



Sri Lanka Institute of Information Technology

Cosmetics Manufacturing And Sales Management System

Project Proposal
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WD_B01_ITP_03

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1. Background

Cosmetic and sales management system is designed to improve the functional efficiency of a company which is involved in directing the manufacturing of cosmetics and delivering the product to the customers. This system helps to maximize the interaction between suppliers, customers, employees and the factory management.

2. Problem and Motivation

1. Problem – Physical Payments

When it comes to payments, all the transactions were done physically because the system was not automated. Therefore, is not suitable for nowadays as there are so many transactions happens in a day. Company has to make payments when ordering raw materials from suppliers. Sometimes suppliers have to refund when the company request. Customers has to go with physical payments when purchasing items. Most of the customers prefer online shopping these days. So, this method is not totally fine with the customer's side. And also, company has to keep track of all the transactions and enter to the databases manually.

Motivation

When we realized how hard the physical payment method is for this system, we decided to add an online payment form to our web application whenever payment is necessary, and additionally the system will record all the transactions and those will be inserted to the relevant databases automatically. It can make the customers to purchase items more easily through the web and the supplier related transactions also can be done easily and on time.

2. Problem – Time consuming

All the Managers and supervisors must maintain documents manually for every task that done by them. When creating documents, it takes lot of time to gather all the data for those documents. Because humans don't work at one solid rate through the whole day. On other hand managers can't keep track on stocks in real time so they can manage stocks properly.
[1]

Motivation

From the database of our web application, Managers can search data they want very fast and accurately. Automation software is much faster. It works at a consistently high rate and doesn't stop unless you tell it to. So, it's very fast when employees and other supervisors enter data into the system. And we provide export functions for almost all main functions, from that manager can generate reports from the data whenever they want at an instinct.

3. Problem – Data redundancy and storage problems

When everything is done within a manually centered environment, data duplication is a common problem. As the use of stationery increases over time, space should be also increased. Then it is difficult to maintain a large number of documents within a limited space. As well as there is higher time consumption when storing data. Sometimes there were data misplacing and redundant also.

Motivation

Solution for time-consuming and data redundancy and storage problems we are making the database which can keep all the details of the crops and products. When we use the database, we can search any data using the database very quickly. On the other hand, we are hosting the system so we can store our data in the cloud. Maintain database to store data and keep up to date. Manage the finance by showing budget forecasts, updating daily income and outcomes, and salary calculations.

4. Problem – Difficulty of updating details

Continuous updates and changing of details of certain information is regular in a system. Updating system information manually can be a huge issue. When it comes to sectors like employee management, supplier management and customer management, registrations of new users are happening daily. Updating this information manually one by one in separate documents is inefficient. Human mistake in data input is one of the leading sources of accounting problems. According to Bloomberg research, 27.5 percent of companies manually enter inaccurate data into their systems, resulting in tax and accounting errors. [2]

Motivation

Our Cosmetic and sales management system is designed to overcome the issue of difficulty of updating details. By providing proper user interface and easy navigation method user can create, update delete relevant data and information without any issue. Since there are validation methods, errors occurring due to the user inputs are minimal.

5. Problem – Lack of organization of workflow

A major problem faced by manufacturing organizations is the inability to organize the heavy workflow throughout the manufacturing and sales activities. Without proper workflow management in the current manual system, complicated repetitive processes like scheduling productions and completing orders become overwhelming, leading to added stress, disorganization, and poor quality of work.

Motivation

A proper workflow management can be achieved by automating decision making processes and task monitoring processes normally performed by employees. This will provide a sequential order for accomplishing tasks, keep records of previous processes and make future processes repeatable by eliminating heavy analyzations such as checking availability of raw materials necessary for productions.

6. Problem – Security Problems

In a manual system unauthorized access is possible as documents and other details are open for everyone. Because most automated systems need to integrate with other systems to serve your company (whether it's drawing data from another platform or exchanging information with another system), you'll need at least a handful of API connections to make things work. Unfortunately, each of those connections is another potential vulnerability. If you aren't communicating using encrypted exchanges and secured channels, your data could become vulnerable especially if it's all happening in the background. [1] It is a huge problem when it comes to confidential documents such as transaction details, secret formulations of products and bank details. And also misplacing documents is possible here. Destroying the important documents may possible due to natural disasters and threats.

Motivation

As physical documents can be looked up by unauthorized people is big issue for the system, we are planning to make fully automated system with high security. In here only the authorized people can access the confidential documents. Therefore, we can protect confidential information from unauthorized people.

3. Aim and Objectives

Aim

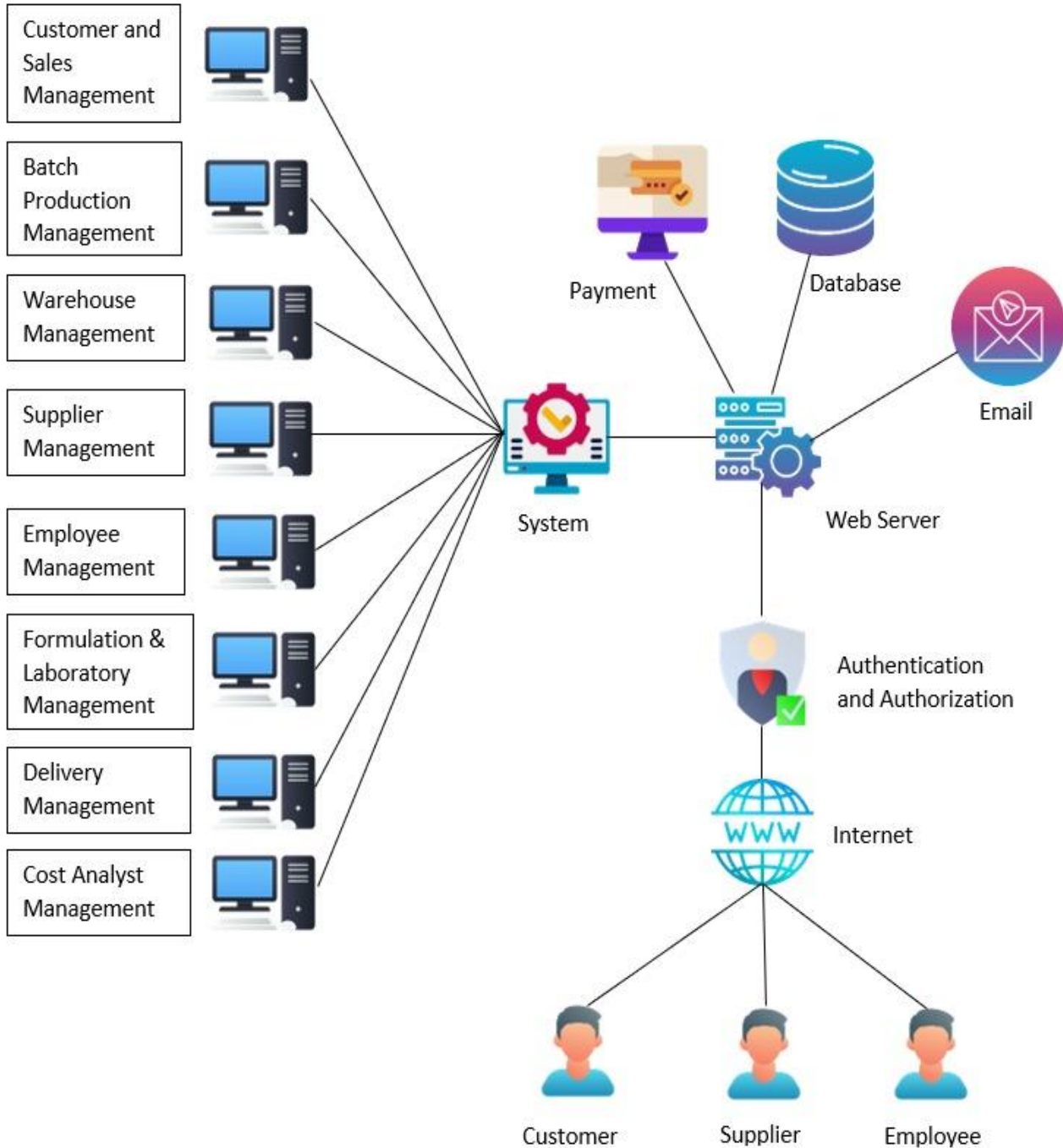
The aim is to produce the greatest amount of output, at the highest possible quality, for the lowest possible amount of input resources, including time and labor. The general aim of this project is to achieve Process optimization in every task of the business from the manufacturing stage up until the products are rendered to the customers.

Objectives

Most effective ways to optimize efficiency at manufacturing plants is to modernize the processes and systematize the workflows of the entire business. Manufacturers need to minimize time-consuming and labor-intensive tasks, reduce material waste, optimize the use of equipment by minimizing damage, simplify their supply chains. [2] and achieve sales goals by use of automated activity measures.

4. System overview

4.0 High level Diagram



4.1 Customer and Sales Management

One of the most important sectors of every production company is Customer and Sales Management. Customer and Sales Management system is designed to manage all the production sales related process and customer management. This system offers an online platform to sell factory products to retail customers as well as wholesale customers. And it allows to manage all the sales related tasks anywhere at any time.

Functional requirements of customer and sales management

Register Customers - This function is about creating an account by registering to the system as a customer. It will create a new customer and separate user profile for each customer.

Ordering Factory Products - Customer can buy factory products using add to cart function and complete the payment via online payment. Whole sales customers can request for bulk orders.

Review and Feedback - Customers can review delivered products and give feedback about the customer service.

Manage Products & Bundles - System allows the sales admin to add, update & delete products/ bundles from the online platform.

Manage Sales Teams - In here system allows the sales admin to add, update and delete sales teams. It allows to create sales teams from selecting sales employees.

Manage Sales Tasks - This system allows sales admin to create and update sales tasks by assigning sales teams for each task.

Generate Sales Reports - System allows the sales manager to generate sales reports according to user preferred timeline.

Non-functional requirements of customer and sales management

- Portability and Compatibility
- Usability
- Reliability and Availability
- Human error Handling

Technical requirements of customer and sales management

- Authentication and Authorization

4.2 Batch Production Management

Batch productions management is an important role in the factory management system. This system aims to provide production scheduling options in a user convenient manner and systematize the workflow to a great extent. Batch production manager is the prominent user of this feature who handles all the production related activities of the cosmetic factory.

Functional requirements of batch production management

Update quantity of raw materials within the production plant - Production manager maintains a separate database to store information regarding raw materials available within the production plant in order to carry out recently due productions.

Schedule a batch production - This is an important feature in the system which allows the production manager to organize the requirements before initializing the production activities. Once a product is taken forward to be scheduled for production, manager can enter details such as target batch quantity and due date where the system displays the production specifications, raw material requirements and labor requirements to proceed with the specific production.

Calculate deficiency in raw materials - Upon scheduling a production, the system allows the production manager to calculate deficient raw materials by analyzing the availability of necessary raw materials.

Raw material requisition - If the system identifies a shortage of raw materials to proceed with a production, administrator should be able to send a request to the warehouse indicating the specific details.

Update and delete a scheduled production - Details of a scheduled production can be updated and under critical circumstances a scheduled production can also be deleted from the system before due date.

Manage productions - Production manager is allowed to update the production status of scheduled activities into different stages such as 'Scheduled', 'On Hold' if the production is overdue when Raw materials are unavailable and 'In progress'. While 'In progress' the system allows the manager to monitor the tasks and submit a detailed report when production is completed.

Search production details - Production manager is able to search details of completed productions and represent them in graphs and chart.

Generate production reports - The system allows to generate a detailed report of production activities carried out during a user specified timeline.

Non-functional requirements of batch production management

- Availability
- Manageability
- Compatibility

Technical requirements of batch production management

- Access control
- Data quality
- Productivity

4.3 Warehouse Management

Warehouse management is an important role in Glamour cosmetic management system. From warehouse management, it allows warehouse managers and Employee supervisors to continuously keep track of stocks accurately in real time. It shows an alert when a product stock is become less than reorder level so managers can reorder those products from suppliers at right time. And it shows the jobs available for employees to done like preparing products for an order. So, employees can quickly engage on those activities and increase the efficiency of warehouse.

Functional requirements of warehouse management

Manage Products - Products are the finished product that send from the factory. Our system allows warehouse manager to insert, update, read or delete those data in the database.

Manage Inventory - The raw materials, Material handling equipment and materials use to packaging purposes are belongs to the inventory. Warehouse manager and employee supervisor can insert, update, read or delete those data in the database.

Manage Orders - Employee supervisor and Warehouse manager can view the orders that are made by customers, and they can update the progress of those orders.

Manage Employees - Employee supervisor can view all the employees in the warehouse and availability of them. According to the availability of employees he can assign them to different jobs by using this system.

Manage Expenses - This allows the Employee supervisor to add, update or view all expenses occur in the warehouse and he should generate reports from those data and present it to the warehouse manager.

Make Requests - When stocks are become lower than reorder level this will allows Warehouse Manager to request a stock from relevant suppliers.

View History - Warehouse manager can view the history of all activities that happen in the warehouse, and he can clear the history if he wants. When a someone add an item or delete an item system automatically add that task to the history.

Search - Warehouse manager and employee supervisor can search data from their tables quickly by entering relevant keywords.

Generate Reports - This allows Warehouse Manager and Employee supervisor to generate reports by selecting the data. Then system will provide a downloadable report from those data.

Non-functional requirements of warehouse management

- Speed
- Scalability
- Security

Technical requirements of warehouse management

- Maintainability
- Authentication
- Authorization

4.4 Supplier Management

Suppliers play a large role in supplying raw materials and machineries related products in a manufacturing company. Through our web application we can manage all the suppliers and it allows to make orders according to the stock's availability of our warehouse. This system covers purchasing orders, returning products, sending invoices and receipts and generating reports.

Functional requirements of supplier management

Request order - Supplier manager has the ability to view the warehouse requests. Then he/she can choose a supplier according to the product category they sell, so that the supplier manager can request the products from the supplier.

Accept/Reject orders – According to the availability of stocks, suppliers can accept or reject the request. Supplier sends the Total price of the order if the order is accepted.

Purchase order – Supplier manager can continue the order and make payments when the order request is accepted.

Manage suppliers – The supplier manager is responsible for managing the suppliers. Suppliers can join the company through a registration form. Manager can accept and allow them to log in to the system in order to fulfill security needs. Supplier manager can remove the suppliers from the system as well.

Return products – When the company is not satisfied with the quality of purchased product, supplier manager is responsible for returning the product. The application provides the ability to get refunded or get another product from the supplier. Databases will record the changes.

Order history – Both the Supplier and Manager should have the ability to view the order history, so that they can view previous orders and the order status anytime. All the orders done by the manager is recorded in the order history.

Generating reports – System has the ability to generate reports on all the purchased orders and transactions, so that they can be handed over to the sales manager.

Manage products – Supplier can add, update, delete the products that he sells, into the system. This is useful for the supplier manager when making orders from suppliers.

Non-functional requirements of supplier management

- Availability requirement
- Reliability requirement
- Manageability requirement

Technical requirements of supplier management

- Privacy
- Internal controls

4.5 Employee Management

This function maintains all the employee details. In this system the employees are required to register of the system first. It is needed to provide details such as employee name, address, contact number, ID No, email, etc. After collecting the details, the admin (employee manager) should store those details into the database. He should make the user profiles for employees by adding their details. After finishing this process, the employees can log into the system by entering their login credentials. If the employees can log into the system successfully, employee can access their user profiles. The admin needs to add salary details, record items which employee duty on /off in working hours, OT hours, and the number of holidays taken by employees. And when they work overtime, they must mark it in their profiles and then employee manager calculates them and generate final salary. Finally, it can be generated relevant reports.

Functional requirements of employee management

➤ Admin should maintain main parts of this process

Register Employees - Collecting employee details of each employee and register one by one to the system. It will be created separate user profile for each employee.

View all Employee details - only Admin can view all employees' details and it can be edit, update or delete details from the database.

Preparation of salary – There are two types of employees working in this company.

Staff members - Staff members salary is a fixed salary based on their designation. According to the designation they will receive basis salary. As well as add cost of living and add other allowances according to their performance. Total salary is made by multiple calculation.

Skilled and unskilled labors - skilled labors have fixed salary with cost of living. But unskilled labors have daily fixed salary. So, their monthly salary will be based on their attendance. Daily attendance of labors will be recorded from the employee registration system to the database. Then the system will calculate their basic salary for the month based on their attendance. But total salary will be considered after the calculation as given above.

Employee leave - After requesting leave by the employee, manager will be decided how to approve it. He can be approved or not considering the reason given by the employee.

Attendance details - After entering data to the system and processing admin can be view all attendance details.

➤ **After processing the system**

Employee can view their profile - using the user ID and emp password employee can view their user profile.

Apply leave – When required to request leave, employee should fill the leave form and submit.

Attendance - After employees report their attendance daily (on/off) attendance report will create automatically.

After processing the system necessary reports can be obtained.

Non-functional requirements of employee management

- Usability
- Availability
- Manageability

Technical requirements of employee management

- Access control
- Data quality

4.6 Formulation and Laboratory Management

Chemist plays an important role in formulation and laboratory management in Glamour cosmetic management system. In addition to adding new formulations to the system we give product formulation testing facilities by analyzing the test data with the presence of some general harmful chemicals like aluminum, mercury in harmful compositions and predicting whether the suitability of the product for human usage.

Functional requirements of formulation and laboratory management

Add new product formulation – Chemist has the ability to add formulations of newly discovered products. These product details are added to the database and system will preview it.

Update product formulation – After previewing the data, chemist can do necessary updates if needed and add new features to existing products. And these details are updated in the relevant tables in database

Delete product formulation – After previewing the data, if chemist need to delete any product system will allow to do that.

Test product formulations – Before adding product formulation to the system chemist can carry out a general test whether some general harmful chemicals are containing in a harmful composition through the system. System will suggest alternatives based on the test results.

Search and view product details – Chemist can search and view product details to get a detailed description and better understanding about the product formulation. This will be helpful in doing updates and deleting unnecessary products.

Generate reports – System has the ability to generate lab test reports, and the monthly activity report including newly added updated and deleted product formulas.

Non-functional requirements of formulation and laboratory management

- Usability
- Manageability
- Security
- Data integrity
- Availability

Technical requirements of formulation and laboratory management

- Access control
- Data quality

4.7 Delivery Management

Delivery management is an administrator interface build to handle functions related to delivery vehicle management and order delivery management. The system allows the user to sort and access retail and wholesale orders systematically so that a large number of orders can be handled easily. Here the system automates the process of assigning delivery charges and packaging charges making it easy for the delivery manager to complete deliveries successfully on time.

Functional requirements of delivery management

Manage delivery vehicle - Delivery manager should be able to register new delivery vehicles and driver details in the system. These details can be updated or deleted when necessary.

Sort wholesale and retail orders - System allows the delivery manager to sort due orders under different criteria such as latest and oldest, so that he can prepare the oldest orders for delivery and continue systematically. He can also sort the orders according to delivery region in order to proceed with delivery activities.

Assign delivery vehicles - System allows the delivery manager to check the availability of delivery vehicles and assign a vehicle to a selected list of orders. The delivery region and the type of order (retail and wholesale) is considered in this process.

Assign packaging charges - Delivery manager is allowed to set and update packaging cost rates according to different weight ranges of packages. System will implement these data, calculate and assign packaging cost for each order.

Assign delivery charges - Delivery manager is able to set and update delivery cost rates into the system considering constantly changing fuel prices and other factors. The system checks the delivery address, analyze distance and calculate the delivery charges according to initially entered rates.

View and update order status - System provides an interface to the customer to track their order where the delivery manager can update the order status into different stages such as 'ready for delivery', 'order dispatched' and 'Delivered'.

Generate reports - Delivery manager is able to generate reports on details such as vehicles actively operated in delivery activities within the month and details of orders successfully dispatched within the time period. These reports can be downloaded and shared when necessary.

Non-functional requirements of delivery management

- Usability
- Availability
- Manageability

Technical requirements of delivery management

- Access control
- Data quality

4.8 Cost Analysis Management

In this function keep a record of all the financial performances of the company in order to calculate the monthly profit according to the incomes and expenses throughout the year. The main task of this function is to apply the production cost formula based on the direct and indirect labor costs, material costs as well as factory overheads obtained from relevant management to account for the unit costs for each product. The system then analyzes expected vs actual costs.

Functional requirements of cost analysis management

Calculate monthly profit – Finance manager calculates the monthly profit according to the incomes and expenses throughout the year. so that the finance manager can generate financial reports easily.

Production cost formula – The Finance manager applies all the factory costs such as direct and indirect labor costs, material costs as well as factory overheads. The finance manager can obtain from relevant management to account for the unit costs for each product.

Manage direct materials - The raw materials that get transformed into a finished good by applying direct labor and factory overheads are direct in cost accounting. Direct materials are those raw materials that can be easily identified and measured.

Manage direct labor - These costs include the wages and other benefits paid to the factory staff or the employees involved in manufacturing goods. For example, the worker's salary who works in the factory to manufacture goods is the direct labor cost, but the office staff salary is the administrative cost.

Factory overheads - These costs include all the directly linked to the production of goods except direct material and direct labor costs. An example of the same is the materials not directly allocated to the product but are used in products. The wages are paid to the overhead manufacturing employee who is not working directly for manufacturing overhead.

Generate reports – The system then analyses expected vs actual costs to determine the profit or loss of the business for a certain time period and generate reports.

View History – The finance manager views the history of works done in the cost analysis management

Non-functional requirements of cost analysis management

- Usability Requirement
- Serviceability Requirement
- Manageability Requirement
- Security Requirement
- Data Integrity Requirements
- Availability Requirement
- Scalability Requirement
- Reliability Requirement

Technical requirements of cost analysis management

- Access control
- Data quality

5. Literature review

5.1 Paper based records

Keeping all necessary records of transactions, employees, suppliers, preparation methods of products in physical files is called as paper-based records. This is one of the basic methods that can be used as a solution. Manually recording transaction details, employee details, product preparation methods, details about suppliers, details about product delivery will take place in here.

Pros	Cons
Cheaper	High risk to be damaged
Easy to record	High risk to be misplaced
No technical knowledge needed	Low security. Everyone can access
	Difficult to filter out important data
	Problems associated with storing

In this approach, physical files containing important details are at high risk of being damaged and misplaced. And it is difficult filter out data needed in an urgent situation. And this approach is more time consuming in recording and retrieving data.

5.2 Microsoft office

Microsoft office is an extremely versatile option when it comes to documenting. We can use Microsoft office for saving and printing reports and Microsoft excel for storing and keeping records such as transaction records, delivery details, supplier and employee details, preparation methods of products.

Pros	Cons
Data can be stored in a well-organized manner	Not suitable in collaborative working
Easy to record	Less reliability
Not much technical knowledge needed	Low security. Everyone can access
Available at any time	Time consuming for entering and filtering out data

Data stored in excel sheets can be corrupted due to unexpected system failures and as there is no proper security important data such as preparation methods of products and transaction details can be accessed by unauthorized parties can cause many troubles.

And also keeping records and filtering out data is more time consuming in this approach.

As a solution for above mentioned drawbacks in these approaches we have suggested more reliable and efficient solution to completely handle all the tasks efficiently.

6. Methodology

6.1 Development tools and technologies

Requirement Engineering methods

We gathered requirements mainly through interviews with client and questionnaires. After that we classified requirement into groups and prioritize them accordingly. Requirement specification is done with several documents such as use case diagrams and creating product backlog. After that we validated the gathered requirements by providing prepared documents to the client.

Design methods

When considering designing methods, a wireframing software is used for UI planning and sketching rapid wireframes. In that aspect we use Mock Flow which facilitates team collaborate in a systematic and organized manner. We also use Figma as a UI/UX design tool to identify all the possible options and find the most effective, user-friendly way to express our interface idea. Unlike other UI/UX design tools like Sketch and Adobe XD, Figma allows you your projects from any platform without having to install software or purchase multiple licenses. [3] Color hunt is an online tool which we used to select the most suitable color pallet to be applied in designing the web application This helped us to achieve an interaction of colors in the design through complementation, contrast and vibrancy.

Development and Integration methods

In this Information Technology Project, we are planning to use different kind of tools and technologies throughout the project to implement a great web application. In that scenario we select those tools and technologies by considering the newest technologies used in industry level.

When developing this kind of webapp by a group, project management is a very important task. We use Trello to create Kanban boards. A Kanban board is an agile project management tool designed to help visualize work, limit work-in-progress, and maximize efficiency (or flow). It can help both agile and DevOps teams establish order in their daily work.

We use Django as the main framework to build our system. Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. So, we have to use python language as well for developing the backend of our system.

Then we use MYSQL as the Database of our system. Many of the world's largest and fastest-growing organizations rely on MySQL to save time and money powering their high-volume Web sites and business-critical systems.

As the frontend we use Bootstrap framework, HTML, CSS, and JavaScript. Bootstrap is a free, open-source front-end development framework for the creation of websites and web apps. We use HTML to create our templates and use CSS and JavaScript to make them more user friendly.

For integration and version control, we use GIT and GitHub. Git is a version control system that lets you manage and keep track of your source code history. And GitHub is a cloud-based hosting service that lets you manage Git repositories, by using GitHub it's very easy to integrate and manage our project.

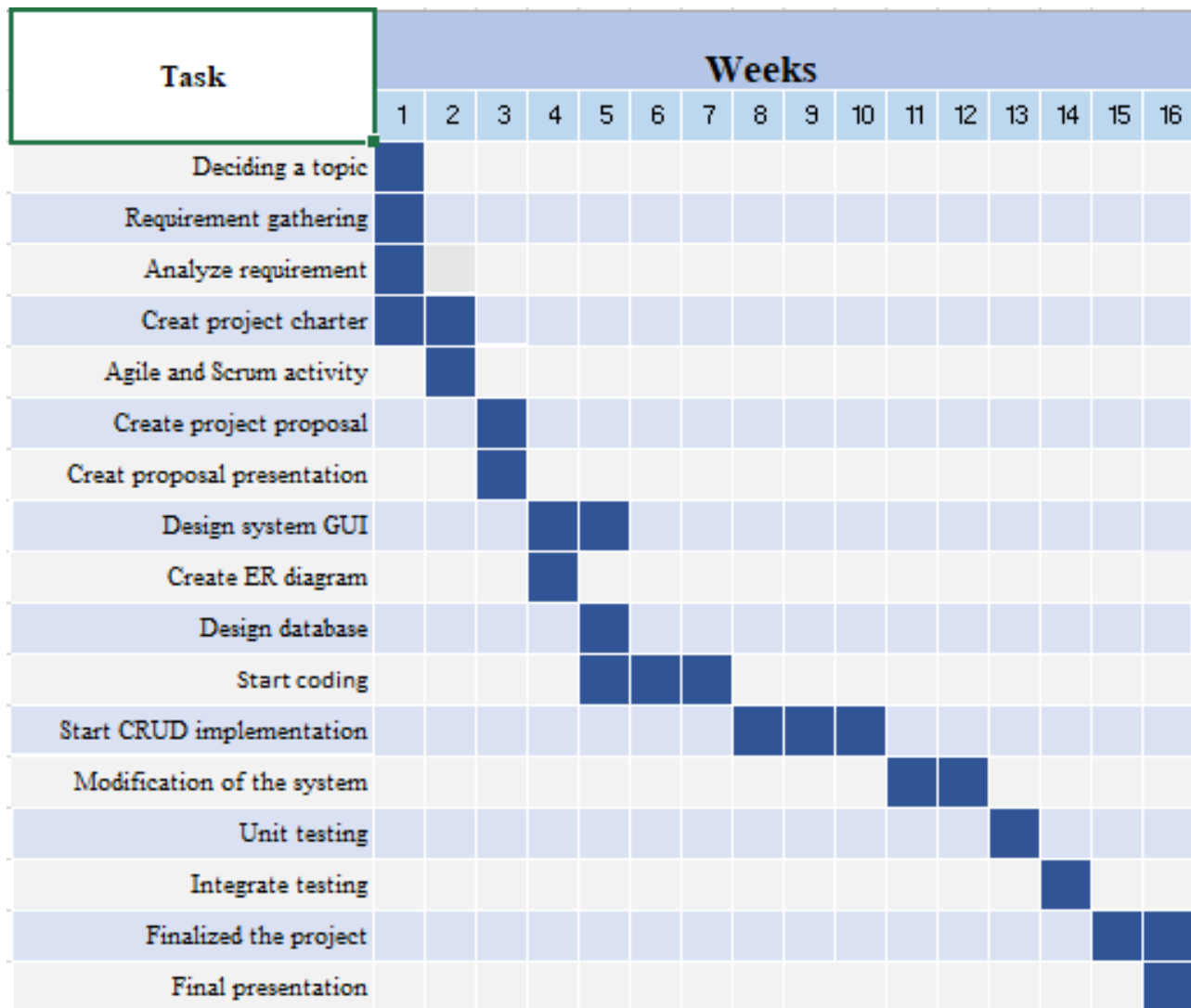
We use PyCharm, VS Code, MYSQL Workbench, DataGrip, GitHub Desktop as the IDE's for develop our system. PyCharm is the Main IDE we use for developing. It is a very powerful IDE for developing python related projects. VS Code is also a very useful IDE in every aspect. Workbench and DataGrip are also powerful IDEs for Managing database. GitHub Desktop comes in a handy way when integrate our works and it's very easy to use.

This all technologies are somewhat new to us, so there will be errors and other unknown things. So, we use Stack Overflow and Django Documentation to avoid and solve those issues. Stack Overflow is a question-and-answer website for professional and enthusiast programmers. It's very easy to find any answers for our problems when occur in developing by using Stack Overflow. Also, Django Documentation is also very helpful to learn all the things about Django. [5] [6]

Testing methods

We are using informal testing method to test our web application in different levels. Informal testing is testing without a stated set of objectives or strategies. Informal testing is based on the tester's instincts and expertise. Experienced engineers can be productive in this mode by mentally performing test cases for the scenarios being exercised.[3] We will test our web application function wise. We will perform our testing methods in three different levels. Starting from the first one, Unit testing, Integration testing and System testing. We will test single programs of the functions via unit testing once it is completed, we will move to the integration testing by integrating all the components of the web application. Integration test will verify whether the system is working after the collecting all the functional components. Then we will proceed with the system testing where it will decide the web application works as a complete system. We will complete these tests by manually entering inputs and check whether the outcome is exactly same as the expected one. [8]

6.2 Gantt Chart



6.3 Work breakdown structure

Student ID	Student Name	Work Allocated
IT21060694	Weerasooriya K.A	Implementing the Customer & Sales Management System. <ul style="list-style-type: none">• Register Customers.• Ordering Factory Products.• Review and feedback.• Manage products and bundles.• Manage Sales team.• Manage sales tasks.• Generate sales report.
IT21037610	Wanniarachchi W.D.D.M	Implementing the Batch Production Management System. <ul style="list-style-type: none">• Update quantity of raw materials within the plant.• Schedule a batch production.• Calculate deficiency in raw materials.• Raw materials requisition.• Update and delete a scheduled batch production.• Manage productions.• Search production details.• Generate production report.
IT21052606	Ranaweera G.R.D	Implementing the Warehouse Management System. <ul style="list-style-type: none">• Manage products.• Manage inventory.• Manage orders.• Manage employees.• Manage expenses.• Make requests.• View history
IT21041402	Wickramanayake V.P.P	Implementing the Supplier Management System. <ul style="list-style-type: none">• Request order.• Accept/Reject orders.• Purchase orders.• Manage suppliers.• Return products• Order history.• Manage products• Generating reports

IT21073496	Nadeera A.A.D.P	Implementing the Employee Management System. <ul style="list-style-type: none"> • Register employees. • View all employee details. • Preparation of salary. • Employee leave. • Attendance details. • View employee profile
IT21073496	Priyabandu H.K.S.N	Implementing the Formulation and Laboratory Management System. <ul style="list-style-type: none"> • Add new product formulation. • Update product formulation. • Delete product formulation. • Test product formulation. • Search and view product details. • Generate reports.
IT21076220	Galappaththi A. I.	Implementing the Delivery Management System. <ul style="list-style-type: none"> • Manage delivery vehicle. • Sort wholesale and retail orders. • Assign delivery vehicles. • Assign delivery charges. • View and update order status. • Generate reports.
IT21510380	Kularathna D.G.J.C	Implementing the Cost Analysis Management System <ul style="list-style-type: none"> • Calculate monthly profit • Production cost formula • Manage direct materials • Manage direct labor • Factory overheads • Generate reports • View History

7. **References**

- [1] [Online]. Available:
<https://www.thinkautomation.com/productivity/everything-wrong-with-manual-data-entry/>.
- [2] [Online]. Available:
<https://www.accountingweb.com/aa/auditing/human-errors-the-top-corporate-tax-and-accounting-mistakes>.
- [3] [Online]. Available: <https://www.isaca.org/resources/news-and-trends/isaca-now-blog/2018/automated-systems-and-security-threats-and-advantages>.
- [4] [Online]. Available:
<https://www.hashmicro.com/blog/overcoming-common-manufacturing-challenges/#h3>.
- [5] [Online]. Available: <https://www.coursera.org/articles/figma-vs-sketch-vs-adobe-xd> .
- [6] [Online]. Available:
https://en.wikipedia.org/wiki/Stack_Overflow.
- [7] [Online]. Available: <https://www.mysql.com/why-mysql/>.
- [8] [Online]. Available:
<http://www.softwaretestingstuff.com/2008/12/software-testing-techniques-and-levels.html>.