

## Pizza Mania

Group ID: ITP\_WD\_B07\_G05

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# Introduction

## OUR COMPANY

Pizza is a beloved food worldwide, and the demand for it is on the rise. With the increasing popularity of online food ordering and delivery, it has become essential for pizza shops to have a strong online presence. **Pizza Mania** is a business which provides a user – friendly interface for customers to browse menus, place orders, and track their deliveries. At the same time, it offers a powerful back – end system for shop owners to manage their orders, inventory, and finances. With our system, Pizza Mania can streamline its operations, reduce errors, and increase its efficiency. We can also expand our customer base by reaching out to new customers who prefer to order food online.

## ABOUT THE PROJECT

Our project is aimed at developing a comprehensive software solution for pizza shop owners and managers to streamline their business operations. The system will allow them to efficiently manage all aspects of their pizza shop, including inventory management, order processing, sales tracking, employee management, and more.

With the help of our pizza shop management system, pizza shop owners and managers can have a better understanding of their business and make informed decisions to improve efficiency, reduce costs, and increase profitability. The system will provide real-time data and analytics, making it easier for them to identify trends and make adjustments accordingly. Our system will be designed to be user-friendly and easy to navigate, with a simple and intuitive interface that can be easily learned by employees. We will also ensure that the system is secure and reliable, with measures in place to protect data and prevent unauthorized access.

## 2.a) Problem Statement

### **Limited Reach**

The pizza shop may not be able to reach a wider audience beyond its physical location.

People who live outside of the pizza shop's delivery radius may not be able to order.

### **Long Wait Times**

During busy periods, the pizza shop may have long wait times for customers who want to place an order.

### **Limited Payment Options**

The pizza shop may only accept cash or in-person card payments, limiting the payment options available to customers.

### **Limited Menu Access**

Some customers may not have access to a physical menu and may not know what options are available to them.

### **Order Errors**

Orders may be misheard or incorrectly entered, leading to customer dissatisfaction and potential loss of business.

## 2.b) Benefits

1. **Enhanced quality and reliability:** Addressing software development problems can result in better quality and more reliable software products, which can lead to increased customer satisfaction, reduced maintenance costs, and improved brand reputation.
2. **Cost savings:** Addressing software development problems can help clients reduce their development costs by minimizing rework, improving resource utilization, and reducing development time.
3. **Better collaboration and communication:** Addressing software development problems can help clients establish more effective communication and collaboration processes, leading to improved teamwork and increased knowledge sharing among team members.
4. **Improved efficiency and productivity:** By identifying and addressing software development problems, clients can optimize their development process and reduce the time and resources required to develop high-quality software products.
5. **Security:** Addressing software development problems can help clients improve the security of their software products, reducing the risk of cyberattacks, data breaches, and other security threats. This can help protect sensitive information and prevent costly legal and financial repercussions.
6. **Customer satisfaction:** Addressing software development problems can help clients create software products that better meet the needs and expectations of their customers, leading to higher levels of customer satisfaction and loyalty. This can help improve retention rates and attract new customers through positive word-of-mouth.

## 3.a) Aims

### **Streamline Order Processing:**

The system should allow customers to easily place their orders and enable staff to efficiently process them.

### **Manage Inventory:**

The system should keep track of ingredients and notify staff when supplies are running low, so they can order more in a timely manner.

### **Increase Customer Engagement:**

The system can include features that encourage customers to return, such as loyalty programs, personalized offers, or the ability to save their favorite orders.

### **Improve Delivery Operations:**

The system should optimize delivery routes, provide real – time tracking for customers, and enable staff to efficiently manage the delivery process.

### **Enhance Data Analysis:**

The system can collect and analyze data on customer preferences, sales trends, and other factors to help our shop make informed business decisions.

### **Ensure security and privacy:**

The system should protect customer data and financial transactions from unauthorized access or theft.

## 3.b) Objectives

### **Reduce order processing time**

- 90% of orders are processed within 5 minutes of being placed.

### **Increase customer satisfaction**

- Achieve a customer satisfaction rating of 4.5 out of 5 stars on online review platforms.

### **Improve inventory management**

- Maintain a maximum of 10% inventory waste by accurately forecasting demand and minimizing overstocking.

### **Increase sales through customer engagement**

- Achieve a 20% increase in sales from repeat customers through a loyalty program and personalized offers.

### **Optimize delivery operations**

- Reduce average delivery time by 15% by optimizing routes and increasing efficiency.

### **Increase profitability through data analysis**

- Achieve a 10% increase in profitability by analyzing sales trends, customer preferences, and operational costs to make informed business decisions.

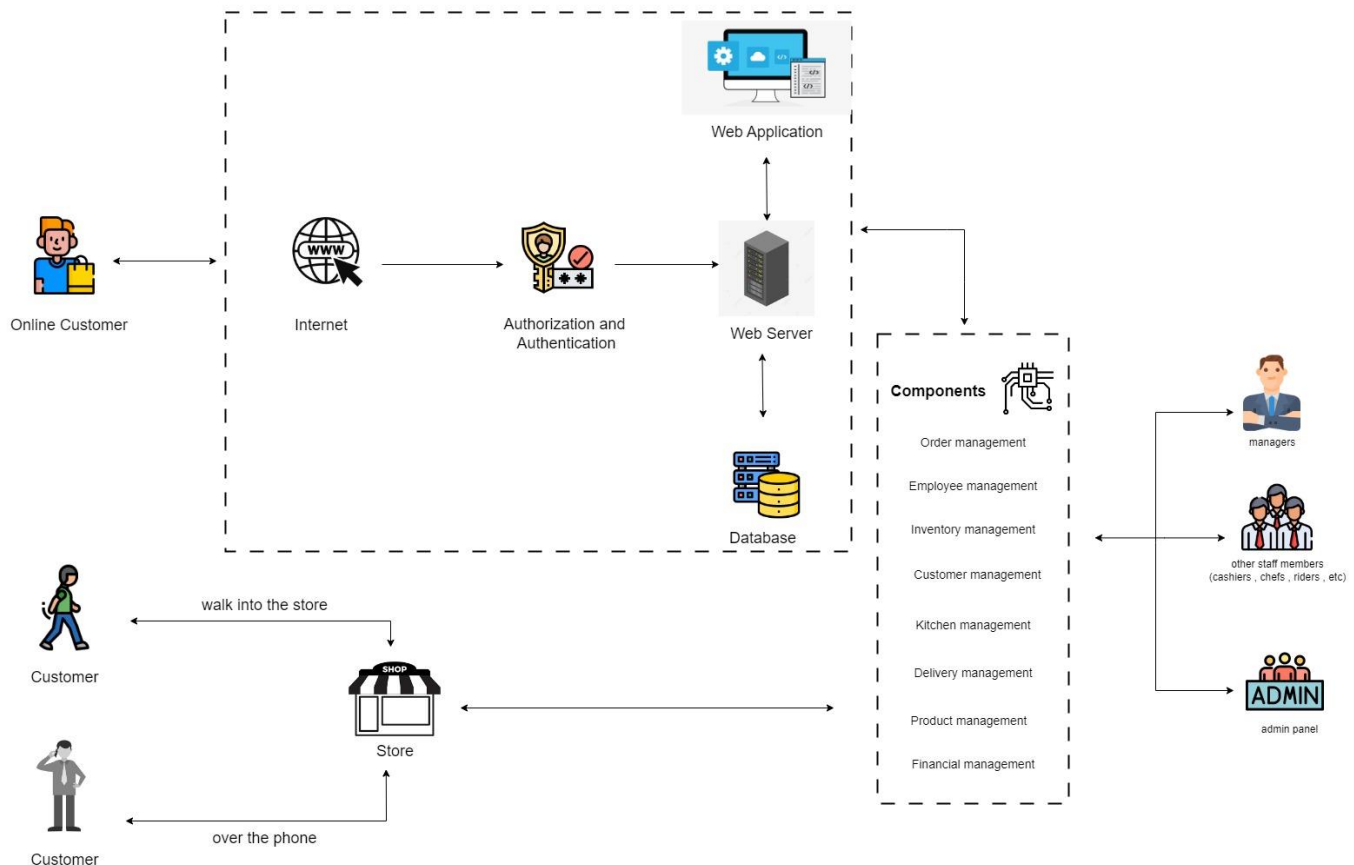
### **Ensure security and privacy of customer information**

- Maintain compliance with industry standards and regulations, such as the Payment Card Industry Data Security Standard (PCI DSS), to protect customer data from theft or unauthorized access.

## 4. System Overview

Following are the main components that we can identify in our system.

1. Order management
2. Customer management
3. Employee management
4. Delivery management
5. Inventory management
6. Financial management
7. Product management
8. Kitchen management



## Employee Management

An employee management system is an essential component of any business, including our pizza shops , “Pizza Mania” . Managing a team of chefs, riders, cleaning staff, waiters, cashiers, and managers can be challenging, especially when there are many employees with varying schedules and responsibilities. Our pizza shop management system will have a robust employee management module that will help pizza shop owners and managers to efficiently manage their staff. The module will include the following features.

- 1.Employee profiles:** The system will allow managers to create individual profiles for each employee, including their name, contact information, position, salary, and work schedule and amount of holidays that they took.
- 2.Manage Employees:** The manager can add new employees , Fire current staff members , Edit current employee details and view current staff details (CRUD).
- 3.Attendance tracking:** The system will enable managers to track employee attendance and working hours, including clock-in and clock-out times, breaks, and overtime. It is useful when calculating the salaries and year end bonuses.
- 4.Shift scheduling:** The system will have a built-in scheduling tool that will allow managers to create and manage employee work schedules for chefs, riders, cleaning staff, waiters, cashiers, and managers. This will help ensure that the right number of staff is available during peak hours. An automated shift swap feature could be added to the system, which would allow employees to request to swap shifts with other employees. The system could automatically notify managers of the request and handle the approval process, freeing up time for managers to focus on other tasks.
- 5.Task assignment:** The system will allow managers to assign tasks to individual employees or groups of employees, such as preparing orders, delivering pizzas, cleaning tables, and restocking inventory.
- 6.Customizable Role-Based Access:** Customizable role-based access could be added to the system to allow managers to control which employees have access to certain areas of the system. For example, a cashier may only need access to the sales and order processing modules, while a manager may need access to all modules.
- 7.Performance tracking:** The system will enable managers to track employee performance by monitoring their productivity, quality of work, and customer service skills. Real-time performance metrics could be added to the employee management system to provide managers with up-to-date information on employee performance. This could include metrics such as order completion time, customer satisfaction ratings, and sales per hour. Later these valuable information will be used to choose the employee of the month , rising employee of the year.



**8.Integrated Messaging System:** An integrated messaging system could be added to the employee management system to facilitate communication between managers and staff. This would allow managers to quickly and easily communicate important information to all employees, such as changes in the schedule or inventory updates.

## Customer Management

The customer management system provides the “Pizza Mania” shop a range of activities that are aimed at ensuring that customers have a positive experience and are satisfied with the products and services provided by the pizza shop.

**Customer Service:** Pizza Mania provides an excellent customer service by addressing customer queries, concerns, and complaints in a timely and professional manner. This can include responding to customer inquiries via phone, email, or social media.

**Loyalty Programs:** Developing and implementing loyalty programs to incentivize repeat business from customers. This can include offering discounts, free items, or rewards points for each purchase. Also, we provide former customers with our loyalty card so that they can access timeless benefits.

**Customer Feedback:** Soliciting and responding to customer feedback to improve the overall customer experience. This can involve conducting customer satisfaction surveys, monitoring social media for customer feedback, and responding to reviews on necessary platforms. Also, customers can rate our employees.

**Register New Customers:** Customers can create, edit, or delete their account maintaining accurate customer databases, that include contact information, order history, and customer preferences. This information can be used to personalize the customer experience and improve customer retention.

## Order Management

The system is designed to manage orders for Pizza Mania restaurants, allowing managers to take orders from customers and fulfill them quickly and accurately. The system will allow managers to note the type of order as take-away, dine-in, or delivery, and manage orders, take payment, and generate bills. The system will be used by Pizza Mania managers at various locations to manage orders from customers who visit the restaurant, call in orders, or place orders online. The system will interface with a variety of hardware components, including point-of-sale terminals, cash registers, and printers, as well as various software applications, including the Pizza Mania website and delivery management software.

The main key features of the system will include,

**Order taking:** Managers will be able to take orders from customers in person, over the phone, or online, and record the order details, including the customer's name, address, and payment information.

**Order management:** Managers will be able to manage orders and track their progress, from the time they are placed to the time they are fulfilled. The system will provide real-time updates on the status of each order, allowing managers to take action to ensure timely delivery or pick-up.

**Payment processing:** The system will enable managers to process payments from customers using a variety of payment methods, including cash, credit cards, and mobile payment apps.

**Bill generation:** The system will generate bills automatically for each order, ensuring that the correct amount is charged and that all necessary details are included.

**Assign orders:** The system will also include an interface to communicate the order details to the kitchen staff. It will provide the order details to the kitchen staff to begin preparing the order.

## Inventory Management

**Restocking:** This is first component of inventory management system. this component Identifying the ingredients and supplies need to make pizzas and placing orders with suppliers to make sure that inventory is always fully stocked for customer demand.it is essential to ask from supplier and order only right amount of inventory items to avoid overstocking and financial loss.

**Tracking:** This means keep tracking inventory levels to check stock is sufficient to meet customer needs.it is important to have a good system to calculate inventory to avoid out of stock.so there is a popup alert to remind stock outs. this help to avoid lost sales and dissatisfied customers.

**Monitoring:** This means analyzing inventory levels to identify what ingredients are mostly important for customer demand.it mostly depend on daily or weekly trends.so this information can be used for things like change order quantities.it will help to reduce the waste.

**Storage:** This means store inventory items in a proper way to keep quality and freshness. This also help to reduce waste and stop wasting money.

**Generating reports:** This includes reports about the inventory data. This will automatically create at the end of month. Inventory manager sending it to supplier and admin also the kitchen management. This will help supplier to restock items and also shop owner to make decision about ordering quantities to increase profitability.

## Kitchen Management

Kitchen management system helps the shop and its staff to manage their operations more efficiently. It consists of tools that manage menu items, Request supplies and ingredients from the inventory, view order information, Mark the orders as ready after they are prepared, and generate certain reports.

**View order information:** This function shows incoming orders, and it helps kitchen staff to prepare the required meal. Also, the kitchen staff can give how long it will take to prepare the meal and staff can inform the customer after the meal is ready. Which can help to improve customer satisfaction.

**Request supplies from inventory and keep a record of supplies:** This can alert the kitchen manager when supplies or ingredients are running low or depleted. So, the manager can request certain items from the inventory through the system. Also, this system can keep a track of supplies that restore or exists in the kitchen. The kitchen manager must update the record after the kitchen received supplies from the kitchen.

**Manage menu items:** When some ingredients are running low there can be limitations or unable to make certain meals. So, kitchen staff needs to inform that certain meal is not available at this time to the customers. So, they won't be able to order the meal. So, kitchen staff can request to make the particular meal as unavailable in the menu through the system.

**Generate reports:** This system can record what supplies that requested from the inventory, what orders that received, and what time they took to be prepared. And the system can make a report from this information.

## Financial Management

A financial manager is a professional responsible for managing the financial operations of a company or organization. Financial managers are responsible for creating and implementing financial plans, managing budgets, making investment decisions, analyzing financial data, and ensuring that financial reports are accurate and up to date.

**Cost Analysis:** Conduct a detailed cost analysis of the pizza shop, including expenses such as rent, equipment, inventory, utilities, and staffing. Make sure to include both fixed costs (such as rent) and variable costs (such as food and labor) and discuss how you plan to manage these costs over time.

**Break-Even Analysis:** Conduct a break-even analysis to determine how much revenue the pizza shop needs to generate to cover all its costs and start making a profit. This can help you to set prices, evaluate marketing strategies, and determine other key business decisions.

**Compensation Structure:** Financial manager is updating salary range, bonuses, benefits, and any other incentives. This should be based on industry standards, the manager's level of experience, and the responsibilities of the role.

**Generate financial report:** Financial manager is creating a report of employee salary changes like increasing and decreasing salaries. And also, he is creating a detailed report of profits, losses and cost of ingredients of foods and other supplies.

**View employee salaries:** When select on any employee in the shop, financial manager can view detailed report of employee salaries.

## **Delivery Management.**

Our pizza shop system believes that a delivery management system will help us optimize our delivery operations, improve efficiency, and enhance our overall customer experience. The primary objective of this component is to implement a delivery management system that will enable us to manage our delivery operations, track delivery orders, optimize delivery routes and processes, and respond to customer inquiries and complaints regarding deliveries.

### **Update and enter new customer address.**

Customer can update their location whenever that needed. They can view what place their selected for the order. Customer checked their address and can continue or cancel their orders. After the delivery panel the customer can enter the payment panel.

### **Package assigns to riders.**

After confirm order package will assign to our pizza mania riders will drop the orders to relevant customer address and take money and sign from customer. Then rider can update delivery status as completed.

### **Rush hour delivery.**

Rush hour delivery in rush hours system will auto check all order delivery address and group them and assign to all orders to one rider which has same location range.

### **Generate the report.**

Generate the report about daily deliveries and sent to admin. Delivery manager can view daily report.

### **Order Tracking.**

Delivery manager and customer can view and track the order in real time.

## Product management

Customization options: Offering customers the ability to customize their pizzas with different toppings, sauces, and crust options. This can require developing a system to manage customer requests and ensure that they are accurately fulfilled.

**Menu planning:** Developing and updating the menu to include new and innovative pizzas that meet customer preferences and market trends.

**Quality control:** Ensuring that pizzas are consistent in taste, quality, and presentation by implementing quality control measures and training staff on quality standards.

**Production scheduling:** Developing and implementing production schedules to ensure that pizzas are prepared and delivered on time and to the right specifications.

**Marketing:** Developing and implementing marketing strategies to promote the pizza shop's brand, menu offerings, and promotions.



## Non - functional requirements

**Performance:** The system must be fast and responsive, with minimal lag or delays when processing employee data or generating reports.

**Security:** The system must be secure and protect employee data from unauthorized access or theft, with features such as user authentication, password protection, and data encryption.

**Scalability:** The system must be scalable to accommodate growth in the pizza shop's employee base, with the ability to handle large amounts of data and users.

**Reliability:** The system must be reliable, with high availability and minimal downtime, to ensure that employee data is always accessible and up to date.

**Usability:** The system must be easy to use and intuitive, with a user-friendly interface that requires minimal training for employees and managers.

**Accessibility:** The system must be accessible to all employees, regardless of their physical abilities, with features such as adjustable font sizes and compatibility with screen readers.

**Integration:** The system should be able to integrate with other third-party software or systems used by the pizza shop, such as accounting software, delivery platforms, or social media platforms.

## 5.Literature review

Our pizza shop management system has several unique features that set it apart from other basic, less technical pizza shop systems [1]

**Comprehensive Functionality:** Our pizza shop management system has a comprehensive suite of features that cover all aspects of pizza shop management, including inventory management, order processing, sales tracking, employee management, and more. This makes our system a one-stop-shop for pizza shop owners and managers, and eliminates the need for them to use multiple systems to manage their business.

**Customizability:** Our system is highly customizable, which allows pizza shop owners and managers to tailor the system to their specific needs. They can choose which features they want to use, and configure the system to match their business processes.

**Scalability:** Our pizza shop management system is scalable, which means it can grow with the business. As the business expands, the system can be easily expanded to accommodate the additional workload.

**User-Friendly Interface:** Our system has a user-friendly interface that is easy to learn and use. This means that pizza shop owners and managers can quickly and easily train their staff on how to use the system, which reduces the learning curve and increases productivity.

**Real-Time Analytics:** Our pizza shop management system provides real-time analytics, which allows pizza shop owners and managers to make informed decisions based on up-to-date data. This can help them identify trends, adjust operations, and make decisions that will improve the efficiency and profitability of their business.

**Integration with Third-Party Apps:** Our system could be integrated with third-party apps such as delivery platforms, accounting software, and marketing tools. This would allow pizza shop owners and managers to streamline their operations, and access all their business data in one place.

**Predictive Inventory Management:** Our system could use predictive analytics to forecast inventory needs based on historical data, sales trends, and other variables. This would help pizza shop owners and managers to optimize their inventory levels, reduce waste, and ensure that they always have the ingredients they need to meet demand.

**Social Media Integration:** Our system could be integrated with social media platforms, allowing pizza shop owners and managers to manage their social media presence directly from the system. This would help them to promote their business, engage with customers, and track the effectiveness of their social media campaigns.

**AI-Powered Chatbot:** Our system could include an AI-powered chatbot that can handle basic customer service queries such as order tracking, menu inquiries, and delivery status updates. This would free up staff time and improve customer satisfaction by providing quick and accurate responses.

Overall, our pizza shop management system is unique in its comprehensive functionality, customizability, scalability, user-friendliness, and real-time analytics. These features make our system a powerful tool for pizza shop owners and managers to manage their business and achieve their goals. By adding these technical features to our pizza shop management system, we can provide pizza shop owners and managers with an even more powerful tool to manage their business. These features would help to increase efficiency, reduce costs, and improve customer satisfaction, ultimately leading to increased profitability and growth for the pizza shop.

## 6.Methodology

In our information technology project, we employed UML tools and techniques in addition to a database modeling tool like MongoDB and project management software like MS Project. Our task is being completed separately after being separated into sections. The models and drawings for our projects were made using Mockflow, StarUML, and Draw.io. Microsoft PowerPoint was used to construct the task proposition presentation in model one, and it is also utilized to create the scrum presentation in model two. Microsoft Word was used to complete our task proposition record. So, the Microsoft office suite has shown to be really helpful in assisting us in finishing our project proposal preparation and our sanction archive. Each coworker independently demonstrated their skills in Word, and then they all merged their efforts to create a single word archive.

To make sure the design is understandable and efficient, Adobe XD design software is used. Adobe XD is a potent vector application that was developed especially for people who want to be both productive and creative at the same time when building interfaces for websites or apps. A useful free outlining tool, Draw.io provides its users with powerful collaborative tools. It has a variety of shape libraries, each of which has a large number of graphic elements. In this part, we'll show you how to make and distribute graphs right in your web browser. We were able to use it to make our framework outline chart as a result. Apart from that, we've also used StarUML. It is a set of tools for language display that have been combined. Moreover, it is used to make UML diagrams. In addition to the other tools, a hackolade will serve as the database displaying device for our database. (MongoDB) We have used the tools and technological breakthroughs listed above. We utilized the Microsoft Project/MS Project software as a part of our executive project management procedure.

To finish our project on schedule and within our allocated budget, we will draw on a range of resources. To achieve our objectives, we will use JavaScript and Node.js as a programming language. It is a runtime environment for JavaScript that enables you to execute JavaScript code outside of a web browser. The JavaScript engine in version 8 serves as the foundation for the entire environment. Building high-performance web applications using Node.js is a real possibility. Our main integrated development environments will be Microsoft Studio Code and Eclipse, while Sublime Text will be our backup editor.

Also, we will build our application using Express as the back-end framework and React as the front-end framework. Express is a NodeJS web application framework that keeps multi-platform and online apps simple while including functionalities. It explains why worker-side programs for the web and portable devices are necessary. The MERN stack's backend is made up of Express and the MongoDB data store, while the frontend is made up of React. React is a powerful and flexible JavaScript toolkit for building user interfaces. It builds intricate user interfaces out of discrete, little chunks of code called "components." It is utilized to build single-page web apps.

For our ITP project, we will be using the web technologies Bootstrap, HTML, and XML. A well-known CSS framework called Bootstrap also permits the installation of JavaScript upgrades. It includes layouts for the plans that are based on HTML and CSS. Also, we employ XML to present data on our website. It has the capacity to provide frontend and backend functions in the same application. In this approach, Apache will be used as the web service and Apache Tomcat as the webserver. Web content is distributed over the internet through the free and open-source Apache web server. In this case, Apache is in charge of establishing a connection between the Apache tomcat worker and the visitors' web browsers. The programming language Apache has multiple stages. A servlet compartment called Apache Tomcat Worker can meet Java servlet requirements.

## 7.Evaluation Method

The evaluation of our Pizza Mania Shop System can be based on several criteria, such as:

- a) **Performance Metrics:** The performance of the system could be evaluated based on several key metrics, such as order processing time, accuracy of orders, and customer satisfaction ratings, delivery time, customer management. Managers could collect data on these metrics and use them to identify areas for improvement in the system.
- b) **User Testing:** The system could be evaluated through user testing with real customers. This would involve gathering feedback from customers who use the system to place orders, make deliveries and assessing their overall satisfaction with the system. User testing could help identify any usability issues or bugs in the system and provide valuable insights for future development
- c) **Cost-Benefit Analysis:** The system could be evaluated based on a cost-benefit analysis, which would involve comparing the costs of developing and maintaining the system with the benefits it provides to the business. This analysis could help managers make informed decisions about whether the system is worth investing in and how it can be optimized for maximum return on investment.

Overall, A combination of these evaluation methods could be used to assess the effectiveness of our pizza Mania shop and identify opportunities for improvement.

## 8.Gantt Chart

	Week 01	Week 02	Week 03	Week 04	Week 05	Week 06	Week 07	Week 08	Week 09	Week 10	Week 11	Week 12
<b>Definitions and requirement analysis</b>												
<b>Planning</b>												
<b>Page UI design</b>												
<b>Database degning</b>												
<b>Coding the structure</b>												
<b>Development</b>												
<b>Testing</b>												
<b>Launching the web application</b>												

## References

- [1] <https://www.coursehero.com>, "<https://www.coursehero.com>," [Online]. Available:  
<https://www.coursehero.com/file/76882782/POS-Literature-Reviewediteddocx/>.

## Work Breakdown Structure

	Names with ID	Work Distribution
01	Subhath H.R.H IT21310164	<ul style="list-style-type: none"> <li>• Order Management</li> <li>• Aim &amp; objectives</li> <li>• Gantt chart</li> <li>• Problem&amp;Motivation</li> </ul>
02	Chanthuka U.L.D IT21307430	<ul style="list-style-type: none"> <li>• Employee Management</li> <li>• Gantt chart</li> <li>• System overview</li> <li>• Literature review</li> </ul>
03	Premarathna W.G.S.R IT21308666	<ul style="list-style-type: none"> <li>• Product Management</li> <li>• Gantt chart</li> <li>• Finalizing the document</li> </ul>
04	Kulathunga K.M.P.N IT21267154	<ul style="list-style-type: none"> <li>• Financial Management</li> <li>• Gantt chart</li> <li>• Finalizing the document</li> <li>• Evaluation Methods</li> </ul>
05	Ilangkoon I.M.C.S.B IT21371318	<ul style="list-style-type: none"> <li>• Inventory Management</li> <li>• Gantt chart</li> <li>• Problem&amp;Motivation</li> </ul>
06	Kannangara K.K.H.R IT21308734	<ul style="list-style-type: none"> <li>• Delivery Management</li> <li>• Gantt chart</li> <li>• Introduction</li> </ul>
07	Jayawickrama Y.R.C.S IT21208744	<ul style="list-style-type: none"> <li>• Kitchen Management</li> <li>• Gantt chart</li> <li>• Evaluation Methods</li> <li>• Methodology</li> </ul>
08	Pallage P.D.R.S IT21311604	<ul style="list-style-type: none"> <li>• Customer Management</li> <li>• Gantt chart</li> <li>• Evaluation Methods</li> <li>• Methodology</li> </ul>