View-Control (MVC) Architecture

Model-View-Controller (MVC) is an architectural pattern that separates an application into three main logical components: the model, the view, and the controller. Each of these components are built to handle specific development aspects of an application. MVC is one of the most frequently used industry-standard web development frameworks to create scalable and extensible projects. Traditionally used for desktop graphical user interfaces (GUIs), this architecture has become popular for designing web applications and even mobile, desktop and other clients. Popular programming languages like Java, C#, Ruby, PHP and others have popular MVC frameworks that are currently being used in web application development straight out of the box.

Model: The Model component corresponds to all the data-related logic that the user works with. This can represent either the data that is being transferred between the View and Controller components or any other business logic-related data.

View: The View component is used for all the UI logic of the application.

Controller: Controller acts as an interface between Model and View components to process all the business logic and incoming requests, manipulate data using the Model component and interact with the Views to render the final output.

The reason for using MVC architecture in this project is that it has been widely adopted as an architecture for World Wide Web applications in major programming languages. Several web frameworks have been created that enforce the pattern. These software frameworks vary in their interpretations, mainly in the way that the MVC responsibilities are divided between the client and server.

1.4.3 XAMPP

XAMPP stands for Cross-Platform (X), Apache (A), MySQL (M), PHP (P) and Perl (P). XAMPP software package contains Apache distributions for Apache server, MariaDB, PHP, and Perl. And it is basically a local host or a local server. XAMPP is the most popular PHP development environment.

1.4.4 NetBeans IDE 8.2

The NetBeans IDE can boost the productivity when working with Java SE technology as well as PHP, JavaScript, and C/C++. The NetBeans IDE provides integrated support for scripting languages such as PHP and JavaScript.

PHP: With the NetBeans IDE for PHP, one gets the best of both worlds: the productivity of an IDE (code completion, real-time error checking, debugging and more) with the speed and simplicity.

JavaScript: The NetBeans IDE has the JavaScript tools one needs: an intelligent JavaScript editor, CSS/HTML code completion, the ability to debug JavaScript in Firefox and IE, and bundled popular JavaScript libraries.

Chapter – 2: PROJECT MANAGEMENT

2.1 PROJECT PLANNING

Project planning involved all three of us and the project team at Tech Elecon Pvt. Ltd. where emphasis was laid on creating a quality web application meeting all the specified requirements in a given period of time. Thus, the environment for developing the project had to be Agile. For the purpose of project development, scrum process was used. The reason for using scrum process is that it involves an active participation of all the stakeholders of the project (product owner), a development team and a scrum master. Throughout the development of the project, many sprints were planned which were of the duration of 2 weeks and contained the information about the objectives that had to be achieved within the end of those 2 weeks. Once a sprint was completed, it was discussed and assessed thoroughly in the sprint review meeting and the feedbacks/suggestions/corrections were noted so that they can be implemented in the future sprints. After that, the same process of sprint planning, sprint implementation and sprint review continued till the development and working of the project. We began the project development by studying MVC architecture using PHP and ended it with debugging and working on various test cases in the web application following many sprints of 2 weeks each.

2.1.1 Project Development Approach and Justification (Agile Model)

SDLC, that is Software Development Life Cycle is a standardized process used by the software industry to design, develop, test and maintain good quality software. The main aim of SDLC is to meet or exceed the expectations of customer alongside producing a high-quality software within decided time and costs. The software development process model that has been followed for designing this project is Agile model. Agile SDLC model focuses on customer satisfaction and process adaptability alongside rapid delivery of working software product. Agile SDLC generally contains six phases such as: Requirement Gathering, Analysis, Designing, Coding, Testing and Maintenance. The six Agile SDLC phases followed while developing this project are as below:

1. Requirement Gathering: Requirement Gathering is the first and foremost phase of any software development. It is the process of gathering a list of requirements (for the system) from the various stakeholders such as customers, users, developers, etc. For the purpose of Requirement Gathering for this project, we conducted several interviews and questionnaires with the project team at Tech Elecon Pvt. Ltd. which helped us with the formal Requirements Definition. The interviews that we conducted helped us getting the background information and understanding the existing ERP systems, which helped us a lot while designing and developing the proposed system. Once we had proper requirement definition, we considered and developed different use-cases and scenarios that can be used to validate the proposed system under different situations and to discover the areas that requires more attention while development of the project.
2. Requirement Analysis: Once Requirement Gathering is complete, the next significant and most essential task is Requirement Analysis. It is the process where the gathered requirements are analyzed, refined and scrutinized deeply. It helped us getting a graphical view of the entire system after reviewing all the requirements.
3. Designing: The designing process of the project starts once the requirements are gathered and thoroughly analyzed. Each requirement will help in generating the overall picture of the system. Designing helped us describe the proposed software features in detail alongside full data dictionary, entity-relationship diagram, system flow and data flow diagrams. These design elements were further used to develop the web application with website.
4. Coding (Development): Taking design elements as primary input, the development process of the project commences. It is the most critical part of SDLC. Based on our knowledge and understanding of the required system and coding, we were given different tasks. Each task was then performed by the assigned individual member of the team and once it was complete, the tasks were merged into the system.
5. Testing: Once the development of the project was completed, the project was tested to determine the quality of the software and its performance. The project has been tested using different test cases and also has been debugged to fix several issues present in the system earlier.
6. Maintenance: Maintenance is the last and final stage of the SDLC where upon

successful completion of the project and testing of the project, the web application is delivered to the client/customer. If there needs to be any modification in the web application or the website, then it will come under the maintenance process of the SDLC.

Now, we will discuss how our system follows Agile SDLC:

1. Constant communication with the client: During the development of the system and even before it, i.e. Requirement Gathering and Analysis stages, there has been a constant conversation between our external guide at Tech Elecon Pvt. Ltd. and us. The conversation took place in the form of interviews and questionnaires. There was a constant feedback from our external guide after the development of each module and changes were made into the system from time to time based on their feedback.
2. The main focus while designing this project was on developing high quality web application and website in time rather than documentation for the system.
3. There was frequent delivery of each module to the external guide once it was completed so that they can provide their feedback on the system from time to time.
4. At times, there were changes in the requirements provided to us by our external guide during the development phase of the project. However, the changing requirements were met efficiently as project was being developed module by module rather than developing whole system at a time.
5. There has been a strong co-ordination between each of us by the means of face-to-face communication while developing the project which led us to develop the project in time efficiently.

Thus, following Agile process model for software development helped us developing the project in less time with a high quality.

2.2 PROJECT WORK SCHEDULING

The project work scheduling regarding our project development process can be seen in the following Gantt chart:

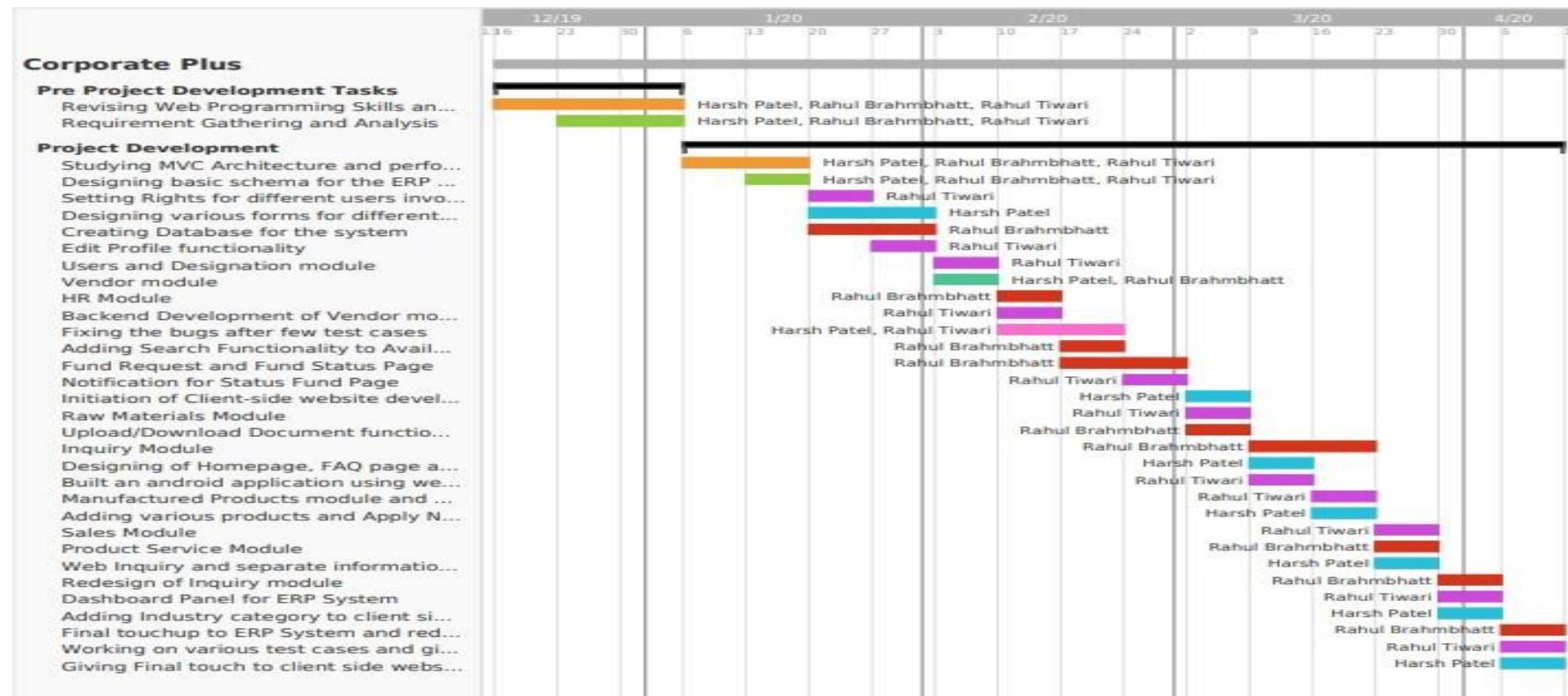


Fig 2.1 Gantt Chart representing Project Work Scheduling

Chapter – 3: SYSTEM REQUIREMENTS STUDY

3.1 USER CHARACTERISTICS

Corporate Plus encompasses following users within the system:

1. Administrator –

- This user has the most pivotal role in the system, this user has the responsibility in defining any new designation and adding new users (employees) in accordance to it.
- Also, it the role of Administrator to allocate the access rights i.e. the functionalities to the users according to their designation and department in the organization.

2. Users (based on their designation) –

- Various users in the system have certain functionality as allocated by the Administrator according to their designation. The user can then perform the work according to their role in the system.
- The common access to each user in the system will be to edit their respective Profile and Request Fund for any expenses related to the organization.
- Various designations in the system are Manufacturing Engineer, Sales Engineer, Finance Manager (Accounts Department), Inventory Manager, HR (Human Resources Department) and Service Engineer.

3. Sales Manager –

- A Sales Manager of the organization will play a very important role. Any to All sale of the manufactured products, inquiries and follow up will be handled by the Sales Manager of the organization.
- The Sales Manager will have an access to Sales, Inquiries and list of Manufactured Products ready to sale in the system.

4. HR –

- A Human Resources Manager (HR) will have the rights to hire an employee based on the criteria set by the organization or the requirements of the organization.
- HR will have an access to the HR module of the system.

5. Finance Manager –

- A Finance Manager will be the one having the rights to either approve or reject a Fund Request made by different employees of the organization.
- Thus, Finance Manager will have an access to Fund module in the system.

6. Manufacturing Engineer –

- A Manufacturing Engineer will be looking after the manufacturing of products in the organization.
- The main aim of a Manufacturing Engineer is to make sure that a high-quality product is developed using the required raw materials and make the product ready to sell by generating barcode after performing quality checks.
- Thus, a Manufacturing Engineer will have an access to Manufacture Products and Generate Barcode in the system.

7. Inventory Manager –

- An Inventory Manager will keep a record of all the products and raw materials kept in the inventory of the organization.
- It will be the role of an Inventory Manager to request the vendors for raw materials that have been out of stock.
- Thus, an Inventory Manager will have an access to the Products and Raw Materials module in the system.

8. Service Engineer –

- If there is a defect in the manufactured product after its sale, then the product is returned to the Service department of the organization where the Service Engineer performs the servicing of the defective product and makes sure that the customer needs not to worry about the product again.

- Thus, Service Engineer will have an access to the Service module of the system.

9. Website User –

- While visiting the informational website, the user has the role to display the products manufactured and sold by the company under the products categories and can inquire about the same through the web inquiry form, any willing applicant can submit the application for job under the apply now module and also if user has any query, then it can be submitted under contact us section in the website.

3.1.1 Use Case Diagram: -

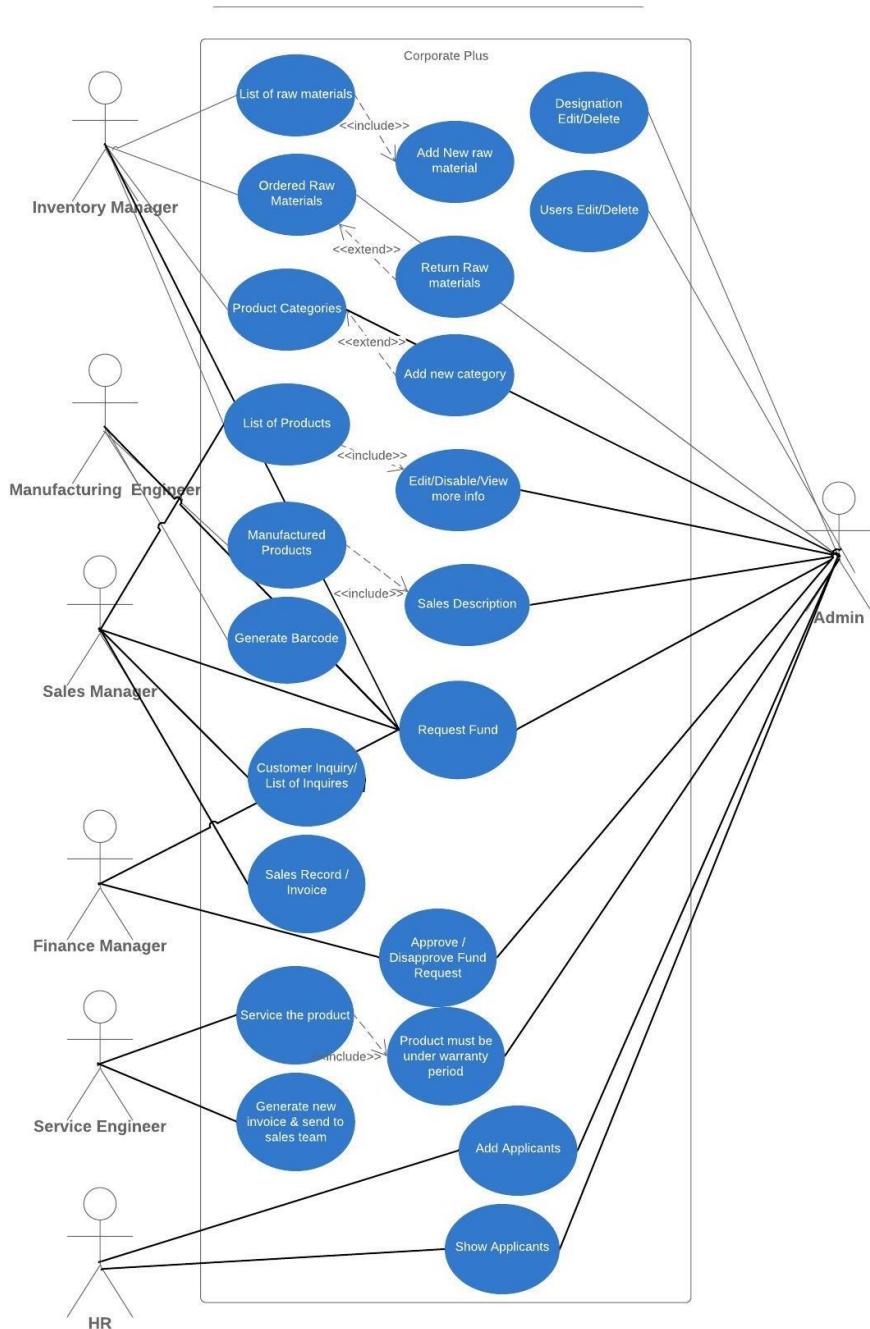


Fig 3.1 Use Case Diagram (Corporate Plus ERP Web Application)

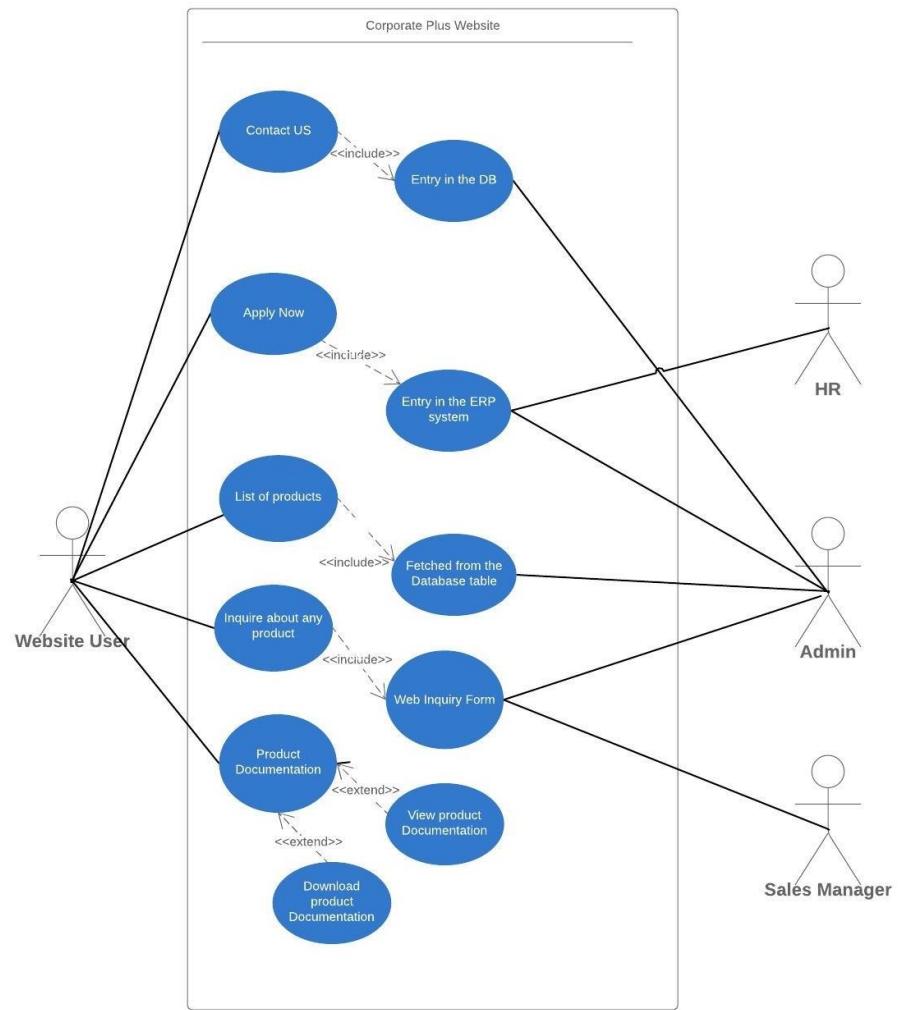


Fig 3.2 Use Case Diagram (Corporate Plus Website)

3.2 HARDWARE AND SOFTWARE REQUIREMENTS

Following are the hardware and software requirements of the project.

3.2.1 Hardware (Minimum)

Physical computer resources, also known as hardware are the most common set of requirements defined by any operating system or software application. The following sub-section list discusses the various aspects of hardware requirements.

- Processor: Dual Core Intel x86 64-bit chip architecture, 12 CPU cores at 2GHz
- Memory (RAM): 4 GB
- Hard Drive: Minimum 20 GB

3.2.2 Software

Software requirements deal with defining software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of the system. These requirements or prerequisites are generally not included in the system installation package and need to be installed separately before the system is installed.

- Web Browser: Microsoft Internet Explorer, Google Chrome, Mozilla Firefox
- Web Server: XAMPP/WAMP
- Editor: NetBeans IDE, Sublime text editor
- Frontend Platform: HTML, CSS, Bootstrap, JavaScript
- Backend Platform: CorePHP (MVC Architecture), MySQL/MS Access

To import the project in your system, there is a README file provided in the GitHub repository while downloading the project from GitHub or while deploying the project as an organization, all the necessary changes required to run the project are mentioned in the README file along with the information related to downloading certain prerequisites for the project. While deploying the project for any particular organization, the README file will be provided with the project. Also, the necessary changes to be followed to receive/send the e-mail and file upload are mentioned in the README file.

3.3 ASSUMPTIONS AND CONSTRAINTS

Assumptions can be considered as the facts that are believed to be true based on our knowledge, experience and information provided by the team members. They are the predicted events which are expected to occur during the project life cycle. Analysis assumptions are the part of risk management process. Improper analysis of it may affect the project's working in harmful way.

In this project, the assumptions are that the user's system meets all the hardware and software requirements as mentioned earlier under the system requirements section, it is assumed that the Administrator of the ERP Web Application will give the access rights to all the designations created for the particular organization. Latest version of XAMPP/WAMP must be present in the user's system, afterwards the apache server and MySQL needs to be turned on through XAMPP dashboard and the database (sql file) needs to be imported to phpMyAdmin panel. It is also assumed that the Administrator of the system will be able to configure the project by following the other steps listed in the README file on the GitHub repository.

Constraints related to ERP application are the mentioned as below: -

- **Implementation time** - The process of implementing the ERP system in the organization is often very time consuming and needs to be implemented step by step. It needs to be designed for a particular business to handle the processes and the maintain the flow of the system just as the company needs.

- **Implementation Cost** - The implementation cost of ERP applications is much higher as compared to any other traditional system being used in the organizational premises, as the ERP Web application centralizes all the departments under the organization and customization is followed while designing such system, all these encounters to rise in the cost.
- **Sufficient Testing** – Carrying out the testing of the ERP application does not only mean that whether the system is functioning properly or smoothly, but the performance and the fact that whether it satisfy all the needs of the organization are crucial and are to be checked or else it will lead to unexpected updating of the application.
- **Maintenance Cost** - Once the ERP application is successfully deployed in the organization; it will require periodic maintenance as to update the system to include various other functionalities not present in the current system and this will prove costlier.
- **Appropriate Training** - While implementing the ERP system in the organization, special training and motivation needs to be provided to the employees of the organization.
- **Ineffectual in integration with existing software** – It is not possible to fit the new ERP system to the existing system on which the organization is currently operating, it requires the organization to eliminate the use of former system and adapt the ERP system to lead the its various departments.

Chapter – 4: SYSTEM ANALYSIS

4.1 STUDY OF EXISTING SOLUTIONS

Talking about open source ERP systems, there are numerous flexible, reliable and cost-effective systems available in the market. Any organization with various departments has many things to manage and control including planning the manufacturing of the products, accounts, finances, inventory management, managing the fund requests from the employees. Following the approach of managing these tasks with the help of dissimilar tools and system won't be scalable. It will increase the trouble in moving the data across various departments when needed as well as maintaining such system is also a difficult task. This is the principle reason of the organization's emphasis towards the approach of Enterprise Resource Planning (ERP).

Organization looks for an ERP system that best suits with their environment and meets their requirement for the business. Majority of the ERP systems are Web based, so that it becomes easy to download and install it on the server of an organization. Proper support and good documentation of the ERP system are also an essential requirement. The information about such ERP systems are mentioned below.

- **ADempiere** – ADempiere is an Enterprise Resource Planning open source software package, it is aimed at midsized organizations for their businesses. It is named after Italian word which means to attain and the system has the goal to assist the organization in fulfilling their business requirements. To manage various processes like manufacturing, sales, finances, inventory, in a single piece of software it adds Supply Chain Management (SCM), Customer Relationship Management (CRM) in the ERP system. ADempiere being a multiplatform solution is accessible on Linux, Unix, Windows, MacOS.
- **Apache OFBiz** – This system is built on common architecture base which enables organizations to customize the ERPs according to their needs. For all the midsize or large organizations which have internal development resources to be adapted, this proves to be effective choice. It is an open source ERP

system where in different modules like manufacturing, sales, finances, inventory management, CRM as well as e-commerce are available.

- **Dolibarr** – Dolibarr is an ERP system which offers end-to-end management of small as well as midsize organization businesses and provides numerous features like keeping a record of invoices, inventory management, sales record, manufacturing department, finances around the organization and so on. There are also many other features in the software which can be bought in from the add-ons store the system already have.
- **Odoo** – Odoo is an Integrated software that combines multiple functions in an application, and also includes several modules like project management, billing services, finances, manufacturing department, inventory management, sales record and so on. This system has the ability that these modules can communicate with each other very efficiently in order to exchange data or information. Being complex in nature, it is made simpler by the use of Spartan interface which is similar to Google Drive.
- **Tryton** – Tryton ERP system is aimed at businesses of all sizes and since it's release has grown both to be popular and has given flexible functioning. It consists variety of modules ranging from accounts, finances, sales, manufacturing, inventory management, analytics and so on. As it is modular in nature, only the modules that are needed by any organization can be installed. Being web base by nature, it also has desktop clients for Windows and MacOS.

4.2 LIMITATIONS OF EXISTING SOLUTIONS

After studying the basics of existing ERP solutions, the following can be considered as the drawbacks in the ERP systems.

- Many of the systems do not have integrated webmail service, however all the emails are stored in a sent folder and the mail which are received are used to generate data records in the system.
- The feature for double accounting entry is not available in many of systems.

- The deployment time of ERP systems are very time consuming, as the organization needs to shift from their previous systems and manage the business with the help of new ERP system, all these tasks consume large amount of time.
- For integrating the business of any organization to ERP system, sufficient customization is needed to be performed because very little customization may not integrate the business to ERP and too much of it can slow down the project and develop inability to upgrade it on later stages.
- Sufficient knowledge and participation of the users in the organization is necessary for any organization to switch to the ERP system, hence adequate amount of training needs to be imparted to the users in order to understand the concepts and flow of the ERP system in business.
- The ERP systems are difficult are to be implemented in decentralized organization where differing business processes.

All these difficulties can be solved by designing a centralized system which can manage all the departments and can set connection wherever needed through the help of a centralized database which will be shared amongst the employees in the organization which will lead to increased efficiency and transparency.

The project is to create such an ERP Web application that monitors and connects all the departments in any organization. Same ERP Web application will be shared between all the employees of the organization but the respective designation will have pre-defined access and only those functionalities will be visible and accessible to that user. Administrator of the system will have all the rights in the system and only he/she can modify the system or add any new users to the system according to the departments in the organization. All the data related to the departments will be sent to one common database through which it can be accessed by any official according to their need.

The main purpose of the project is to streamline and improve the business operations of an organization by implementing Enterprise Resource Planning System. It will help in eliminating redundancy in the data management system and increase flexibility of operations with improved rate of production. The informational website shall provide

the overview of the organization with presenting the details of product categories along with the product the organization manufactures, from that point the website user can inquire about any interested product with that inquiry being sent to the ERP Web Application and being allocated to any designated user for further process, if satisfactory information is not being delivered to the website user during first onsite inquiry, he/she can opt for subsequent follow ups till the time they wish to buy the respective product and become customer for the organization, all these functionalities including generating the invoice for the product and providing the service for the same till the product is under the warranty period are intention for this project.

4.3 REQUIREMENTS OF THE PROPOSED SYSTEM

Corporate Plus is an ERP Web Application that allows any organization to manage the business processes in their premises in centralized manner. Also, the project provides informational website that allows any outsider to get the details of the products and services provided by the organization. The main principle behind this project is to allow the various departments in the system to exchange data and information whenever needed. For deploying the ERP system into any organization's environment all the hardware and software requirements mentioned in the earlier chapters should be fulfilled.

4.3.1 Functional requirements

Functional requirements defines the function of the system or it's associated components, they play a pivotal role in capturing the planned actions of the system.

The functional requirements of this project are mentioned as follows:

- Any user (employee) of the organization can login to the system.
- The system must be centralized in order to support and allow the users to manage grouped task and exchange data between various departments.
- Administrator of the system must possess all the rights of the system and should have the access to add new designations according to the

departments with giving the particular designation, rights to certain forms according to the functions to be performed and their role in the organization.

- Any designation user (employee) must be able to perform their tasks and functions without any issues according to their rights and role at the organization. For instance, any manufacturing engineer must have the rights to add new product, order raw materials, display the available stock, make entry for any new manufactured product and so on.
- There must be one centralized ERP database between all the users so that all the data is stored at one place and can be made easily accessible to any of the user who needs it to perform any task.
- Any of the logged in user can alter their profile and change necessary information through the profile page.
- Dashboard must display the necessary graphs and information about newly added products, to-do list, sales information and so on.
- Any of the outside can contact the organization through the contact now section provided in the informational website.
- The website user must be able to get information dynamically about any of the product category or new products that are added in the organization.
- Any applicant willing to apply for job at the organization must be able to submit the online application under the apply now page.
- Any interested person willing to inquire more about any particular product can fill in a inquiry form which will then be submitted to the organization's ERP system through which it can be processed further.
- Efficiency – This system must be able to deal with load caused due to large number of users performing their business operations through this ERP system, The system must function efficiently in critical cases as well to maintain the proper state in the system. Efficiency is an important requirement which should be taken care of.

4.3.2 Non functional requirements

- **Efficiency** – This system must be able to deal with load caused due to large number of users performing their business operations through this ERP system, the system must function efficiently in critical cases as well to maintain the proper state in the system. Efficiency is an important requirement which should be taken care of.
- **Accuracy** – Accuracy is an important aspect when considering the functioning of entire organization which has various departments, so the ERP system must be accurate in terms of its functions. All the data should keep working properly and must be accessible by the users. All the functionalities dedicated to the users according to their designation must function accurately.
- **Reliability** – The system that is to be used in any organization with various departments must be reliable enough to ensure that no errors are occurring in the modules and if they are occurring, they need to be solved by the use of Error handling mechanism.
- **Performance** – The portal must load within specified amount of time and must be compatible with all the browsers. Once the ERP system is deployed in the organization it must deliver high performance to the users (employees) in terms of proper and fast functioning eliminating any issues which may interrupt the working of the system.

4.4 SYSTEM WORK FLOW

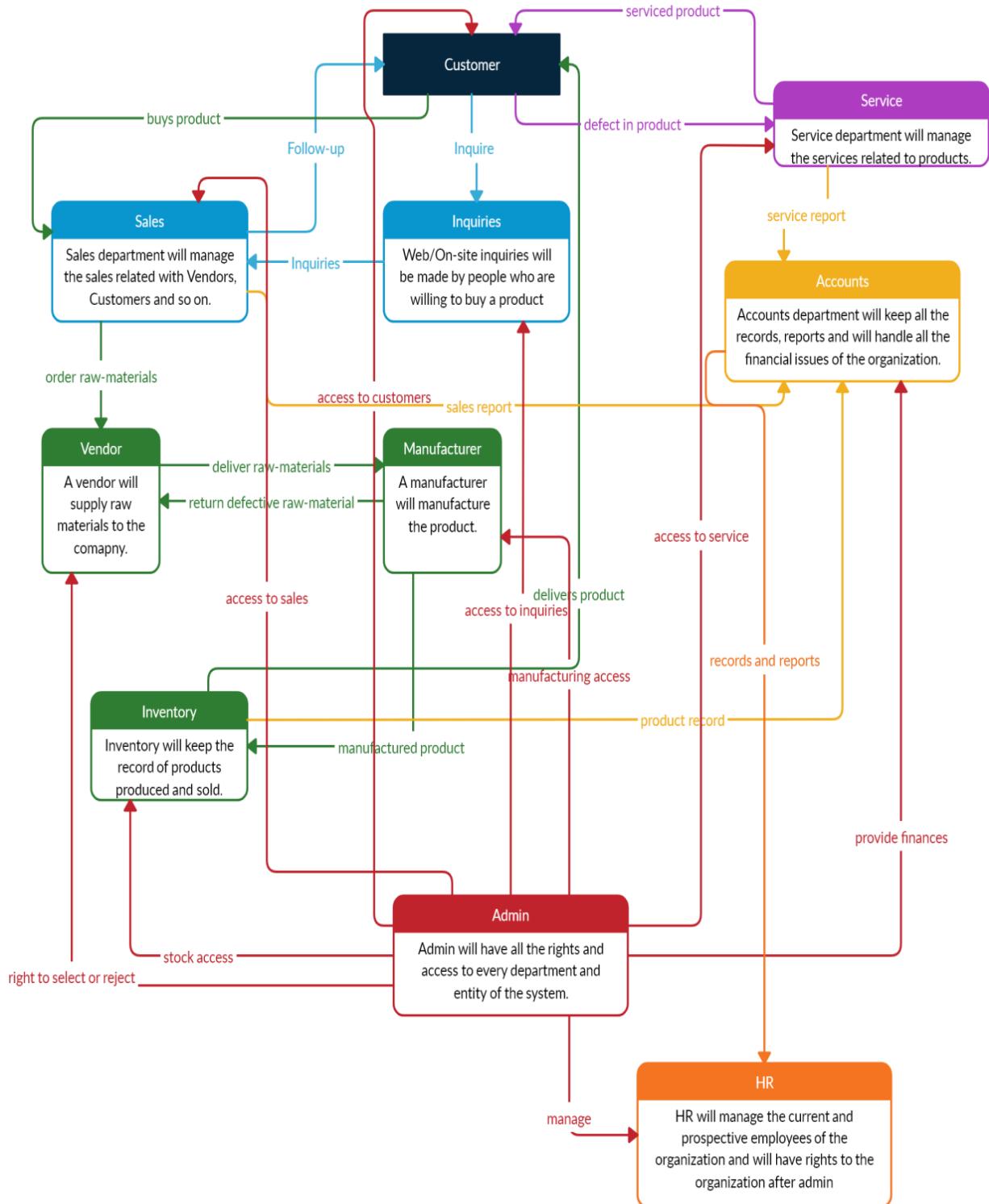


Fig 4.1 Corporate Plus System Flow

4.5 DATA FLOW DIAGRAM

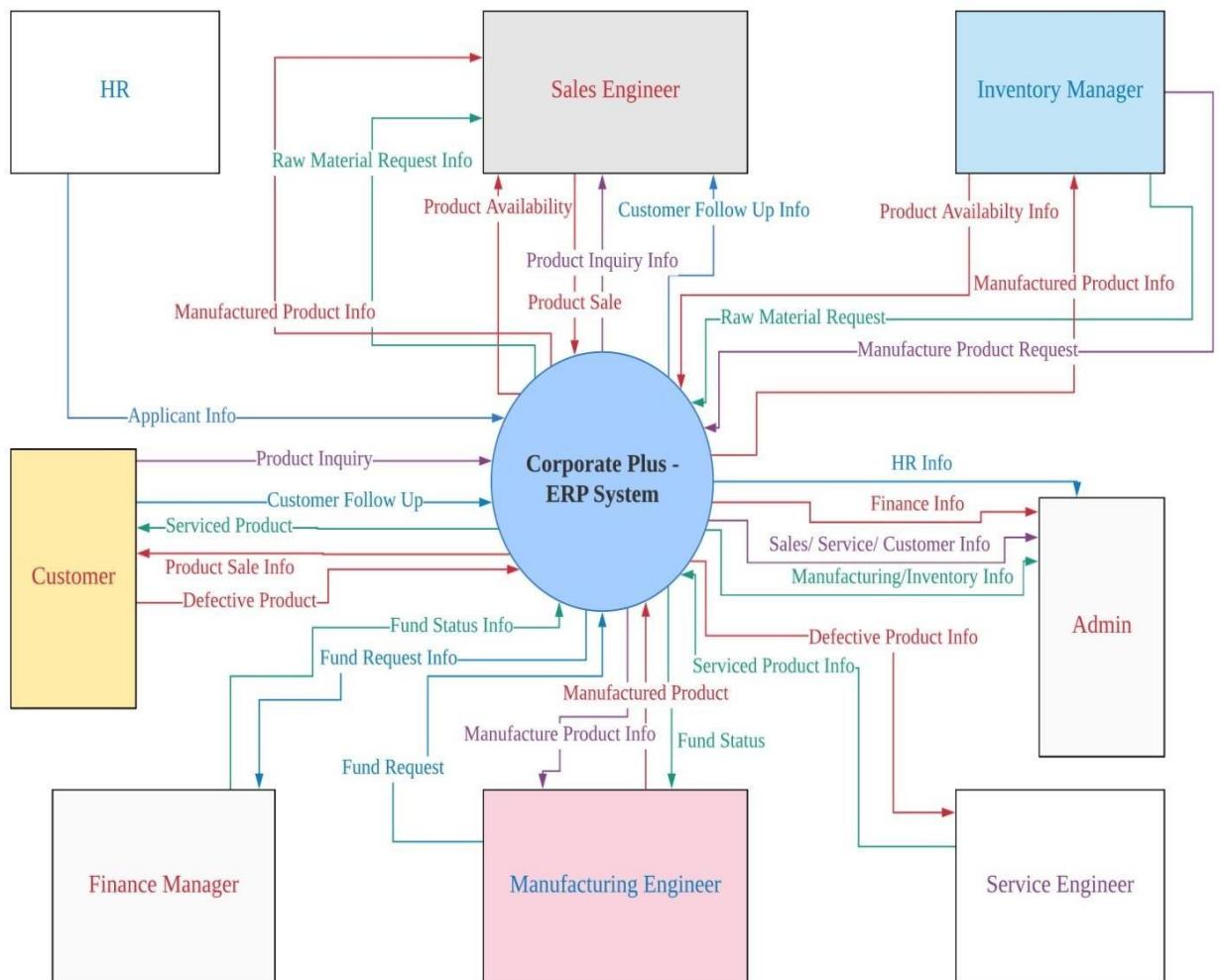


Fig 4.2 DFD Diagram (level 0)

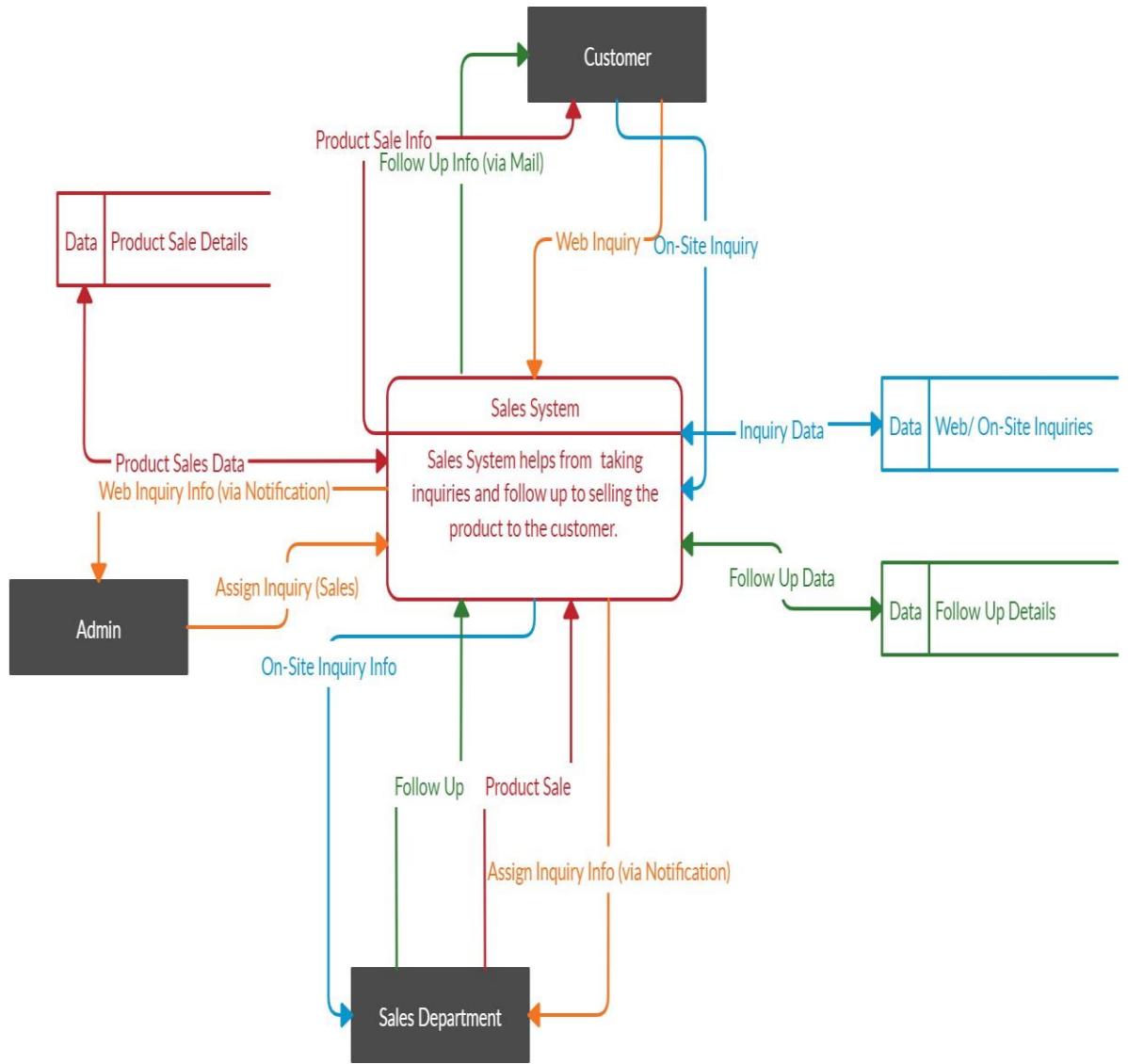


Fig 4.3 DFD Diagram (level 1)

Chapter – 5: SYSTEM DESIGN

5.1 DATABASE SCHEMA DESIGN

Database design is the first step while developing a project with data management in it. And while we have developed an ERP system, the heart and soul of the project lies in its data. Thus, it is necessary to have a better database design which ensures data consistency, elimination of data redundancy, efficient execution of queries and supports a high-performance application. Therefore, we spent a lot of our time in designing, editing and modifying the database for our project which resulted in less development time of the project, ease of access for retrieval of information and strong dependency among different tables in the database of the system.

The database schema design for our project is shown below:

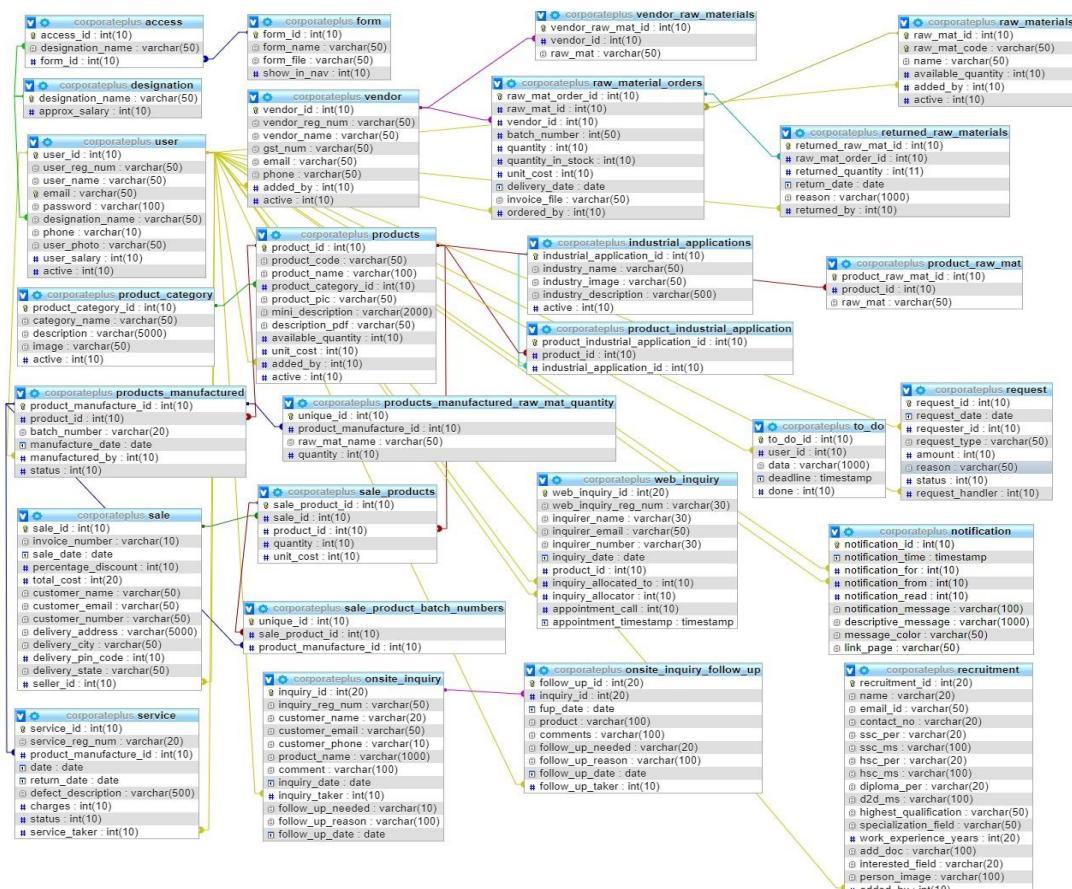


Fig. 5.1 Database schema design for Corporate Plus

5.2 DATA DICTIONARY

A data dictionary contains the data about the database. It is very important since it contains the information regarding what is stored in the database, in what form (data type) it is stored in the database and what the stored data signifies (description). Thus, the data dictionary in general contains information about: Names of all database tables along with their schemas, Table constraints such as primary key, foreign key, etc. and Information on how the data is stored.

For our project, we designed the data dictionary in Microsoft Excel spreadsheet where we included the entities like Field Name, Data type and Remarks (Description) for each table in the database of our system. Data dictionary for the database of our project is shown below:

Corporate Plus - Administering Expertly		
User (Add New User)		
Field Name	Data type	Remark
User_ID	INT(10)	Primary Key/Auto Increment/ Unique Value
user_reg_num	varchar(50)	Registration number for the user
User_Name	varchar(50)	Name of the user
email	varchar(50)	Email of the user
password	varchar(100)	Password of the user to access the system
designation_name	varchar(50)	Designation of the user/ employee
phone	varchar(10)	Contact Number of the user
user_photo	varchar(50)	Photo of the user
user_salary	int(10)	Salary details of the user
active	INT(10)	Active status of the user in the system

Fig. 5.2 Data dictionary for User table in the Corporate Plus database

Designation		
Field Name	Data type	Remark
designation_name	varchar(50)	Name of the designation for the employee
approx_salary	int(10)	Salary for the employee
Form		
Field Name	Data type	Remark
form_id	int(10)	Primary Key/ ID assigned to each form uniquely
form_name	varchar(50)	Name for the forms used in the system
form_file	varchar(50)	File name for the forms in the system
show_in_nav	int(10)	To show a form in the left navigation panel
Access		
Field Name	Data type	Remark
access_id	int(10)	Primary Key/ Auto Increment/ Unique Value
designation_name	varchar(50)	Designation of the user/ employee
form_id	int(10)	ID for the forms in the system/ Unique Value

Fig. 5.3 Data dictionary for Designation, Form and Access tables.

Form table in the database stores the data such as form name and form file for each form in the Views folder. It also contains an attribute named show_in_nav which helps in displaying forms in the left navigation panel of the system according to the access given to each user in the system. For that purpose, each user/employee of the organization is given a designation and as seen in the Access table, designation_name from the Designation table and form_id from the Form table are taken as foreign keys which helps in achieving the task of giving access of the system to the user based on their designation.

Vendor		
Field Name	Data type	Remark
vendor_id	int(10)	Primary Key/ Unique Value/ Auto Increment
vendor_reg_num	varchar(50)	Registration number for the vendor
gst_num	varchar(50)	GST number of the vendor
vendor_name	varchar(50)	Name of the vendor
vendor_email	varchar(50)	Email ID of the vendor
vendor_phone	varchar(50)	Contact Number of the vendor
added_by	int(10)	ID of an employee who registered the vendor
active	int(10)	Active status of vendor

Fig. 5.4 Data dictionary for Vendor table

Raw Material Orders		
Field Name	Data type	Remark
raw_mat_order_id	int(10)	Primary Key/ Unique Value
raw_mat_id	int(10)	Foreign Key/ Coming from Raw Materials table
vendor_id	int(10)	Foreign Key/ Coming from Vendor table
batch_number	int(50)	Batch Number for the Raw Material Order
quantity	int(10)	Quantity of Raw Material needed
quantity_in_stock	int(10)	Quantity of Raw Material in stock
unit_cost	int(10)	Unit Cost of Raw Material
delivery_date	date	Delivery Date for the raw material
invoice_file	varchar(50)	Invoice for the purchase of raw material
ordered_by	int(10)	ID of employee who ordered the raw material
Vendor Raw Materials		
Field Name	Data type	Remark
vendor_raw_mat_id	int(10)	Primary Key/ Unique Value
vendor_id	int(10)	Foreign Key coming from Vendor Table
raw_mat	varchar(50)	Raw Material/(s) sold by vendor

Fig. 5.5 Data dictionary for Raw Material Orders and Vendor Raw Materials table.

The Vendor Raw Materials table contains the information about the raw materials sold by the vendor. Here, vendor_id from Vendor table is taken as a foreign key.

Returned Raw Materials		
Field Name	Data type	Remark
returned_raw_mat_id	int(10)	Primary Key/ Auto Increment/ Unique Value
raw_mat_order_id	int(10)	Foreign Key/ Coming from Raw Material Orders
returned_quantity	int(10)	Quantity of raw materials to be returned
return_date	date	Date of returning the raw materials
reason	varchar(1000)	Reason for returning the raw material
returned_by	int(10)	ID of employee who returned the raw material

Fig. 5.6 Data dictionary for Returned Raw Materials table.

Product Category		
Field Name	Data Type	Remark
product_category_id	int(10)	Primary Key/ Auto Increment/ Unique Value
category_name	varchar(50)	Name of the product category
description	varchar(5000)	Description for Product Category
image	varchar(50)	Image for Product Category
active	int(10)	Active Status for product category

Fig. 5.7 Data dictionary for Product Category table.

Products		
Field Name	Data type	Remark
product_id	int(10)	Primary Key/ Auto Increment
product_code	varchar(50)	Product Code
product_name	varchar(100)	Name for the Product
product_category_id	int(10)	ID for the Product_Category
product_pic	varchar(50)	Image for the Product
mini_description	varchar(2000)	Mini Description for the product
description_pdf	varchar(2000)	PDF File for the Product Description
available_quantity	int(10)	Available Quantity for product
unit_cost	int(10)	Unit Cost for product
added_by	int(10)	ID of employee who added the product
active	int(10)	Active Status of the product

Fig. 5.8 Data dictionary for Products table.

Industrial Applications		
Field Name	Data type	Remark
industrial_application_id	int(10)	Primary Key/ Auto Increment
industry_name	varchar(50)	Name of the Industry
industry_image	varchar(50)	Image for the Industry
industry_description	varchar(500)	Description for the industry
active	int(10)	Active Status for the Industry

Product Industrial Application		
Field Name	Data type	Remark
product_industrial_app_id	int(10)	Primary Key/ Auto Increment
product_id	int(10)	Foreign Key/ Coming from Products
industrial_application_id	int(10)	Foreign Key/ Coming from Industrial Applications

Fig. 5.9 Industrial Applications & Product Industrial Application table data dictionary.

The tables Industrial Applications and Product Industrial Applications are used to display the products manufactured by the organization according to their uses in different industries on the website of the organization.

Product Raw Material		
Field Name	Data type	Remark
product_raw_mat_id	int(10)	Primary Key/ Auto Increment
product_id	int(10)	Foreign Key/ Coming from Products
raw_mat	varchar(50)	Raw Material Name
Products Manufactured		
Field Name	Data type	Remark
product_manufacture_id	int(10)	Primary Key/ Auto Increment
product_id	int(10)	Foreign Key/ Coming from Products
batch_number	varchar(20)	Batch Number of Product
manufacture_date	date	Date of Manufacturing of Product
manufactured_by	int(10)	ID of employee who manufactured the product
status	int(10)	Status of the Product
Product Manufactured Raw Material Quantity		
Field Name	Data type	Remark
unique_id	int(10)	Primary Key/ Auto Increment
product_manufacture_id	int(10)	Foreign Key/ Coming from Products Manufactured
raw_mat_name	varchar(50)	Raw Material Name
quantity	int(10)	Quantity of Raw Materials Used

Fig. 5.10 Data dictionary for Product Raw Material, Products Manufactured and Product Manufactured Raw Material Quantity tables.

Here, Products Manufactured table consists the information of the products manufactured by the company. The product_id is the foreign key coming from Product table which contains the information about the registered products in the system. The Product Raw Material table contains the information about the raw materials needed to manufacture a product registered in the system. Product Manufactured Raw Material Quantity contains the information about the quantity of raw material used in manufacturing a product, which will further help in keeping the record of available raw materials.

Sale		
Field Name	Data type	Remark
sale_id	int(10)	Primary Key/ Auto Increment
invoice_num	varchar(10)	Invoice Number for the sale
sale_date	date	Date of Selling the Product
percentage_discount	int(10)	Discount offered on sale
total_cost	int(20)	Total Cost of sale
customer_name	varchar(50)	Name of the customer
customer_email	varchar(50)	Email ID of the customer
customer_number	varchar(50)	Contact Number of the customer
delivery_address	varchar(5000)	Address for delivering the product
delivery_city	varchar(50)	City for delivering the product
delivery_pin_code	int(10)	Pin Code for delivering the product
delivery_state	varchar(50)	State for delivering the product
seller_id	int(10)	ID of employee who sold the product

Sale Product		
Field Name	Data type	Remark
sale_product_id	int(10)	Primary Key/ Auto Increment
sale_id	int(10)	Foreign Key/ Coming from Sale
product_id	int(10)	Foreign Key/ Coming from Products
quantity	int(10)	Quantity of the Product
unit_cost	int(10)	Unit cost of the product

Fig. 5.11 Data dictionary for Sale and Sale Product tables.

Here, Sale table stores the data related to the sale and customer. Sale Product table stores the data related to the sale of a product. It contains attributes called ‘sale_id’ and ‘product_id’ as foreign keys from the tables Sale and Product respectively along with quantity of the products sold and unit cost of each product. Similarly, a table name Sale Product Batch Numbers is created which generates the batch number for each sale with the help of ‘sale_product_id’ and ‘product_manufacture_id’ from the tables Sale Product and Product Manufactured respectively.

Sale Product Batch Numbers		
Field Name	Data type	Remark
unique_id	int(10)	Primary Key/ Auto Increment
sale_product_id	int(10)	Foreign Key/ Coming from Sale Product
product_manufacture_id	int(10)	Foreign Key/Coming from Prod. Man. Raw Mat. Qt

Fig. 5.12 Data dictionary for Sale Product Batch Numbers table.

On Site Inquiry		
Field Name	Data type	Remark
inquiry_id	int(20)	Primary Key/ Auto Increment
inquiry_reg_num	varchar(50)	Inquiry Registration Number
customer_name	varchat(20)	Name of the Customer
customer_email	varchar(50)	Email ID of the customer
customer_phone	varchar(10)	Contact Number of the customer
product_name	varchar(1000)	Name of the Product/(s)
comment	varchar(100)	Comments on the Inquiry
inquiry_date	date	Date of Inquiry
inquiry_taker	int(10)	ID of employee who took the inquiry
Follow_Up_needed	varchar(10)	Whether Follow Up Needed or Not
Follow_Up_Date	date	Date of Follow Up
Follow_Up_Reason	varchar(100)	Reason for Follow Up

Fig. 5.13 Data dictionary for On Site Inquiry table.

On Site Inquiry Follow Up		
Field Name	Data type	Remark
follow_up_id	int(10)	Primary Key/ Auto Increment
inquiry_id	int(20)	Foreign Key/ Coming from On Site Inquiry
fup_date	date	Follow Up Date
product	varchar(100)	Name of Product
comments	varchar(1000)	Comments on Follow Up
follow_up_needed	varchar(20)	Whether Follow Up Needed or Not
follow_up_reason	varchar(100)	Reason for another Follow Up
follow_up_date	date	Date for another Follow Up
follow_up_taker	int(10)	ID of employee who took the follow up

Fig. 5.14 Data dictionary for On Site Inquiry Follow Up table.

Table On-Site Inquiry stores the data of a person's inquiry when they visit the company regarding a product manufactured by the company. It also stores the data regarding the need of follow up on the inquiry, if the person wants another follow up. Table On-Site Inquiry Follow Up contains the data regarding the follow up on the inquiry such as follow up conversation and whether the person needs an additional follow up or not. Similarly, web inquiries will be stored in the Web Inquiries table and an admin will then allocate the inquiry to an employee of the Sales department regarding the follow up for that inquiry.

Web Inquiry		
Field Name	Data type	Remark
web_inquiry_id	int(20)	Primary Key/ Auto Increment
web_inq_reg_num	varchar(30)	Web Inquiry Registration Number
inquirer_name	varchar(30)	Name of the Person
inquirer_email	varchar(50)	Email ID of the Person
inquirer_number	varchar(30)	Contact Number of the Inquirer
inquiry_date	date	Date of the web inquiry
product_id	int(10)	Foreign Key/ Coming from Product
inquiry_allocated_to	int(10)	ID of employee to whom inquiry is allocated
inquiry_allocator	int(10)	ID of employee who allocated the inquiry
appointment_call	int(10)	Appointment Number
appointment_timestamp	timestamp	Timestamp for the Appointment

Fig. 5.15 Data dictionary for Web Inquiry table.

Service		
Field Name	Data type	Remark
service_id	int(10)	Primary Key/ Auto Increment
service_reg_num	varchar(20)	Service Registration Number
product_manufacture_id	int(10)	Foreign Key/ Coming from Products Manufactured
date	date	Date of Service
return_date	date	Return Date for Serviced Product
defect_description	varchar(500)	Description for defect in the product
charges	int(10)	Charges for the service
status	int(10)	Service Status
service_taker	int(10)	ID of employee who took the service

Fig. 5.16 Data dictionary for Service table.

Request (Employee Fund)		
Field Name	Data type	Remark
request_id	int(10)	Primary Key/ Auto Increment
request_date	date	Date of requesting fund
requester_id	int(10)	ID of employee who is requesting the fund
request_type	varchar(50)	Type of request
amount	int(10)	Amount Requested
reason	varchar(50)	Reason for requesting the amount
status	int(10)	status of the request
request_handler	int(10)	ID of employee who handles the request

Fig. 5.17 Data Dictionary for Request table.

Here, the Request table stores the information about each fund request made by the employees of the organization along with the amount of fund that they have

requested, the reason for requesting the fund and the status of that fund request. The fund requests will be managed by the employees of Finance (Accounts) department of the organization.

Recruitment (HR)		
Field Name	Data type	Remark
recruitment_id	int(10)	Primary Key/ Auto Increment
name	varchar(20)	Name of the Applicant
email_id	varchar(50)	Email ID of the Applicant
contact_no	varchar(20)	Contact Number of the Applicant
ssc_per	varchar(20)	SSC Percentage of the Applicant
ssc_ms	varchar(100)	SSC Marksheets for the Applicant
hsc_per	varchar(20)	HSC Percentage of the Applicant
hsc_ms	varchar(100)	HSC Marksheets of the Applicant
diploma_per	varchar(20)	Diploma Percentage of the Applicant
d2d_ms	varchar(100)	Diploma Marksheets of the Applicant
highest_qualification	varchar(50)	Highest Qualification of the Applicant
specialization_field	varchar(50)	Specialization Field of the Applicant
work_experience_years	int(20)	Work Experience of the Applicant
add_doc	varchar(100)	Resume of the Applicant
interested_field	varchar(20)	Interested field of the Applicant
person_image	varchar(100)	Image of the Applicant
added_by	int(10)	ID of employee who added the Applicant

Fig. 5.18 Data dictionary for Recruitment table.

Notification		
Field Name	Data type	Remark
notification_id	int(10)	Primary Key/ Auto Increment
notification_time	timestamp	Notification Time
notification_for	int(10)	ID of employee for whom the notification is sent
notification_from	int(10)	ID of employee who sent the notification
notification_read	int(10)	Whether the notification is read or not
notification_message	varchar(100)	Message in Notification
descriptive_message	varchar(1000)	Description of Notification Message
message_color	varchar(50)	Colour of Message in Notification
link_page	varchar(50)	Page where the notification message is linked to

Fig. 5.19 Data dictionary for Notification table.

The Notification table consists the data related to all the notifications being generated in the system. Similarly, the To Do table consists the information related to all the data in the To-Do List of the Dashboard.

To - Do (To Do List)		
Field Name	Data type	Remark
to_do_id	int(10)	Primary Key/ Auto Increment
user_id	int(10)	ID of employee/ user
data	varchar(1000)	Data for To Do list
deadline	timestamp	Deadline for the data in To Do List
Done	int(10)	Whether the Data in To Do List is Complete or Not

Fig. 5.20 Data dictionary for To – Do table.

5.3 SCREEN LAYOUT (FORMS AND REPORTS)

Screen Layout is one of the most important parts of an application's design and development as a good user interface enables users to complete the task that they came to the web application/website to do with ease and without confusion. Thus, while designing the user interface for our project, we kept in mind the idea of a simple yet elegant user interface. The screen layout of different pages (forms and reports) of our project are shown below:

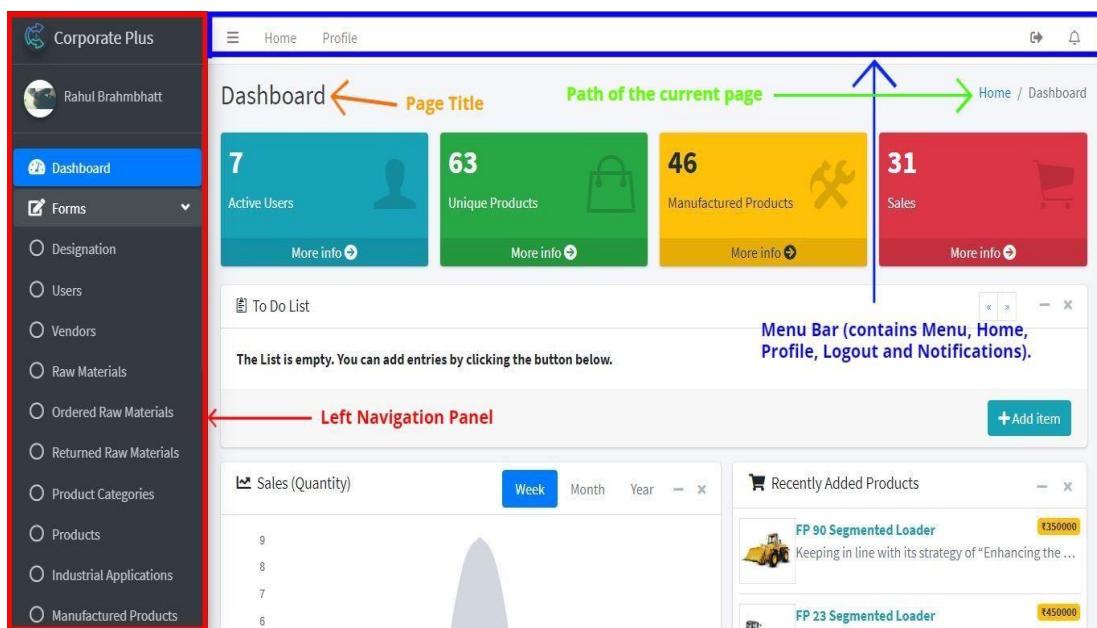


Fig. 5.21 Dashboard (Home Page) Screen Layout.

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Fig. 5.22 Footer of the page.

Above shown is the screen layout of the home page (Dashboard) for our project. The system has Left Navigation Panel, Menu bar, Page Title, Path of the page and Footer of the page in common for every page. The pages differ in terms of the content in the body of each page. Furthermore, some pages in the system have new and unique elements as per the requirement of the content in the body of the page which will be discussed further.

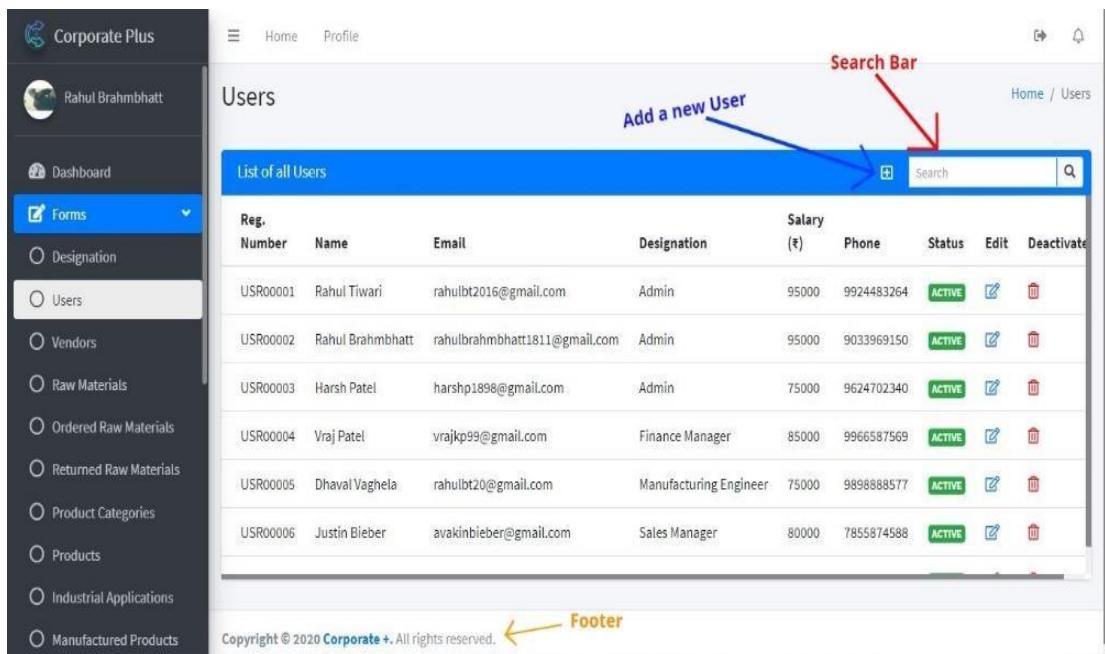


Fig. 5.23 Screen Layout of Users Page.

As seen in the image above, there is a search bar in the top-right portion of the page. The search bar helps to search a particular user from the list of users with an ease. Also, on the left side of the search bar there is a square-plus button. This button opens up a new page where a new user can be registered to the system. At the bottom of the page is the footer which represents the name of our project, Corporate + (Plus).

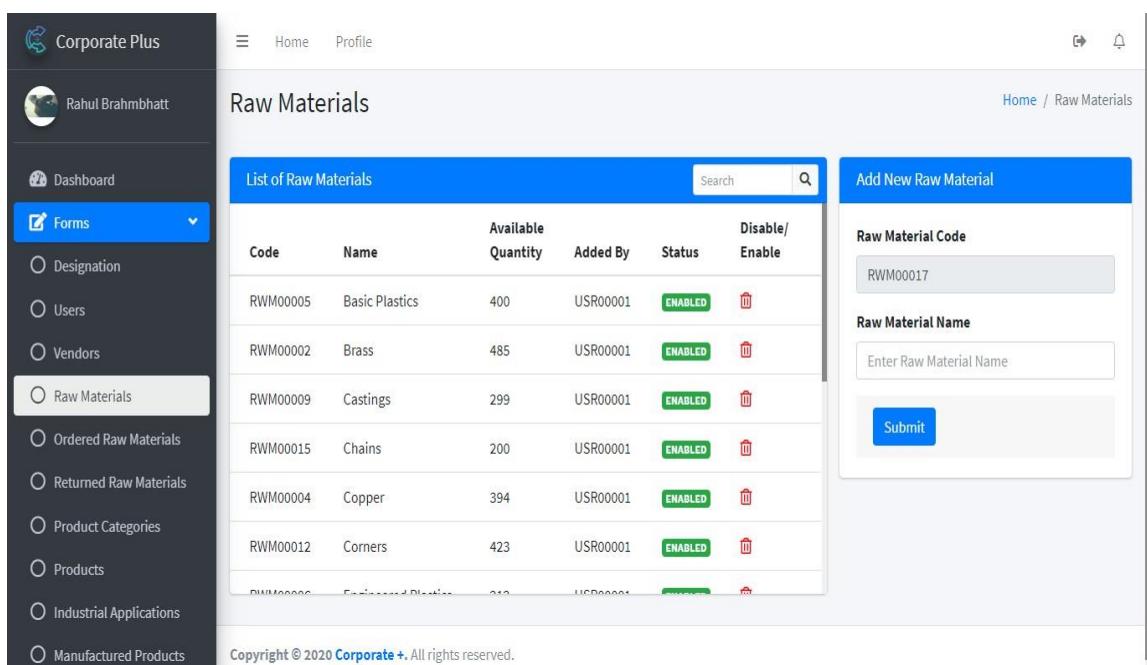


Fig. 5.24 Screenshot of Raw Materials Page.

As seen in the figure above, the body of the page containing information about the raw materials is divided into two portions. The left portion displays the information of registered raw materials. Whereas the right portion displays the functionality of adding a new raw material to the system. Since the fields required to add a new raw material are less, the functionality is placed in the right portion of the body of the page instead of giving a square-plus icon (as discussed for the Users page).

The screenshot shows the 'Ordered Raw Materials' page of the Corporate Plus application. The left sidebar contains navigation links for Dashboard, Forms (selected), Designation, Users, Vendors, Raw Materials, Ordered Raw Materials (selected), Returned Raw Materials, Product Categories, Products, Industrial Applications, Manufactured Products, Generate Barcode, Sales, and On-Site Inquiries. The main content area has a header 'Ordered Raw Materials' and a breadcrumb 'Home / Ordered Raw Materials'. It features a search bar and a table titled 'List of Ordered Raw Materials' with columns: Raw Material, Quantity (Ordered), Quantity (In stock), Vendor Reg. Number, Unit Cost, Batch Number, Delivery Date, Ordered By, Total Cost, Invoice, and Return. The table data includes:

Raw Material	Quantity (Ordered)	Quantity (In stock)	Vendor Reg. Number	Unit Cost	Batch Number	Delivery Date	Ordered By	Total Cost	Invoice	Return
Chains	300	300	VEN00004	₹50	984258	03 Mar, 2020	USR00001	₹15000		
Wires	5000	4920	VEN00003	₹20	198765	01 Mar, 2020	USR00001	₹100000		
Chains	300	NIL	VEN00004	₹80	168475	01 Mar, 2020	USR00001	₹24000		
Keys	500	500	VEN00001	₹20	985547	01 Mar, 2020	USR00001	₹10000		
Locks	500	500	VEN00002	₹50	147552	01 Mar, 2020	USR00001	₹25000		

Below the table is a section titled 'Find Vendor Assist' with a dropdown menu labeled 'Select Raw Material:' containing 'Chains'. A 'Go' button is next to the dropdown. At the bottom, there is a section titled 'Vendors having Raw Material - Chains:' with a table showing vendor details:

Registration Number	Name	Email	Phone
VEN00001	Babloo Kapoor	babloo.kapoor@gmail.com	9955883322

Fig. 5.25 Screenshot of Ordered Raw Materials page.

As seen in the figure above, the body of the Ordered Raw Materials Page is divided horizontally. The upper part of the page contains the list of ordered raw materials, whereas the lower part of the page contains a functionality called Find Vendor Assist which helps in finding the vendor for purchasing the raw material by selecting the required raw material from the list of registered raw materials.

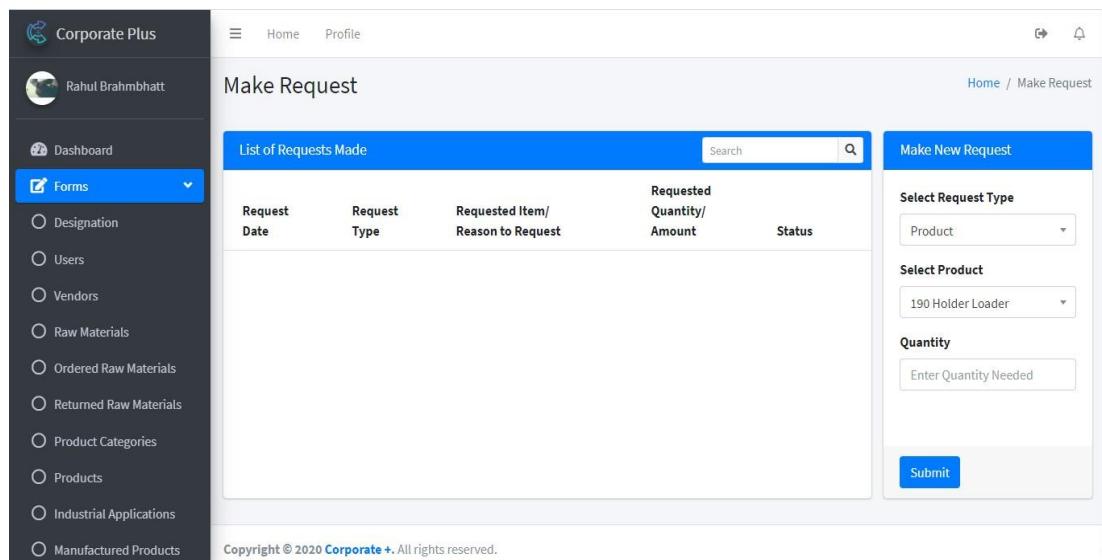


Fig. 5.26 Screenshot of Make Request Page.

As seen in the figure above, Make Request page is divided vertically. The left portion of the page displays the list of requests made, whereas the right portion of the page has the functionality to make a new request. Interestingly, the right portion of the page has the functionality to display the content according to the choice selected while selecting the type of request. (i.e. Product/Raw Material/Fund).

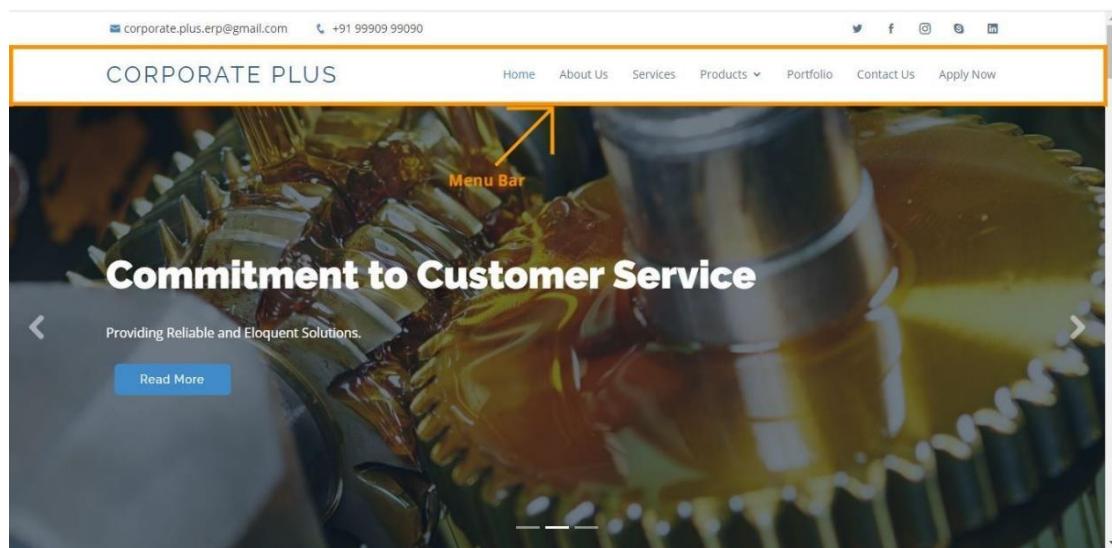


Fig. 5.27 Screen Layout of Corporate Plus Website.

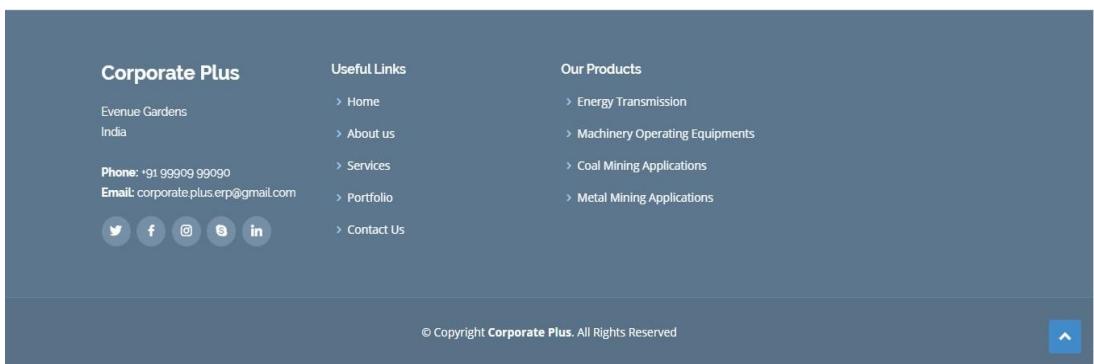


Fig. 5.28 Screenshot of footer of the Corporate Plus Website.

Above images refer to the Corporate Plus website where the former image shows the Menu bar on the top of the home page of the website. Note that the Menu bar will remain same for all the pages in the website. The latter image shows the footer of the website.

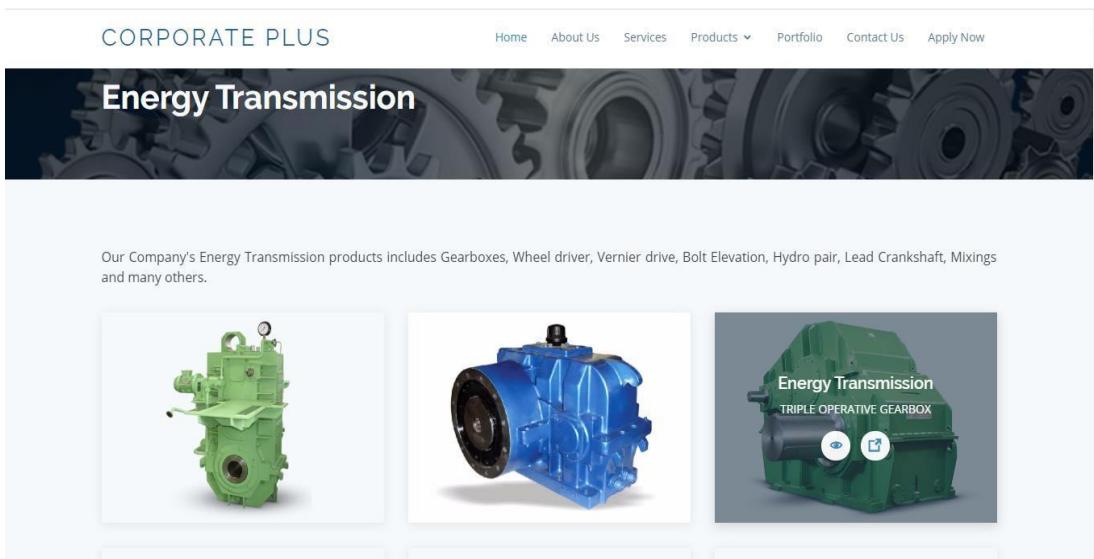


Fig. 5.29 Screenshot of Products page of the website.

Above image shows the list of products with their images under the Energy Transmission category under the Products menu on the website. When hovering on the image of the product, it will give two options. The first one with the eye icon enlarges the image and gives a better view of the product on being clicked. While on clicking the upward arrow icon next to the eye icon, it will take to the page where the description and other details of the product are displayed.

5.4 METHOD PSEUDOCODE

Pseudo code being the foundation for algorithms and executable programs helps understanding the flow of the algorithm in a better way. Directly writing code for complex purposes results into time wastage. Thus, it is very important to design the code using informal description of the algorithm known as pseudo code. For instance, pseudo code functions for algorithms and executable programs just like flow charts and Unified Modified Language (UML) functions with data (i.e. gives a clear picture about the flow of program). Therefore, once we had our database schema and data dictionary ready, we started discussing, writing and modifying pseudo codes until we finalized them and started designing algorithms and coding on its basis.

Following are examples of some of the pseudo codes that we designed while initiating the project development:

1. Pseudo code for login function:

QUERY = "SELECT email, password, designation_name, active from USER"; //To select details from user (DB)

if([email]==USER.email AND [password]==USER.password AND [active]==1)

{

LOGIN SUCCESSFUL (DISPLAY DASHBOARD) //ACTION

designation = USER.designation_name;

Start Email Session

Start Designation Name Session

}

else

{

INCORRECT USERNAME/PASSWORD

{

2. Pseudo code to display sales data between 13th March, 2020 and 16th March, 2020:

SELECT sale.sale_date, SUM(sale_products.quantity) FROM sale, sale_products

WHERE sale.sale_id=sale_products.sale_id AND

sale.sale_date BETWEEN '2020-03-13' And '2020-03-16'

GROUP BY sale.sale_date

3. Pseudo code to display follow up details under On-Site Inquiry:

*QUERY = "SELECT * FROM onsite_inquiry_follow_up WHERE inquiry_id='inqID'
ORDER BY fup_date ASC";*

IF(RESULT(QUERY)==0)

{

FOLLOW UP NOT YET TAKEN.

}

ELSE

{

DISPLAY FOLLOW UP DETAILS. }

Thus, as seen above for developing each algorithm and then coding the same, pseudo codes were used. Pseudo code, in a simpler manner gave a clear idea about how the algorithm of the program for a desired task should work. It helped in reducing the development time as the flow of code was clear.

Chapter – 6: SYSTEM IMPLEMENTATION AND TESTING

6.1 CODING STANDARDS

All the reputable organizations want their programmers/coders to maintain particular type of well-defined style of coding and it is called Coding Standards. On general terms, the organizations make define their coding standards and various guidelines in accordance to what best suits their premises based on the projects they develop. It is very crucial for the programmers to follow the coding standards while developing the projects or else they might get rejected.

6.1.1 PHP

There are certain rules and coding styles which PHP language follows. It would create great confusion if each coder or programmer around the globe follows different standards and coding styles, it would be difficult for any other coder or programmer to understand another developer's code. It would be very hard to manage the code for the future reference. This is the situation where the coding standards come into picture. This makes code very easy to understand as well as store it for future purpose, it makes code more formal and it behaves just like a blueprint. Due to this reason in our project also we have followed all the coding standards for PHP language so that the code can be understood by other programmers also. Below mentioned are few guidelines one must follow to maintain the PHP coding standards and how we have implemented all those points in our project.

- PHP Tags – While coding in PHP language, individual should use the standard PHP tags(), instead of shorthand tags() to delimit the PHP code of the project.
- Comments – In PHP. Usage of standard C and C++ commenting style is done, // is used for single line comments and /* */ is used for multi line comments. In our project we have made use of both types of comments whenever needed, all the functions and modules are given comments with

mentioning their usage and functionality, so that it can be easily understood by any other person reviewing the project.

- Line Length and Indentation – We have followed the standard recommendation of not exceeding more than 70-80 characters in a single line while coding , also instead of using multiple spaces for indentation purpose we have used tabs as it is the standard indenting method.
- Structuring the control flow statements – The control flow as well as conditional statements must be written in such a way that they are differentiable from the function call statements. While writing control flow statements like if, while, switch and so on there must be space between the keyword and the opening bracket (parenthesis). For Example,

```

if (mysqli_query($con,$query)){
    $subject="Access to Corporate Plus";

    $message="Hello ".$name.",\nWelcome to Corporate Plus. Your login
    credentials are as follows:\n\nEmail : ".$email." \nPassword : ".$password."
    \n\nPlease login and reset the password as per your convenience./";

    if (mail($email,$subject,$message,'From:abc@xyz.com')){

        return true;
    }

    else

        return false
}

```

- Function Calls - While writing any function calls in the project, there must be no space between the function name and the opening parenthesis, also while

calling a function there must be comment stating what does the function do.
For Example,

```
<?php

if($_POST['action']=='delete-vendor')

$user->deleteVendor($_POST);

?>

<?php

function deleteVendor($post){      //deletes the vendor from the system

$con = $this->databaseConnect();

$vrn=trim($post['vrn']);

$query      =      "UPDATE      vendor      SET      active=0      WHERE
vendor_reg_num='".$vrn."';

mysqli_query($con,$query);

}

?>
```

- Naming Variables – While coding in PHP, there are certain rules programmer should follow while naming the variables as well as the attributes in database. First, while declaring any variables, they must be in camel case and we have implemented it while naming the variables in our project. For example, `$designationName, $emailId, $productCategory` and so on. Also, while declaring attributes name in the database tables, use of ‘_’ to separate words in fields must be done. We have done the same in naming all the fields in database tables. For example, `product_id, product_code, product_name, product_description` and so on.

- Naming HTML elements – In our project, particularly for ERP web application for submitting various forms and adding different functionality we have used the id and class attributes while coding, and they have been named by the use of ‘_’, ‘-‘, to separate words in the id name as well as class name. For examples, `#login_button`, `#add-designation`, `#edit-profile`, `#delete-vendor`, `.validate-input`, `.enable-product`, `.solo-notification-content`.
- Block Alignment – While defining functions and blocks of code in the project, the curly braces or any other brackets must be aligned.
- Embedded HTML – In our project, for dynamically displaying values of certain elements, we have used embedded html wherein certain php tags are used within HTML tags to display the values on the frontend. For example,

```

<div class="section-title">

<h2><?php echo $productName ?></h2>

<div>

```

6.2 TESTING METHODS

The term “Web testing” is used for checking the web application and the website for possible bugs and issues before it is handed to the customer (organization) or made public. Web testing checks for the compatibility, usability, security, functional, performance of the concerned web application and website. All the below mentioned testing methods have been conducted on our project, Corporate Plus as well as the website.

- Usability Testing – Usability testing is the type of testing which is used to check User-friendliness of the system, System navigation, Alignment of elements, Confirmation messages and so on. It has now become a vital part of any web based project.
 - Test the site Navigation – All the buttons, menus, links to the different pages must be working and consistent on all the pages.

- Test the Content – Written Content should be correct without any type of errors in spelling or grammar, also if the alt text should be used in image tags.
 - All the fields should be properly aligned.
 - All the fonts must be uniform.
- Functional Testing – Functionality testing is used to verify that whether the system is developed as per the specifications mentioned in the functional requirements. It basically verifies that each function in the web application operates in conformance with the requirement specifications.
- Verify that whether URLs of the ERP system's interface (including admin) and website are working or not so that they are launched successfully.
 - Test all the links in the web application as well as the website that whether they are functioning properly or not and confirm that there are no faulty links.
 - Test the HTML and CSS used in the web application and website to ensure that various search engines can crawl the website easily.
 - Test business workflow will include the end to end flow of the business that will take the user through a series of pages according to their designation and priority.
 - Test that whether all the update, insert, delete functionality asks for confirmation while performing it.
 - Test whether all the forms in the system are working as expected or not. It will include :-
 - Performing validation checks through scripts on the forms to ensure that they are functioning as expected. For example, if any user (of any designation) does not fill out any mandatory fields then the data should not be submitted and error message should be displayed.
 - Checking that whether the default values are being correctly displayed or not.

- Once any form is submitted by any individual all the data must be sent to the common database shared between the organization.

- Database Testing – Database is one of the crucial component in web application and it's testing should be performed thoroughly. Various testing activities related to it are:-
 - Check for any errors while execution of queries in the system.
 - It is to be tested that at the time of inserting, updating or deleting the data in the database, data integrity must be maintained.
 - The response time of queries is to be checked.
 - Testing should be done in order to check whether the data retrieved from the database is shown properly and precisely on the web application or not.
 - Verify encrypted data in the database.

- Performance Testing – Performance testing is conducted to verify a system or component with specified performance requirements. This is to ensure that the web application and website works under all loads. Various testing activities related to it are:-
 - The response time of web application and website at various internet speed.
 - Load test must be performed on the website in order to its behaviour under normal and peak loads.
 - Test if due to excessive load, if the site crashes how does the system recovers from it.
 - Identification of best performance levels.

6.3 TEST CASES

A Test case is a set of actions which are executed in order to verify any specific functionality of the application. For verifying any specific requirement, a test case contains test steps, test data, precondition, postcondition. For determining whether the system is functioning or not test case include conditions by which any expected and actual results can be compared. Different test cases in accordance with the web application and website are as follows.

Table 6.1 Login module test case

Test Case ID	TC_01 (Login process)
Module	Login System
Objective	Login of any user (employee) in the organization along with the administrator with their correct credentials.
Test Steps	<ol style="list-style-type: none"> 1. Go to the ERP Web application login page. 2. Enter email ID. 3. Enter password. 4. Click Sign in.
Input data (positive)	Email ID : harshp1898@gmail.com Password : abc#1234
Input data (negative)	Email ID : harshp1898@gmail.com Password : a#1234
Expected results (positive)	The user must login in the ERP web application.
Expected results (negative)	Alert message should be displayed saying that the credentials are invalid and the user must not be able to login in the application.
Actual Result	According to the expectations.
Pass/Fail	Pass

Table 6.2 HR module test case

Test Case ID	TC_02 (Recruiting applicants and adding new users in accordance to it.)
Module	HR Module
Objective	To Submit job applications of applicants and maintaining record for the same as well as adding news users in the system.
Test Steps	<ol style="list-style-type: none"> 1. Go to Left Navigation panel on dashboard in the ERP web Application displaying all the forms according to the functionality. 2. Select Add applicant form. 3. Enter all the required details along with uploading required documents and image. 4. Click on submit. 5. Display the Applicants information from the show applicant form. 6. Add any new user along with the required details by clicking the + symbol in the list of users. 7. After filling all details click submit. 8. Option for editing the profile of any user with having the option to deactivate any of them.
Input data (positive)	Name : XYZ Email : xyz@mail.com Phone number : 9090909090 10 th % : 90% with marksheet (ssc.pdf) 12 th % : 90% with marksheet (hsc.pdf) Diploma % : NA Highest Qualification : B.Tech Specialization : Sales Resume file : resume.pdf Interested field : Sales Image : image.jpeg

Input data (negative)	Name : PQR Email : pqr@mail.com Phone number : 9090909099 10 th % : 90% with marksheet (ssc.pdf) 12 th % : 90% with marksheet (hsc.pdf) Diploma % : NA Highest Qualification : Specialization : Resume file : resume.pdf Interested field : Image : image.jpeg
Expected results (positive)	The applicant is added in the system and it's entry is available in the list of applicants.
Expected results (negative)	At the time of validation, <i>Highest Qualification, Specialization, Interested fields can't be empty</i> , message should be displayed and application should not be submitted.
Actual Result	According to the expectations.
Pass/Fail	Pass

Table 6.3 Accounts module test case

Test Case ID	TC_03 (Requesting Fund for certain requirement.)
Module	Accounts Module (Finances)
Objective	Any user (with any designation) can request funds from the account department for any reason, the finance manager managing the accounts will be notified through notification and then can approve/reject the fund request according to the reason.
Test Steps	<ol style="list-style-type: none"> 1. Go to the Make Request page in ERP web application. 2. In the make new request form, select request type as fund and add amount of fund. 3. Enter reason for requesting amount. 4. Click submit. For finance manager, 5. The Fund request with all the details of user who made it will be displayed with option for approving or rejecting it and appropriate option is to be clicked For User finance manager,
Input data (positive)	<p>Amount (₹): 5000</p> <p>Reason for request amount : To order some raw materials.</p>
Input data (negative)	<p>Amount (₹): 5000</p> <p>Reason for request amount :</p>
Expected results (positive)	The user's request will be submitted to the user holding the access for approving / rejecting the fund requests get notification, after reviewing, the request is approved or rejected. Now the user who made the request will receive the notification about approved/rejected fund request.
Expected results (negative)	Validation message stating <i>reason for request amount can't be empty</i> , is displayed and it system won't allow submission

	of fund request.
Actual Result	According to the expectations.
Pass/Fail	Pass

Table 6.4 Sales module test case

Test Case ID	TC_04 (Adding new sale record and generating invoice.)
Module	Sales Module
Objective	Entry for any new sale record according to the product sold to any organization or individual along with its details and with the condition that any sale record could be made of the products that are available in the stock. Invoice for the same can be generated and displayed in the list with other sales record.
Test Steps	<ol style="list-style-type: none"> 1. Go to the Sales page in the ERP Web Application 2. Invoice number will be automatically generated as per the last invoice made. 3. Enter Customer name. 4. Click Customer email. 5. Enter Customer phone number. 6. Enter product/s to be bought (the availability status of selected product will be displayed). 7. Enter Discount. 8. Enter Customer (Delivery) address. 9. Enter pin code. 10. Enter city. 11. Enter state. 12. Date of sale will be automatically fetched. 13. If the product/s which are in stock are selected, submit button will be displayed, click it.

Input data (positive)	<p>Invoice number : 00000005</p> <p>Customer name : ABC</p> <p>Customer email : abc@mail.com</p> <p>Customer phone number : 9099090990</p> <p>Products (to be bought) : 190 Holder Loader, 70E Croker Loader.</p> <p>Discount : 5%</p> <p>Customer delivery address: 15, Avenue gardens, Ahmedabad.</p> <p>Pin code : 320008</p> <p>City : Ahmedabad</p> <p>Select state : Gujarat</p> <p>Date of sale : 09/04/2020</p> <p>Submit button displayed</p>
Input data (negative)	<p>Invoice number : 00000005</p> <p>Customer name : ABC</p> <p>Customer email : abc@mail.com</p> <p>Customer phone number : 9099090990</p> <p>Products (to be bought) : 890 CoalApp Dumper (Not in stock).</p> <p>Discount :</p> <p>Customer delivery address:</p> <p>Pin code :</p> <p>City :</p> <p>Select state : Gujarat</p> <p>Date of sale : 09/04/2020</p>
Expected results (positive)	<p>The sales record will be successfully inserted in the record list and the user who made the sale will also be displayed along with customer information and the invoice will also be generated automatically which can be viewed by clicking on the eye icon under Invoice column of the sales record page. Option for printing it is also provided.</p>

Expected results (negative)	As the product which is not available in stock is selected for the sales record, the submit button itself won't be displayed and record won't be submitted and validation will give error message , <i>Customer delivery address, pin code, city fields can't be empty</i> , here discount is not mandatory so it may be empty.
Actual Result	According to the expectations.
Pass/Fail	Pass

Chapter – 7: SCREENSHOTS

7.1 CORPORATE PLUS ERP WEB APPLICATION

Corporate Plus is an Enterprise Resource Planning web application that helps an organization to manage its different departments like Manufacturing, Inventory, Sales, Customers, Service, Accounts, Human Resources and many more from a centralized module. The functionality related to all the departments of any organization performed by the users according to their designations are covered in this chapter. From displaying the design of dashboard to adding new applicants, adding new users, creating new designations with new access rights, editing user's profile, requesting fund for certain reasons, requesting product and raw materials according to the need and its quantity, getting notifications for the same, managing the inventory by checking in the raw materials stock, ordering new ones from any vendor, returning if defective, adding new product category, adding new products to the system, adding any new manufactured product, taking inquiries as well as follow ups of interested customers, adding new sales record and generate invoice to service the sold product/s under warranty period, all the screenshots of the entire ERP Web Application developed till date are attached as below.

Corporate Plus - User Login

The screenshot shows a user login interface. At the top, the title "Corporate Plus - User Login" is displayed. Below the title are two input fields: one for "Email" and one for "Password". A large blue button at the bottom contains the text "SIGN IN".

[Forgot Password?](#)

Fig 7.1 Corporate Plus – User login ERP Web Application

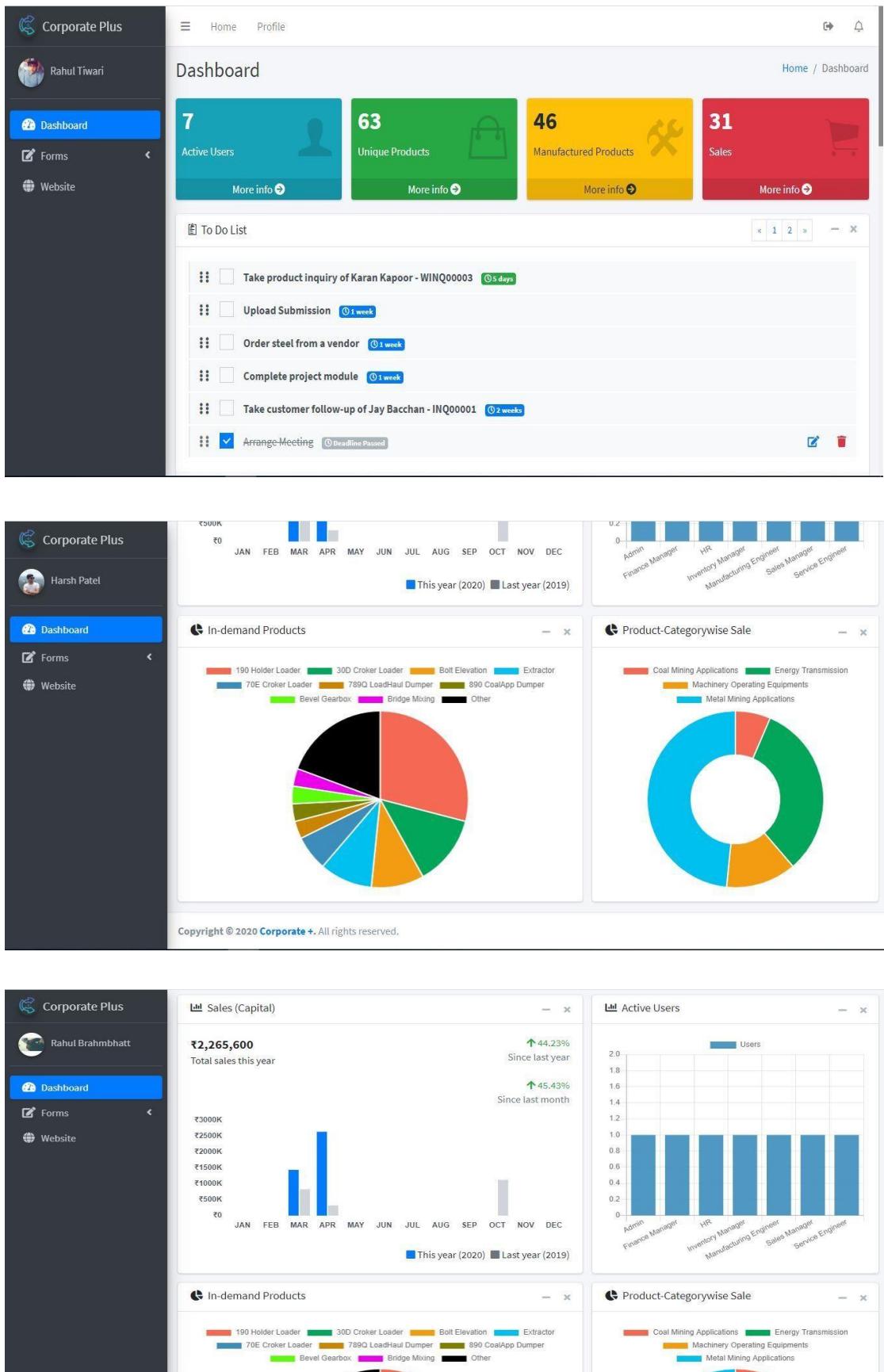


Fig 7.2 Dashboard of ERP Web Application

(The dashboard of the Web application displays various charts, graphs also the information about number of users, sales, products and a feature called to-do list that displays various tasks that are to be accomplished according to the deadline.)

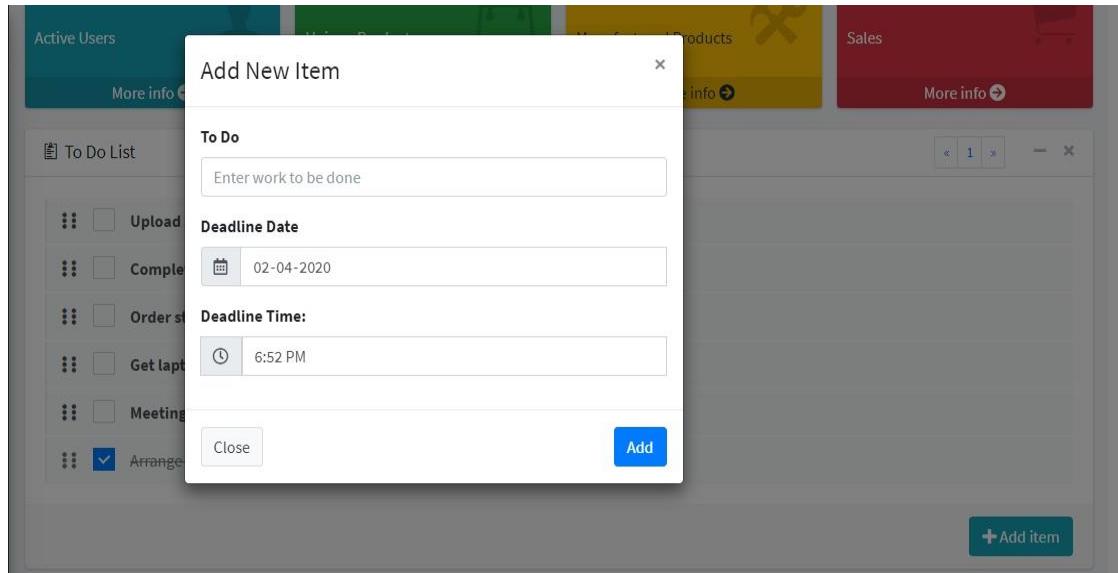


Fig 7.3 Add New Item in the To Do List (modal)

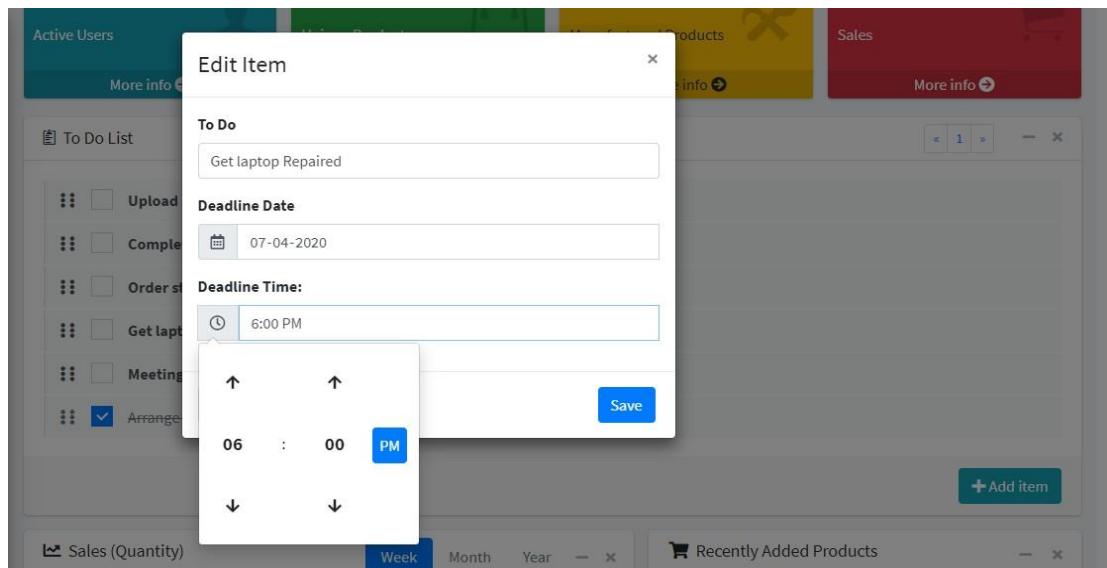


Fig 7.4 Edit Item in the To Do List (modal)

(For adding or editing any new task in the to-do list the add and edit option are provided.)

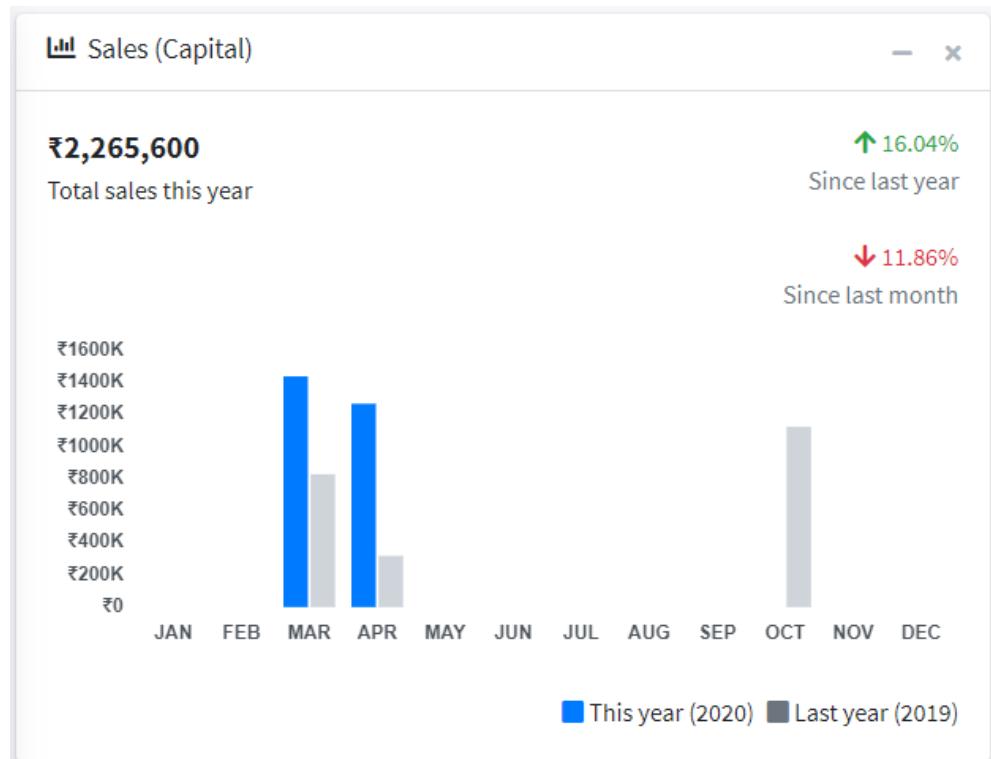


Fig 7.5 Sales (Capital) comparative bar-graph

(This graph is used to show the comparison between sales of current and previous years, also it displays the profit/loss in percentage as compared to last year and last month sales, along with this it also displays the total sales this year.)

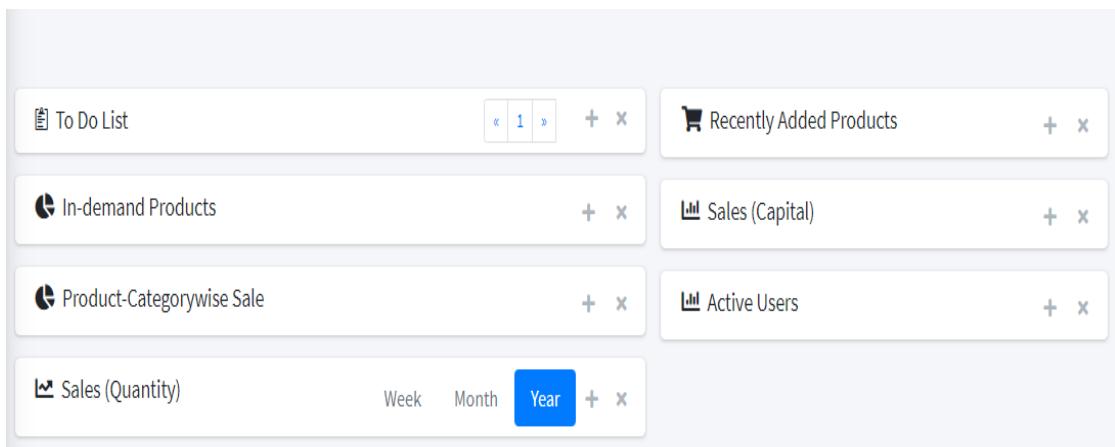


Fig 7.6 All components of dashboard minimized

(For minimizing the unnecessary graphs and components the functionality for minimizing them are provided within the dashboard.)

The screenshot shows the Corporate Plus application's profile page. On the left is a dark sidebar with a user icon and the name 'Harsh Patel'. Below it is a navigation menu with items like 'Dashboard', 'Forms' (which is selected), 'Vendors', 'Raw Materials', etc. The main content area has a header 'Hello, Harsh Patel.' and a large photo of a man in sunglasses. Below the photo are several input fields: 'Name' (Harsh Patel), 'Registration Number' (USR00003), 'Designation' (Inventory Manager), 'Monthly Salary (₹)' (75000), 'Email Address' (harshp1898@gmail.com), and 'New Password' (redacted). There is also a small 'Edit' icon next to the photo.

Fig 7.7 Profile page of the logged in user

(The profile page allows the user to change their personal information and the left navigation panel displays all the functionalities provided to the user according to their designation.)

Existing Designations		
Designation	Edit	Delete
Admin		
Finance Manager		
HR		
Inventory Manager		
Manufacturing Engineer		
Sales Manager		
Service Engineer		

Fig 7.8 Designations in the system

(All the existing designations in the system are displayed with the option of editing the access rights of any designation or deleting it.)

Add New Applicants

New Applicant

Name
Enter Name

Email Address
Enter Email

Phone Number
Phone Number

Educational Qualification

10th (%)
Enter 10th Standard Percentage

12th (%)
Enter 12th Standard Percentage

Diploma (%)
Enter Diploma Percentage

Choose your highest qualification

Choose your Specialization

Work Experience
Enter Work Experience in years

Interested Field
Enter Area or Field of Interest

Person Image
Choose file

Submit

Fig 7.9.1 Add Applicant Page

(This is included in the HR module of the ERP application, in which any applicants' information can be filled with uploading required educational documents, the entry will be made in the database and it will be shown in the show applicants page.)

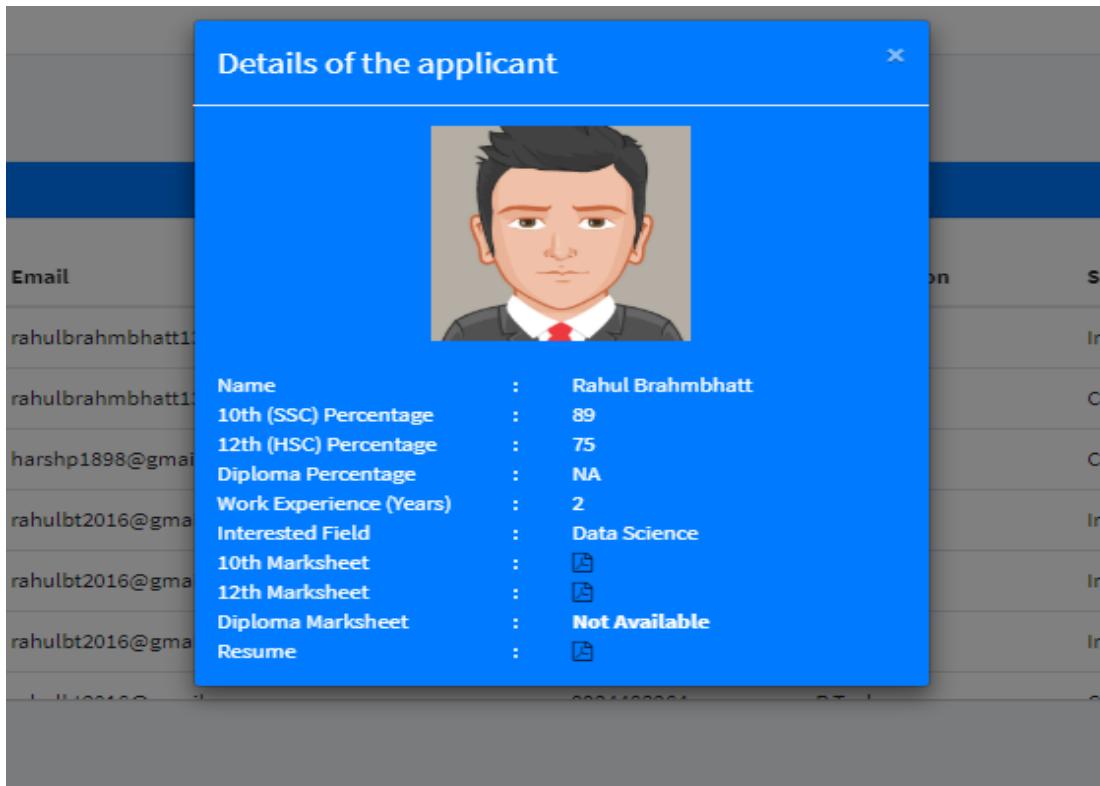


Fig 7.9.2 Show Applicant Page (modal)

(Using modal the details of any applicant are displayed in the show applicants page.)

List of all Users						View		
Reg. Number	Name	Email	Phone	Status	More	Edit	Deactivate	
USR00001	Rahul Tiwari	rahultiwari10@gmail.com	9924465204	ACTIVE				
USR00002	Rahul Brahmabhatt	rahulbrahmabhatt1811@gmail.com	9033969150	ACTIVE				
USR00003	Harsh Patel	harshp1898@gmail.com	9624702340	ACTIVE				
USR00004	Vraj Patel	vrajkp99@gmail.com	9966587569	ACTIVE				
USR00006	Justin Bieber	avakinbieber@gmail.com	7855874588	ACTIVE				
USR00005	Dhaval Vaghela	rahulbt20@gmail.com	9898888577	INACTIVE				
USR00007	Vraj Solanki	avakinbieber98@gmail.com	9988557788	INACTIVE				

Fig 7.10 Active and inactive users

(This page displays the list of all users in the system and on deactivating any of the user, the status will be switched to INACTIVE from ACTIVE, as well as the option for editing user information can be done using edit option and view more will pop up a modal displaying user information.)

The screenshot shows a user interface titled "Find Vendor Assist". A dropdown menu labeled "Select Raw Material:" contains the option "Basic Plastics". A blue "Go" button is located to the right of the dropdown.

Fig 7.11.1 Find Vendor Assistant (i)

The screenshot shows a user interface titled "Find Vendor Assist". A dropdown menu labeled "Select Raw Material:" contains the option "Basic Plastics". Below the dropdown, a section titled "Vendors having Raw Material - Basic Plastics:" displays a table of vendor information:

Registration Number	Name	Email	Phone
VEN00001	Babloo Kapoor	babloo.kapoor@gmail.com	9955883322
VEN00004	Tapan Patel	patel_tapan@gmail.com	9988112222

Fig 7.11.2 Find Vendor Assistant (ii)

(This functionality deals with finding any vendor with the selected raw materials and all the vendors available in the system supplying the selected raw material are displayed.)

Available Applicants								Home / Show Applicants
Available Applicant's List								<input type="text" value="rah"/> 
Image	Name	Email	Contact Number	10th (%)	12th (%)	Diploma (%)	Highest Qualification	Action
	Rahul	abc@xyz.com	9876543210	89%	75%	NA	B.Tech	 
	Rahul Brahmbhatt	rahulbrahmbhatt13@gmail.co	9033969150	89%	80%	na	B.Tech	 

Fig 7.12 Result of search box where 'rah' is searched

(Implementation of search functionality, entries with the searched keyword will appear in the list.)

Add New Returned Raw Material		Home / Ordered Raw Materials / Add New Returned Raw Material
New Return Entry		
Vendor (raw material bought from)		
<input type="text" value="Chandan Jaiswal"/>		
Raw Material (to be returned)		
<input type="text" value="Keys"/>		
Quantity Ordered		
<input type="text" value="30"/>		
Select Quantity Returned		
<input type="text" value="1"/>		
Unit Cost(₹)		
<input type="text" value="50"/>		

Unit Cost(₹)
50

Batch Number
9855478

Date of raw material delivery
24-02-2020

Date of return
27-02-2020

Reason for returning / Defect
Enter the issue

Submit

Fig 7.13 Form for returning defective raw materials

(If the bought raw materials are defective, then this form is to be filled with required details in order to return the defective raw materials purchased from respective vendor.)

Returned Raw Materials [Home](#) / Returned Raw Materials

List of Returned Raw Materials

Raw Material	Quantity Returned	Vendor Reg. Number	Unit Cost	Batch Number	Return Date	Returned By	Reason to Return	Capital Reclaimed
Basic Plastics	10	VEN00004	₹ 100	445522	23 Feb, 2020	USR00001	Broken and old material	₹ 1000
Copper	5	VEN00002	₹ 90	100655	23 Feb, 2020	USR00001	Rusted	₹ 450
Corners	20	VEN00003	₹ 50	3366248	23 Feb, 2020	USR00001	Damaged	₹ 1000
Wires	100	VEN00003	₹ 20	115555	24 Feb, 2020	USR00001	Low Quality Material	₹ 2000

Fig 7.14 List of Returned raw materials

(The list of returned raw materials with all the details like return date, the user who returned with the reason as well as the capital amount reclaimed are displayed.)

The screenshot shows a web application interface for managing requests. On the left, a table titled 'List of Requests Made' displays three entries:

Request Date	Request Type	Requested Item/Reason to Request	Requested Quantity/Amount	Status
10 Apr, 2020	Fund	For buying raw materials	₹ 8000	REJECTED
10 Apr, 2020	Raw Material	Brass	90	PENDING
10 Apr, 2020	Product	190 Holder Loader	9	PENDING

On the right, there is a 'Make New Request' section with the following fields:

- Select Request Type: Product
- Select Product: 190 Holder Loader
- Quantity: Enter Quantity Needed
- Submit button

Fig 7.15 Making any request (product, raw material, fund)

(This page allows the users to request product, raw material as well as fund according to the user's designation i.e fund request can be made by any user in the system, whereas sales engineer can request any product that is to be manufactured and manufacturing engineer can request any raw materials that are needed for manufacturing any product.)

The screenshot shows a 'Manage Requests' page with two tables:

Product Requests

Name	Designation	Email	Contact Number	Quantity	Product	Approved/Rejected By	Approve/Reject
Rahul Tiwari	Admin	rahulbt2016@gmail.com	9924483264	9	190 Holder Loader	PENDING	

Raw Material Requests

Name	Designation	Email	Contact Number	Quantity	Raw Material	Approved/Rejected By	Approve/Reject
Rahul Tiwari	Admin	rahulbt2016@gmail.com	9924483264	90	Brass	PENDING	

Fund Requests							Search	
Name	Designation	Email	Contact Number	Amount	Reason	Approved/ Rejected By	Approve/ Reject	
Harsh Patel	Inventory Manager	harshp1898@gmail.com	9624702340	₹ 6000	For buying raw materials	USR00001		
Rahul Tiwari	Admin	rahulbt2016@gmail.com	9924483264	₹ 8000	For buying raw materials	USR00004		

Fig 7.16 Manage requests page

(The user who are designated to manage the requests made, will receive the request notification in their system and then they can respond to the request received.)

Fig 7.17 Notifications regarding the fund requests

(Functionality of sending notification to the user with the designation that needs to manage the requests.)

List of Manufactured Products						
Product	Mfg. Date	Batch Number	Manufactured By	Raw Materials' Quantities Used	Status	Sale Description
Bolt Elevation	18 Mar, 2020	0000000011	USR00001		AVAILABLE	-
Extractor	18 Mar, 2020	0000000010	USR00001		AVAILABLE	-
Extractor	18 Mar, 2020	0000000009	USR00001		AVAILABLE	-
70E Croker Loader	18 Mar, 2020	0000000008	USR00001		SOLD	
190 Holder Loader	18 Mar, 2020	0000000007	USR00001		SOLD	
Bolt Elevation	18 Mar, 2020	0000000006	USR00001		SOLD	
190 Holder Loader	18 Mar, 2020	0000000005	USR00001		SOLD	

Fig 7.18 Manufactured Products page

(The list of manufactured products contains the name of the product manufactured, date, batch number, modal showing raw materials' quantity used, the status and the sales description showing the details of the sale.)

List of Products						
Code	Name	Category	Available Quantity	Added/Edited By	Status	View More Edit Disable
PRD00061	190 Holder Loader	Metal Mining Applications	10	USR00001	ENABLED	
PRD00059	30D Croker Loader	Metal Mining Applications	3	USR00001	ENABLED	
PRD00060	70E Croker Loader	Metal Mining Applications	1	USR00001	ENABLED	
PRD00053	789Q LoadHaul Dumper	Coal Mining Applications	0	USR00001	ENABLED	
PRD00054	890 CoalApp Dumper	Coal Mining Applications	0	USR00001	ENABLED	
PRD00055	900 Side Dumper	Coal Mining Applications	0	USR00001	ENABLED	
PRD00051	901 Loading Dumper	Coal Mining Applications	0	USR00001	ENABLED	

Fig 7.19 Products Page

(The products page displays all the products that are manufactured and sold by the organization along with the details like name, category, the user who added/edited the product, the status, modal displaying more information about the product as well as the option for editing the information about any product.)

The screenshot displays two panels for managing product categories. The left panel, titled 'List of Product Categories', shows a table with four rows of data:

Category	Status	Edit	Disable
Coal Mining Applications	ENABLED		
Energy Transmission	ENABLED		
Machinery Operating Equipments	ENABLED		

The right panel, titled 'Add New Product Category', contains fields for 'Product Category Name' (with placeholder 'Enter Product Category Name') and 'Description' (with placeholder 'Enter description of the product category'). It also includes a file upload section for 'Product Category Image' with 'Choose file' and 'Browse' buttons, and a 'Submit' button at the bottom.

Fig 7.20 Product Categories

(This page is for adding new product categories as well as displaying the already available ones with status and option for editing it's information along with the option to enable/disable any category.)

The screenshot shows a form for generating a barcode. The title is 'Generate Barcode'. The form has two main sections: 'New Barcode Generation' and 'Select Product'. The 'Select Product' section contains a dropdown menu with '190 Holder Loader' selected. Below it is a 'Barcode Quantity' input field containing the value '1'. At the bottom of the form is a blue 'Go' button.

Fig 7.21 Generate Barcode page

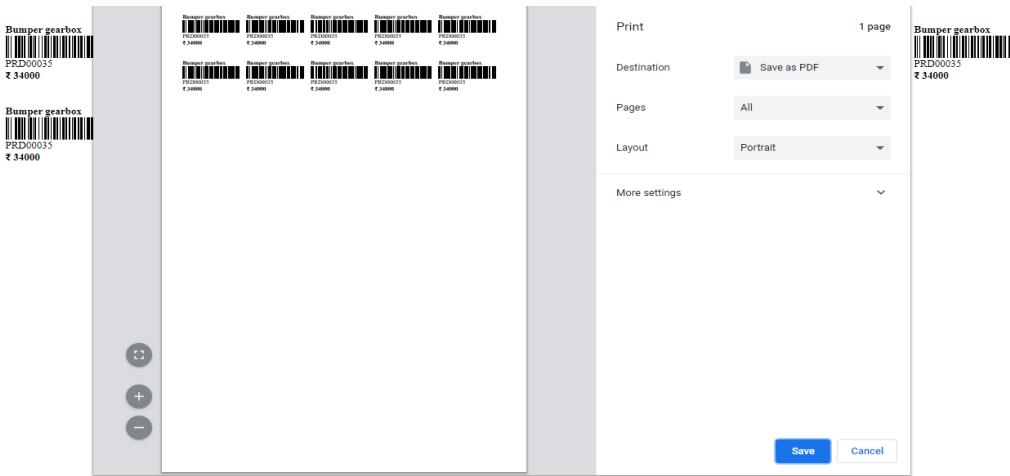


Fig 7.22 Auto-popped-up print dialogue box on barcode page

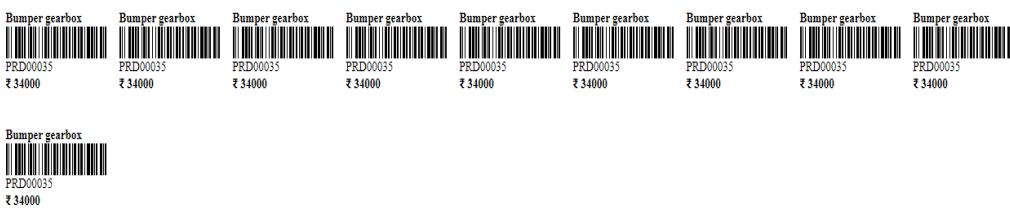


Fig 7.23 Barcodes on barcode page

(Functionality for generating barcode for any product, afterwards the option for printing it will also be displayed.)

Add New Sale

Home / Sales / Add New Sale

New Sale

Invoice Number

Customer Name

Customer Email Address

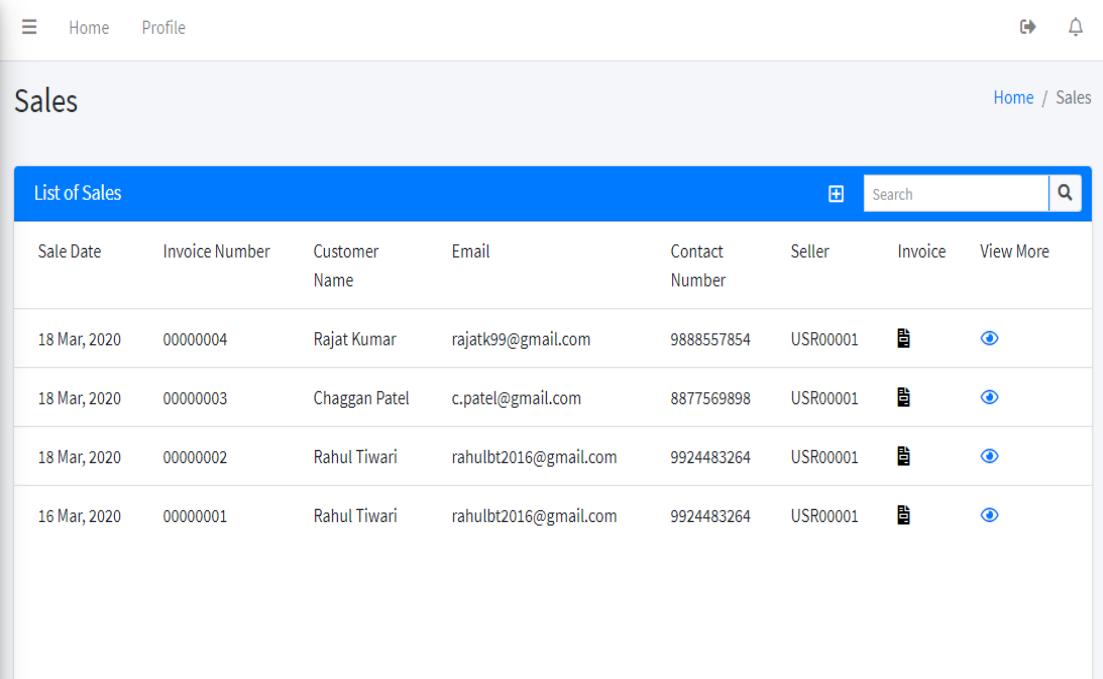
Customer Phone Number

Products**Pin Code****City****Select State****Date of sale**

20-03-2020

Fig 7.24 Add New Sale Page

(Clicking on the add button on list of sales , add new sale record will be displayed as shown above, wherein all the required details are to be filled and when the selected products to be bought are in stock, only then the submit button for submitting the record will be displayed.)

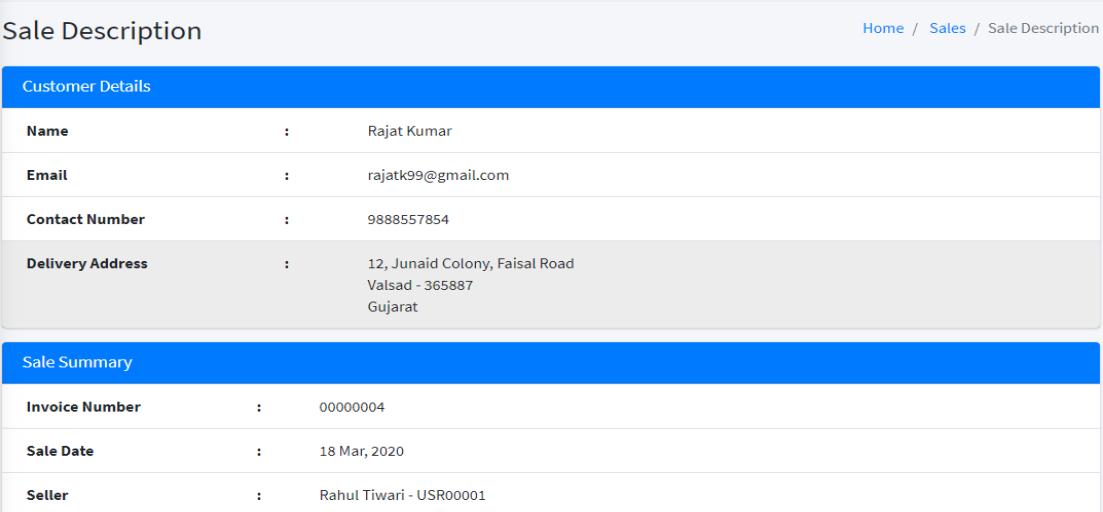


The screenshot shows a web-based application interface for managing sales. At the top, there is a navigation bar with links for Home and Profile, and icons for search and notifications. Below the navigation bar, the title "Sales" is displayed, along with a breadcrumb navigation "Home / Sales". A blue header bar labeled "List of Sales" contains a search input field with a magnifying glass icon. The main content area is a table with the following columns: Sale Date, Invoice Number, Customer Name, Email, Contact Number, Seller, Invoice, and View More. The table lists four sales entries:

Sale Date	Invoice Number	Customer Name	Email	Contact Number	Seller	Invoice	View More
18 Mar, 2020	00000004	Rajat Kumar	rajatk99@gmail.com	9888557854	USR00001		
18 Mar, 2020	00000003	Chaggan Patel	c.patel@gmail.com	8877569898	USR00001		
18 Mar, 2020	00000002	Rahul Tiwari	rahulbt2016@gmail.com	9924483264	USR00001		
16 Mar, 2020	00000001	Rahul Tiwari	rahulbt2016@gmail.com	9924483264	USR00001		

Fig 7.25 Sales list page

(The list of sales display information about the date, invoice number, customer name, email, contact number, seller (user) of the product as well displaying sales description are available with the option of viewing the Invoice of the sale.)



The screenshot shows a detailed view of a sale description. At the top, the title "Sale Description" is displayed, along with a breadcrumb navigation "Home / Sales / Sale Description". Below the title, there is a section titled "Customer Details" containing the following information:

Name	:	Rajat Kumar
Email	:	rajatk99@gmail.com
Contact Number	:	9888557854
Delivery Address	:	12, Junaid Colony, Faisal Road Valsad - 365887 Gujarat

Below the customer details, there is a section titled "Sale Summary" containing the following information:

Invoice Number	:	00000004
Sale Date	:	18 Mar, 2020
Seller	:	Rahul Tiwari - USR00001

Bought Items	:	Qty	Product	Unit Cost	Batch Numbers	Sub-total
		2	190 Holder Loader	₹300000	0000000005 0000000007	₹600000
		1	70E Croker Loader	₹140000	0000000008	₹140000
<hr/>						
Total Cost Calculations	:	Sub-total			:	₹740000
		Discount (10%)			:	- ₹74000
		GST (18%)			:	119880
		Total			:	₹785880

Fig 7.26 Sales Description page opened on clicking view more

Show Invoice							
Home / Sales / Show Invoice							
 Corporate Plus Pvt. Ltd.	Date: 18 Mar, 2020						
From	To	Invoice #0000004					
Corporate Plus Pvt. Ltd. Anand Sojitra Road Anand - 388120, Gujarat Phone: 9900998877 Email: corporate.plus.erp@gmail.com	Rajat Kumar 12, Junaid Colony, Faisal Road Valsad - 365887, Gujarat Phone: 9888557854 Email: rajatk99@gmail.com						
Qty	Product	Unit Cost	Batch Numbers	Subtotal			
2	190 Holder Loader	₹300000	0000000005 0000000007	₹600000			
1	70E Croker Loader	₹140000	0000000008	₹140000			
<hr/>							
Payment Methods:							
  							
<hr/>							
Subtotal							
:							
₹740000							
<hr/>							
Discount (10%)							
:							
- ₹74000							
<hr/>							
GST (18%)							
:							
119880							
<hr/>							
Total							
:							
₹785880							
<hr/>							
 Print							

Fig 7.27 Show Invoice page

(Invoice page of the sales record along with all the records are displayed and the invoice is generated accordingly.)

On-Site Inquiries Done							Search	
Inquiry Number	Date	Person Name	Person Email	Person Contact Number		View More	Follow Up	Confirm Sale
INQ00002	04 Apr, 2020	Dhaval Aryan	dhavalaryan90@gmail.com	9898985585				
INQ00001	04 Apr, 2020	Jay Bacchan	jaybacchan98@gmail.com	9888587895				

Fig 7.28 On-site Inquiries

(Entries of on-site inquiries are displayed along with necessary information like inquiry number, date, person name, email, viewing more information about the inquiry, option for taking follow ups and when the customer is interested in buying the product, adding the sales record through confirm sale option.)

Inquiry Description		Home / Display Inquiries / Inquiry Description
Customer Details		
Name	:	Dhaval Aryan
Email	:	dhavalaryan90@gmail.com
Contact Number	:	9898985585

Inquiry Summary	
Inquiry Number	: INQ00002
Interested Products	: 30D Croker Loader 901 Loading Dumping Low Height
Inquiry Date	: 04 Apr, 2020
Inquiry Taken By	: Rahul Tiwari - USR00001
Inquiry Discussion (Summary)	: Went well
Applied for a follow up?	: No

Follow Up Details (1)	
Date	: 04 Apr, 2020
Follow Up Taken By	: Rahul Tiwari - USR00001
Follow Up Discussion (Summary)	: Almost Convinced to purchase.
Applied for another follow up?	: No

Follow Up Details (2)	
Date	: 15 Apr, 2020
Follow Up Taken By	: Rahul Tiwari - USR00001
Follow Up Discussion (Summary)	: Promised to buy next week.
Applied for another follow up?	: No

Fig 7.29 Follow Up Details under Inquiry Description.

(Follow up details of the user are displayed under the inquiry description with information gathered during each follow up of the customer.)

Arrived Web Inquiries						
Inquiry Reg. Num.	Inquiry Date	Person Name	Person Email	Interested Product	View More	Allocated To
WINQ00009	09 Apr, 2020	Gautam Cara	rahulbt2016@gmail.com	Bevel Helical (SOE Series)		
WINQ00006	06 Apr, 2020	Haresh Garg	rahulbt2016@gmail.com	Fair Conveyor		
WINQ00001	06 Apr, 2020	Jay Panchal	rahulbt2016@gmail.com	Stacker Excavators		
WINQ00008	06 Apr, 2020	Rahim Khan	rahulbt2016@gmail.com	890 CoalApp Dumper		USR00006 - Justin Bieber
WINQ00007	06 Apr, 2020	Karan Kumar	rahulbt2016@gmail.com	Ronon Feeder		USR00001 - Rahul Tiwari
WINQ00005	06 Apr, 2020	Viraj Chitnis	rahulbt2016@gmail.com	Transferable Conveyors		USR00006 - Justin Bieber
WINQ00004	06 Apr, 2020	Thelephoria Dukkar	rahulbt2016@gmail.com	Transferable Conveyors		USR00001 - Rahul Tiwari

Fig 7.30 List of Web Inquiries

(Web inquiries that are received from the website are displayed under web inquiries with details like inquiry reg. num, date, name ,email, interested product, viewing more information , allocating the web inquiry to any of the user along with the option to schedule the appointment.)

Service Reg. Num.	Product Name	Product Batch Num.	Submission Date	Service Taken By	View More	Status	Action
SRV00001	Bridge Mixing	000000001	05 Apr, 2020	USR00001		IN SERVICE	<input checked="" type="checkbox"/>
SRV00003	Cooling Gearbox	000000003	07 Apr, 2020	USR00001		RETURNED	
SRV00002	Extractor	000000009	05 Apr, 2020	USR00001		DONE	<input checked="" type="checkbox"/>

Fig 7.31 List of serviced products

(The products sold by the organization, if are damaged under the warranty period they can be serviced by adding a new entry by selecting + and the information about the serviced product is displayed in the list with service re. num, product, batch number, submission date, the user who took the service, viewing more information as well as providing option for switching the status of the product to in service, returned or done with the help action functionality.)

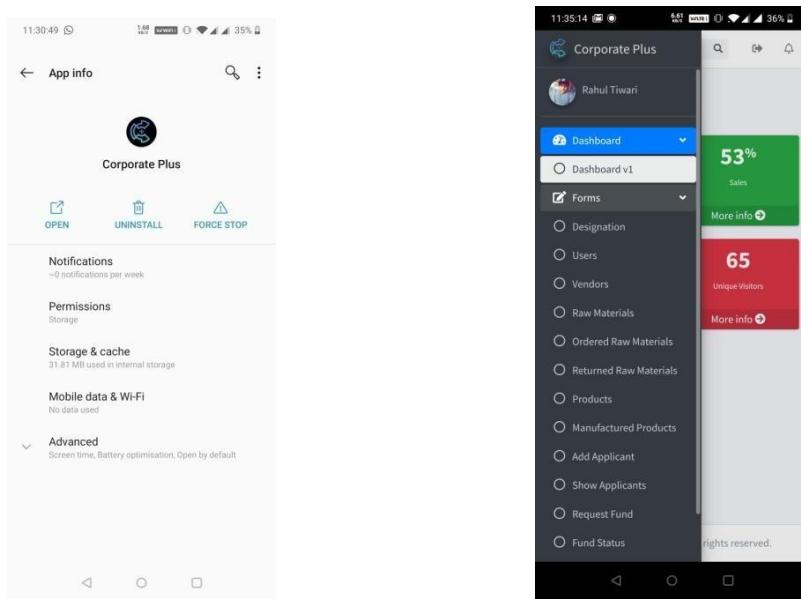


Fig 7.32 Snapshots of Corporate plus Android Application

(Android app is created for operating the ERP Web Application with the help of any mobile device. This is done using the Webview that allows to display web content as a part of activity layout)

7.2 CORPORATE PLUS WEBSITE

Any organization that has various departments and if it is focussing on manufacturing sector, necessarily has website for their organization in order to give any outsider the information about the features of the organization, most importantly the products, services and the industries to which the organization is linked in one or other way so for fulfilling the same requirement, in our project along with developing ERP web application, a website is also designed which is linked with the ERP system in various ways. Functionalities like getting basic information about an organization, displaying the portfolio of the organization, displaying FAQs, providing the functionality of contacting organization to any outsider in case of any query, submitting online application for job, giving overview of the products which the organization manufactures and sells, along with providing basic information about product categories, providing functionality to display more information about any product in

which outsider is interested and providing product documentation and submitting the web inquiry filled by the person to the ERP Web Application and especially for any industry-men to view the products manufactured by the organization related to any particular industry.

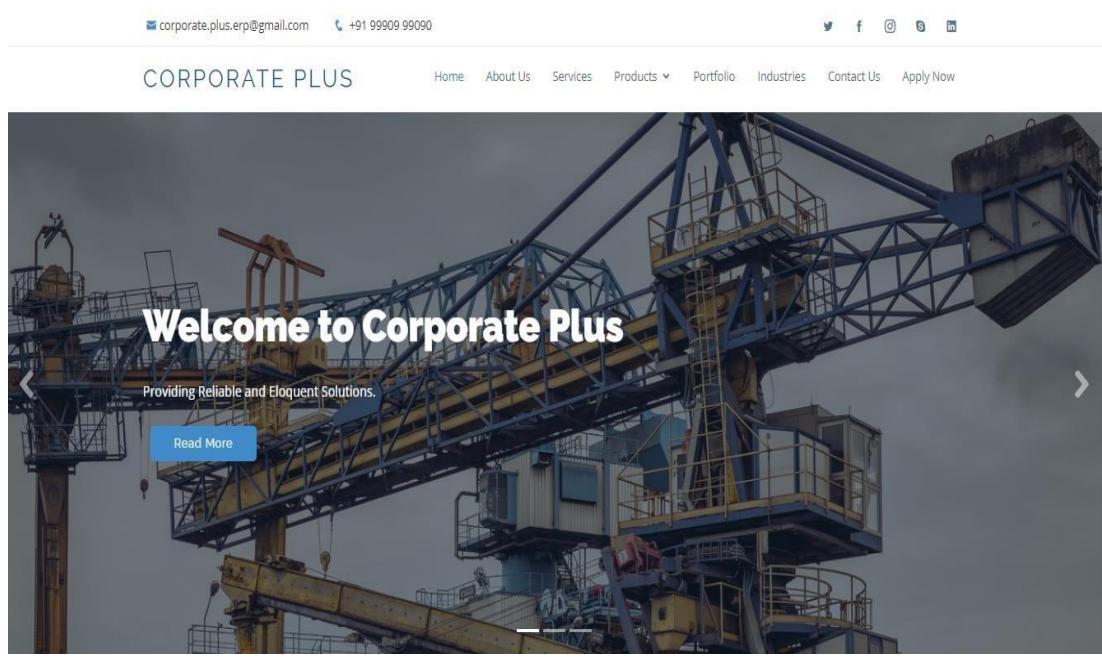


Fig 7.33 Homepage of the website

(Homepage of the website displays the navigation menu that contains links to various pages along with basic information about the organization.)

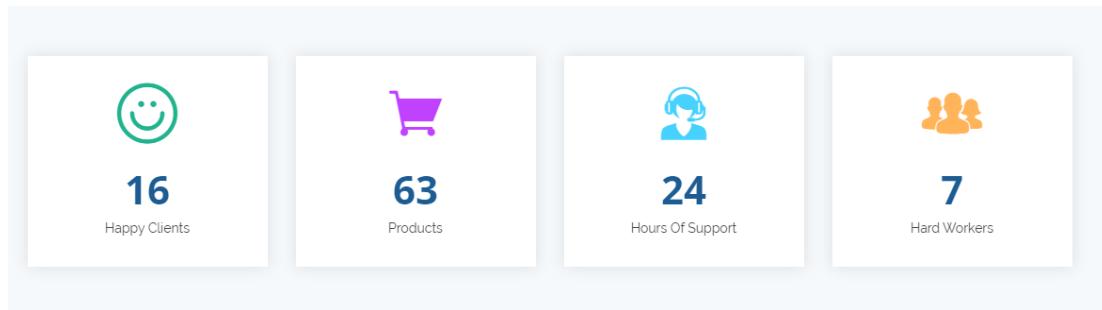


Fig 7.34 Data about organization

(This section dynamically displays the digits of clients, products hours, workers in the organization.)

CORPORATE PLUS

Home About Us Services Products ▾ Portfolio Industries Contact Us Apply Now

Our Portfolio

Our business portfolio is a group of products, services, and business units that conform a given company and allows it to pursue its strategic goals.

ALL PRODUCTS SERVICES INDUSTRIES

The portfolio section displays six images arranged in two rows of three. The top row includes a blue cylindrical industrial component, workers refurbishing gearboxes, and a large industrial conveyor system. The bottom row includes power transmission towers at sunset, a close-up of mechanical parts being assembled, and an orange construction bulldozer. A blue navigation bar at the bottom right contains a downward-pointing arrow icon.

Fig 7.35.1 Portfolio section (All)

Our Portfolio

Our business portfolio is a group of products, services, and business units that conform a given company and allows it to pursue its strategic goals.

ALL PRODUCTS SERVICES INDUSTRIES

The portfolio section displays three images arranged horizontally. From left to right: a large industrial facility with tall white cylindrical tanks; a collection of numerous small plastic bottles with white caps; and a construction site where a large truck is dumping material into a yellow-lined excavation area. A blue navigation bar at the bottom right contains a downward-pointing arrow icon.

Fig 7.35.2 Portfolio section (Industries)

(This portfolio section displays some of the products, services, industries images from the organization and the images displayed are different every time the page is refreshed.)

Contact Us

The screenshot shows a contact form with three main sections:

- Our Address:** Includes a location pin icon and the address "16,Evenue Gardens,India".
- Email Us:** Includes an envelope icon and the email address "corporate.plus.erp@gmail.com".
- Call Us:** Includes a phone icon and the phone number "+91 99909 99090".

Below these are input fields for "Enter Name" and "Enter Email", followed by a large "Message" text area. At the bottom is a blue "Send Message" button.

Fig 7.36 Contact us section

(The contact us section will allow any user to send any query to the organization and the entry will be made in the database table as well as an e-mail will be sent to the person who sent the inquiry.)

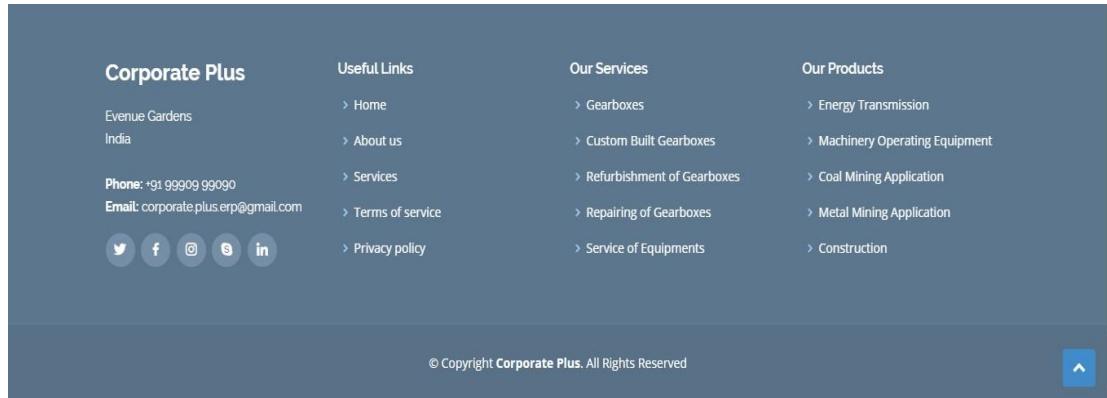


Fig 7.37 Footer section

(Footer of the website contains several details like address and other useful links.)

CORPORATE PLUS

Please fill all the details

Name : harsh

Email : harsh1898@gmail.com

Phone Number : 9090000000

Educational Qualification

SSC (10th) % : 90

HSC (12th) % : 90

Diploma % : NA

Choose your highest qualification : B.Tech

Choose your specialization : Computer Engineering

Interested Field : mm

Work Experience : 9

Resume : Choose file

Fig 7.38 Applicant applying through Apply Now page

(Any applicant can fill in the required details in the apply now page and the entry will be inserted in the database table and the entry of this applicant will be available in the show applicants page in the ERP system.)



Fig 7.39 Products page (category section)

(All the product categories are displayed dynamically from the database table.)

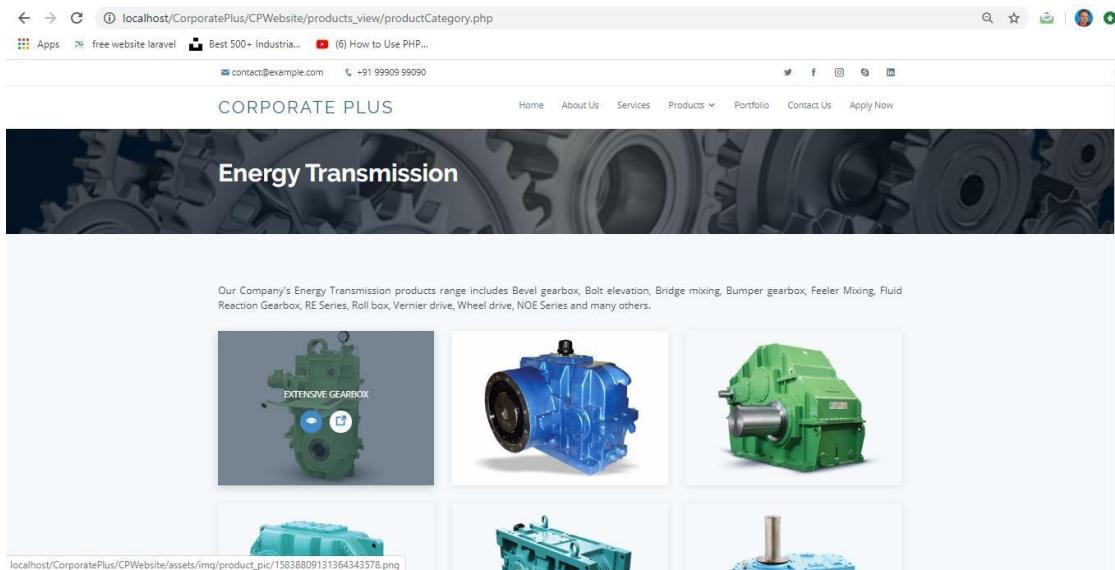


Fig 7.40 Product category page

(Clicking on any product category will open up the category page with their description and the products under that category.)

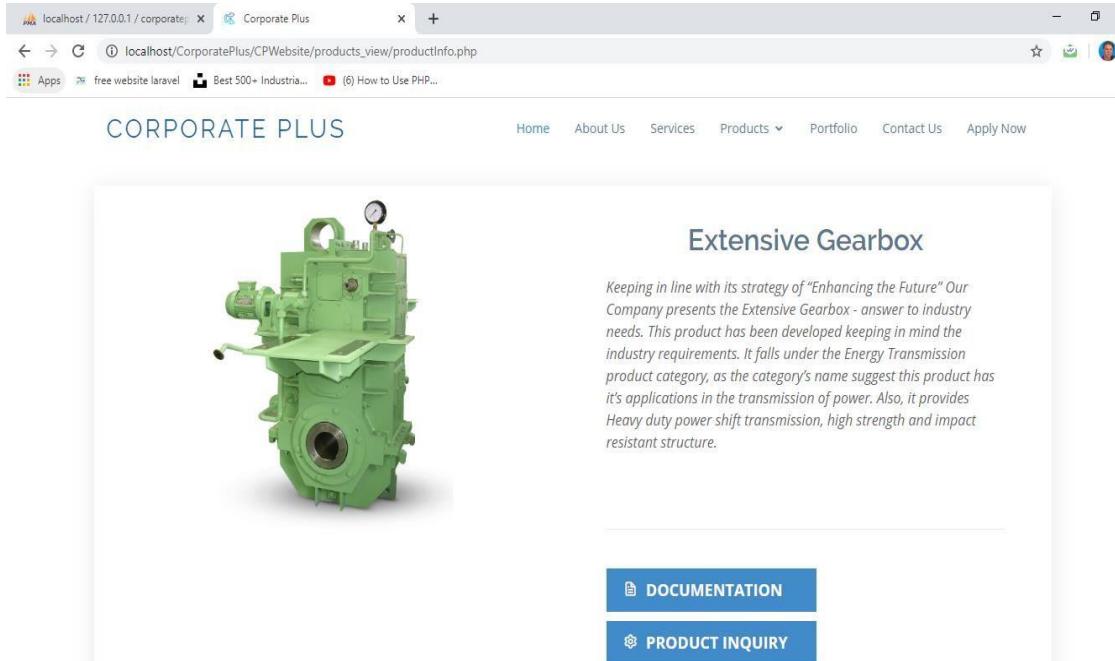


Fig 7.41 Information about selected product

(Product information page will be opened clicking on any product and options for viewing documentation and sending product inquiry are provided.)

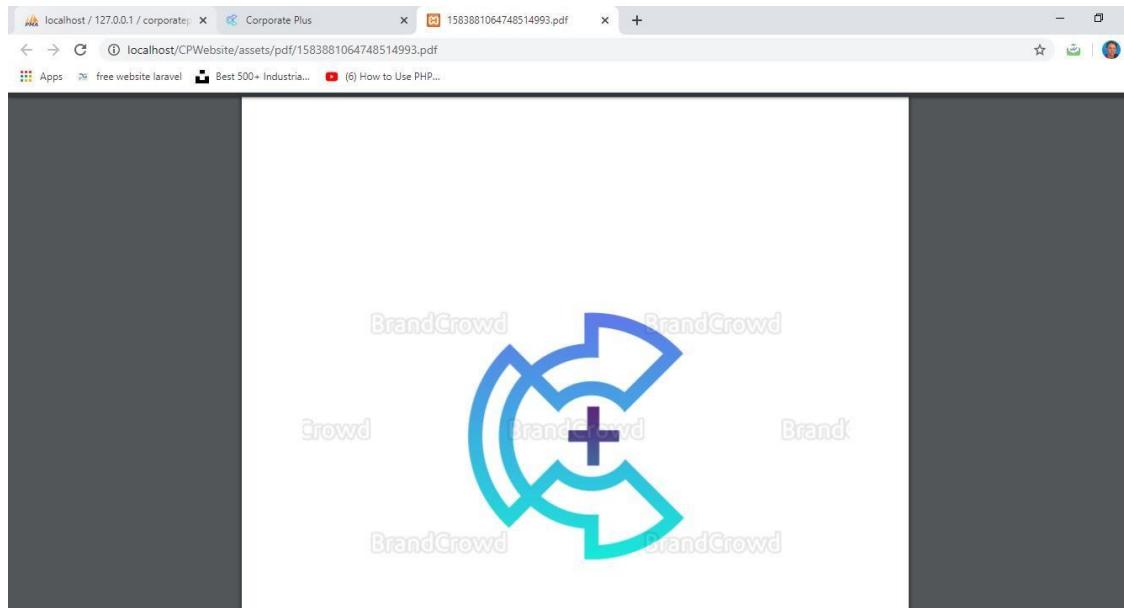


Fig 7.42 Viewing/Downloading product documentation



Fig 7.43 Submitting web inquiry for interested product

(All the details are to be filled and the entry of this inquiry will be sent to the list of web inquiries.)

Industrial Applications			Home / Industrial Applications	
List of Industrial Applications		Status	Edit	Disable
Industrial Application		ENABLED		
Cement Industry		ENABLED		
Chemical Industry		ENABLED		
Construction Industry		ENABLED		
Crane Industry		ENABLED		
Paper Industry		ENABLED		
Plastic Industry		ENABLED		
Power Industry		ENABLED		

Fig 7.44 Industry Applications

(This page displays the industries linked to the products in the organization, with the status to enable or disable it and add any new industry, also editing the information about existing industrial application.)



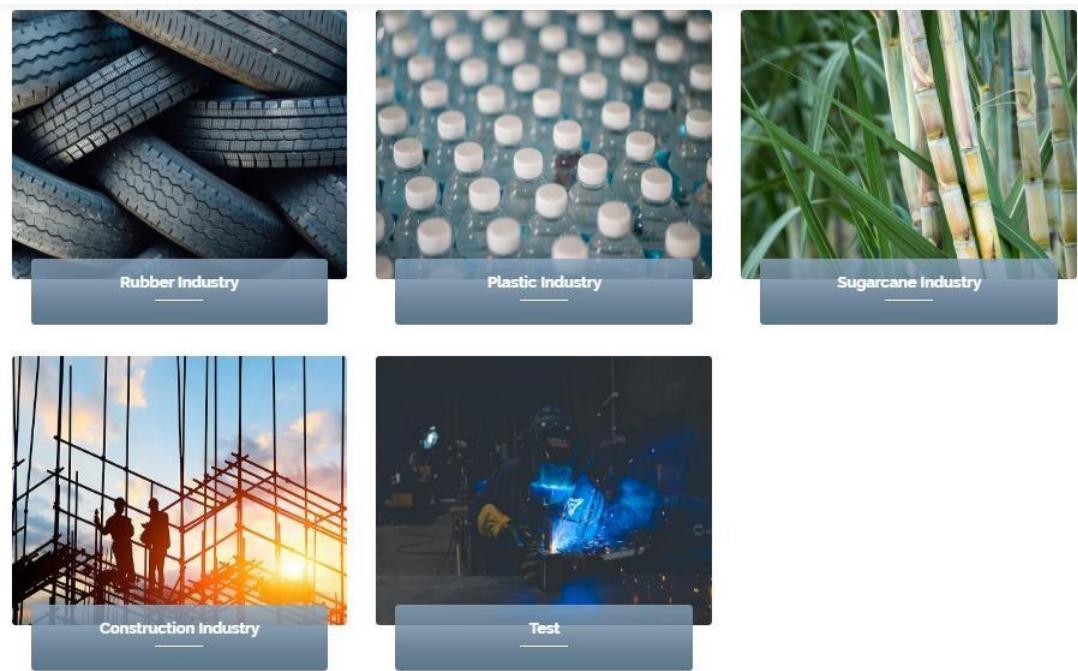


Fig 7.45 Industry Categories

(The list of industrial applications along with their information are displayed dynamically from the database table.)

CORPORATE PLUS

Home | About Us | Services | Products | Portfolio | Industries | Contact Us | Apply Now

INDUSTRIAL APPLICATIONS

Steel Industry



Our Company epitomizes cutting edges technology and path breaking innovation that have given us the chance to be the best choice for Steel companies. Backed by a proven track record and driven by unwavering excellence. Our company is all set to meet the changing requirements of the Steel industry and churn out technologically superior product from time to time. Join hands with our company and ensure a strong future of your business.

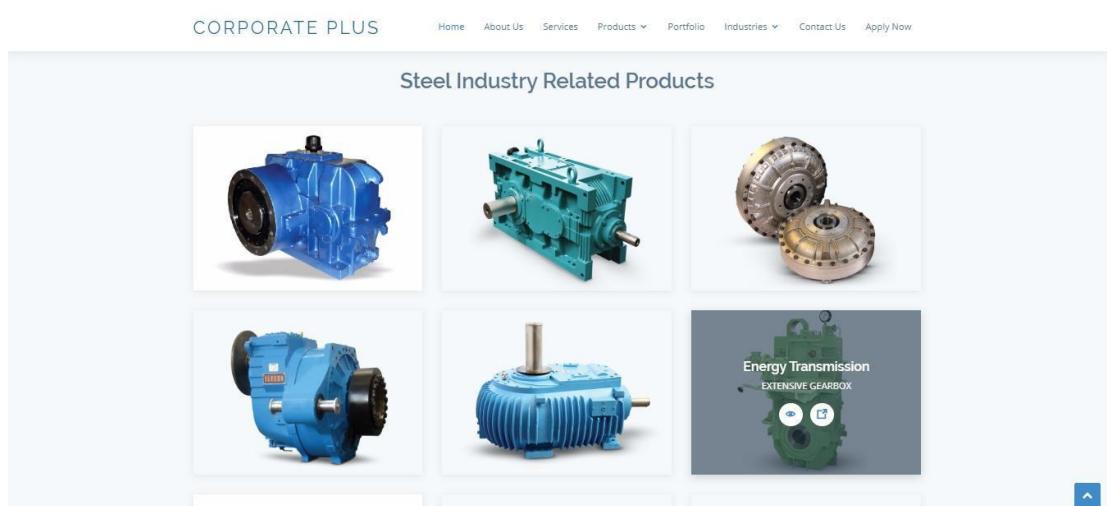


Fig 7.46 Steel Industry information and products related to it

(Clicking on any industry application will open up the industry category page along with its description and the products related to that particular industry, here for example, steel industry is clicked and the information and products related to it are displayed.)

Chapter – 8: FUTURE ENHANCEMENTS

At the moment, our project has the ability to successfully link the Corporate plus web application and website in various ways, allowing any particular organization to establish connection between the products, services, industries which are domain of their business to effectively represent them to the outside personnel and organizations. Corporate Plus Web Application manages various departments of an organization and is capable of performing all the functionalities as mentioned in the former chapters. However, no system can be fully developed within certain span of time, improvements over time are necessary for any system to maintain their business as well as stay in the market. Below mentioned are some future enhancements that are to be implemented on this project to make it more scalable, efficient and user friendly.

- At this time, there is no feature in the system that allows the organization to backup the database on daily basis, such functionality is necessary in order to prevent data loss at the time of system failure.
- Using ERP system in any organization has one drawback that it is very difficult and literally impossible to create such an ERP system which can be integrated with the existing system/software the organization is utilizing for their business needs. However, in future with the assistance of continuous focus and work in order to make this system such that it can be integrated with existing solution will be accomplished.
- The scope of this project is limited to certain functionalities, not all the features and facilities which can make this system implementable at any large sized organization included in it. But gathering requirements for the same and working in that direction with the present system in hand will make it very easy and achievable in less amount of time.
- With advancements in the field of Machine Learning, its successful implementation in the system can make it more suitable for the real time business and managing its needs. In our project, implementation of powerful Machine Learning and Artificial Intelligence over the system data for the purpose of sales analysis and using the algorithms for predicting the future sales.

- With the help of website, the task of submitting the web inquiry related to any product is manual and it is sent to the organization, whose employees process it and then schedule the appointments for further progress. Instead of this, Bot chat feature can be added in web application where any customer can have auto inquiry for the products.
- There is no chat feature between the employees in the organizations employed under different departments for their formal as well as informal communication. This functionality can be added in the system in future so it can make the system more user friendly and make it easy to communicate with colleagues.
- This ERP web application is designed by keeping traditional paradigm in mind but nowadays due to vast dominance of Cloud systems, the process for managing all the data is now shifting towards it. In future, taking this system to cloud can help in improved data storage capacity, managing the control as well as the security of the system. It can allow real time access to the system from anywhere with the obvious advantage of increased scalability and customizations being updated with the system updates giving the surety of business operating with the latest potential.

Chapter – 9: CONCLUSION

For accomplishing the project, Corporate Plus ERP Web Application and Website for the same, we followed Agile model for managing and designing this project. The system was to be developed using CorePHP and MVC Architecture concepts. The small exercises and gathering information about its applications and basics of MVC Architecture at the beginning of our internship helped us greatly while creating the project in later weeks. We gained professional experience by discussing various Agile SDLC model phases which are part of software development process with the IT professionals at Tech Elecon Pvt. Ltd. During the development of the system and even before that, i.e. Requirement gatherings and Analysis stage, all the requirements including functional and non-functional along with analysis of system were achieved as result of constant conversation in the form of interviews and questionnaires. It helped greatly to understand all the requirements and necessary functionalities needed to be taken care of while developing the system.

The system we developed, Corporate Plus is an Enterprise Resource Planning Web application that assists an organization to manage its different departments like Manufacturing, Inventory, Sales, Customers, Service, Accounts, Human Resources and many more from a centralized module. The centralized control in the flow of control and business was the main need of this system as working under disparate conditions will increase the difficulties in performing business functions. The Corporate Plus ERP Web Application provides various functionalities as required by any organization, there is an Administrator in the system possessing all the rights and access, it is the duty of Administrator to add new designations according to the organization. Designations like HR, Finance Manager, Manufacturing Engineer, Sales Manager, Inventory Manager, Service Engineer are already present in this system. According to their roles in the system, they are allocated certain access rights so that they can perform their functions and tasks. The ERP Web application dashboard designed to display number of users, products, manufactured products, sales record entries, feature called to-do list, along with various charts and graphs representing sales (on weekly, monthly, yearly basis), Comparison of sales between two years, displaying newly products in the system, In-demand products, Product-Category wise sale, active users. While requesting any product, raw material, fund according to the

designation, the responsible user for approving/rejecting the request will receive a notification. All the functionalities performed by various users according to their designation are mentioned in the earlier chapters.

It is very important for any organization to have a medium through which they can exhibit the domain and scope of their business. The Website designed for the organization gives any outsider an overview of the products the organization manufactures and sells, as well as sending a web inquiry regarding any product in which the website user is interested, the functionality regarding applying for a job at the organization and also contacting the organization regarding any query can all be accomplished through the website module. Also, providing an overview of the Industries to which the organization is linked and the products manufactured in the organization that fall under the domain of those particular industrial applications.

The Website also has the capability to present all the information about the respective organization and function according to the requirements set as well as act as an intermediary between any outside user or organization and the ERP Web Application of that particular organization for handling the requests and queries.

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