Software Requirements Specification

for

Build My Bot

Version 1.0 approved

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1. Introduction

1.1 Purpose

Build My Bot, an online robot retailer in the United States, wishes to transition from an older e-store system to a newer system. The rationale for this change is that the existing system is no longer meeting the company's growing needs. Its frequent outages, poor coordination with other crucial systems like accounting, the warehouse/inventory system, and shipping, the absence of sufficient payment options, the inability of customers to register for accounts to store their purchase information or track shipments, the challenges of posting multiple images for a single item, and the incapability to publish sales reports are some of the key issues. The goal of the new system is to be an improved and far more customer-agnostic adaptation of the old system that would guarantee customer satisfaction and business expansion.

1.2 Document Conventions

- BMB: Build-My-Bot
- AWS: Amazon Web Services
- RDBMS: Relational Database Management System
- RDS: Relational Database Service
- HTTPS: HyperText Transfer Protocol Secure
- TLS: Transport Layer Security
- SSL: Secure Sockets Layer
- SQL: Structured Query Language
- CEO: Chief Executive Officer
- CIO: Chief Information Officer
- CFO: Chief Financial Officer

1.3 Intended Audience and Reading Suggestions

This report is designed for the following audiences: CEO, CFO, CIO, Project Managers, Development and Testing Team, Accounting Team, Sales & Marketing Team, Tech Support, Finance Team and Customers. The remainder of the SRS Document includes thorough information on the new system by offering an overview of the product, Its external Interface Requirements, in-depth information about each System feature, and other Non-functional Product Requirements. The document is designed in such a way that the Reader follows a sequential path to comprehend the system and its requirements. While everyone should read the Introduction and Overall Description sections to gain a quick overview of the product and become familiar with the standardized words used throughout the document,Developers can skip to the External Interface Requirements, Customers as well as the Sales & Marketing Team can skip to the System Features section to understand the new features added to the system and The Project Managers can skip to the Non-functional requirements.

1.4 Product Scope

The new system would solve the shortcomings of the old system to enhance User Experience and expansion of Business. The following are the product scope:

1. Improved Uptime: The new system would provide a smaller maintenance window and maximum uptime, ensuring system availability and minimizing user issues.
2. System Integration: The new system will be able to communicate with existing systems, such as the accounting, inventory, and shipping systems, without any issues.
3. Device Compatibility: The system needs to work with a variety of gadgets, such as PCs, Macs, phones, and tablets.
4. User Profile: Customers can register a new account to examine past order information, track shipments, and make payments.
5. Plan Report Production: The new system would provide detailed reports that included information on customer orders as well as sales data for each product.
6. Different Payment Options: The new system would allow users to pay using PayPal, GooglePay, ApplePay, Mastercard, and Visa, among other payment options.
7. Multiple Image Postings: Suppliers would be able to publish multiple images about a product using the new system. Additionally, customers can upload numerous images of their Customer Creations.

1.5 References

SRS Template: https://asana.com/resources/software-requirement-document-template
AWS: https://aws.amazon.com/developer/language/net/net-developer-docs/
Lucid Charts: Lucid Chart- ER Diagram
User Interface Guide: https://www.usability.gov/what-and-why/user-interface-design.html

2. Overall Description

2.1 Product Perspective

The product is a replacement system which encompasses features which are unavailable in their existing system and is an upgrade of the online store of the company since their existing product is an outdated version with lack of features and accessibility. This system intends to improve the customer experience by integrating payment methods as well as increasing the sustainability of the system by modifying their accounting system, inventory management and support. Since the whole system requires to be replaced, the product can be iterated as the next version of the system.

2.2 Product Functions

The product is built to deliver an advanced and user-friendly e-store that aims at rectifying the limitations of the current systems by integrating advanced features and transforming sectors related to accounting, inventory management and user-interface. The major functions which the product should perform are listed below:

1. **Performance Elevation:**
    - The system should eliminate the down performance for smoother execution of the e-store.
    - It should increase the uptime of the system and reduce the maintenance schedules.
    - The system should improve the cloud-based support of the system.

2. **Payment Platform:**
    - The system should integrate varied payment methods which consist of payment through net banking, card payments like AmEx and payment apps like PayPal, Apple Pay.
    - The system should implement secure payment gateways and payment procedures.
    - The user should be able to store the payment details.

3. **Inventory Platform:**
    - The system should consist of the feature of uploading more than 1 image per product.
    - The platform should be able to track the shipping, so the customers are able to trace the product.
    - The inventory should be integrated with the in-house accounting system, Peachtree.

4. **User-Interface:**
    - The customer should be able to navigate through the system smoothly.
    - The customer should be able to create an account.
    - The customer should be able to view their purchase history and should be able to place an historical order.
    - The user should be able to purchase any part of the product individually or should be able to combine it with other parts or a kit.
    - It should have a chat window for customers to present their doubts and questions.

5. **Accounting System:**
    - The system should provide administrative access to CFO, Accounting Manager and Finance Manager
    - The system should handle sales tax with respect to the countries and their states.

- The integration of the system should cover connectivity with warehouse, inventory and shipping.

2.3 User Classes and Characteristics

1. **Primary Customers:**
   - The customers i.e. the hobbyists, school kids and teachers, of the Build-My-Bot company will use the system frequently since it is needed for educational purposes as well as sharing knowledge through social media like YouTube.
   - The product will be convenient for the customers since it would consist of a convenient user interface, storing the purchase details as well as ease of purchasing.
   - The technical expertise of the customers can vary from beginner school kids to experts as a Robotic engineer.
   - They will be provided with basic access to the system for just purchase the product.

2. **Employees:**
   - The staff will consist of personnels and managers who manage and assist the company.
   - The staff will assist the customers with technical as well as general support for any discomfort caused by the company.
   - The staff will create and customize the reports and send it to their managers.
   - The staff will have two-factor authentication support for employee access.
   - The technical expertise of the staff will be well qualified since they will be trained with the e-store functionalities.
   - The staff will have access to many parts of the system including customer data, order tracking and shipment process as well as inventory access.

3. **Administrative Staff:**
   - The administrative staff consists of CEO, CFO,CIO, Project Managers, Development and Testing Team, Accounting Manager, Sales & Marketing Team, Tech Support, and Customers, and Finance Manager.
   - This staff will have extensive access to the e-store and can modify any component of the system.
   - The system should be able to provide transactional and order details along with customer details to the administrative staff.
   - The administration should be an expert in managing the e-store.

2.4 Operating Environment

The system should be able to operate on different platforms which has Windows and MAC support. The system should support the following software and hardware components:

1. **Operating Systems:**
   - Windows
   - IOS
   - Android

2. **Hardware Components:**
   - PC

- Mac
- Mobile Devices
- Tablet
- Laptops

3. **Web Browsers:**
   - Google Chrome
   - Microsoft Edge
   - Mozilla Firefox
   - Apple Safari

4. **Build-My-Bot Systems:**
   - Inventory System
   - Warehouse System
   - Peachtree
   - Payment Services like PayPal, Apple Pay

2.5 Design and Implementation Constraints

Legacy Software and Hardware:
- The company's existing software and hardware, if not updated or replaced, can be deemed as a constraint and its compatibility with the new software can create challenges.

Payment Gateways:
- The system's incompatibility with various payment methods like net banking, PayPal, Apple Pay, etc., can be uneasy for customers to process their orders.

User-Interface:
- Although the old system was easy to navigate and use, the new system's complex features may not get accommodated within the old user interface and a new user interface might be required.

Compliance and Regulations:
- The system should be compliant with many national and international regulations and policies related to consumer, data and e-commerce.

External Application Integration:
- The system may face issues while integrating with an accounting system like Peachtree or integrating with AWS.

2.6 User Documentation

- **Product Manual:** A comprehensive documentation in the form of user manual of the system will be provided to the company to guide the users through different factors of the system like inventory management, transaction guidelines, customer log-in functionality, etc.
- **Product Tutorials:** Short video tutorial series will be provided to the users for better understanding of the software which explains the functionalities of the software.
- **Technical Guide**: It will comprise of all the technical aspects of the system explained in detail.
- **Chatbot Manual:** The document will comprise detailed guidelines in operating a chatbot.

- **Language Support Manual:** It will help the users in understanding the switch between various languages including Spanish.
- **Frequently Asked Questions**: This will answer all the common questions which the users might have regarding the system.

2.7 Assumptions and Dependencies

1. **Assumptions:**
    - The system assumes that all the instances and resources of Amazon Web Services will function smoothly without interruption.
    - The system assumes that the software and hardware is compatible with the company's legacy system.
    - The system undertakes the assumption that all the country and state tax policies are taken into account and are compliant with the manufacturers of the parts of the bot.
    - It is also assumed that there will be a high number of customer engagement and sales once this system is upgraded.
    - It is assumed that the system will have adequate amounts of data storage to handle multiple customer requests, payment record storage and customer information.

2. **Dependencies:**
    - The system relies on software computing resources from Amazon Web Services since it is a Cloud-based system.
    - The system is dependent on external payment gateways like PayPal, Apple Pay, etc.
    - The system is dependent on the in-house accounting system, Peachtree.
    - The system is dependent on third party shipping services and manufacturing vendors.
    - The product relies on the engagement from the customers to grow its online community and increase company sales.

3 External Interface Requirements

3.1 User Interfaces

Family Style Guide: Each Screen should follow the same template as mentioned in the interface design documentation. The Screen should include a Header which includes the logo on the left hand side and a toggle menu on the right hand side for users to navigate through the different features the e-store offers. The Footer includes Company details, Tech Support and Contact Information. The template follows a color and font guide which should only be used to maintain consistency. Each page should be interactive and easy to use. Following are the Screens:

- Home Page Screen- The Home Page Screen is a Welcome Page for the e-store. This would be the first screen which would be displayed Once the customer visits the e-store. The main content for this page should include the Company tagline and a toggle Screen to showcase the various products they provide. This Screen should include a Login Button which would redirect the user to the Login Screen. It should also showcase a Gallery of Customer Creations and a button to navigate to the Customer Forum.

- Login Screen- Customers will be able to create or login to their profiles from this screen. This Screen would contain Two Buttons: Login or Create a New Account. The user can easily toggle between both the buttons.
    1. Login Button- Users would be prompted to enter their Username or Password. Users can log in using their Google or Facebook accounts, or by using a username and password combination. Below the prompt, there should be a "Forgot Your Password" option. When a user clicks on this button, a notification mentioning that the Reset Password option has been sent to the registered email address should be displayed.
    2. Create A New Account Button- If a customer visits the page for the first time and wants to create a new account, A “Create New Account” button is provided. Once the Customer clicks on this button, A prompt asking the User to Fill in their details like Name, Contact Information and Account Credentials. Once the User Clicks Submit, They would be redirected to the Login Screen.

- Products Screen - Once the User Logs In, They can See the Products Screen. This Screen would showcase The List Of Products the e-store has to offer. Each Product would contain Product Name, Multiple Images of the Product and Price mentioned. Below each Product there would be a “Quick View” option enabling users to Quickly View Multiple Images of the item without being navigated to a different Screen. The Product Screen would also include a search box at the top where customers could look for a specific item. There would also be various filters (Price Range, Type etc.) which a Customer can set to View Only selected items they wish to see. Once a User clicks on a Product they would be redirected to the Single Item Screen

- Single Item Screen - This Screen would include all additional details of a Product. Product Name, Product Description, Price, Quantity and Multiple Images/Videos would be displayed to The Customer. Additionally, above the Item Details, Average Customer Rating would be mentioned. This would explain how many people recommend using the product. Two Buttons would be provided: Add to Cart and Buy Now.
    1. Add To Cart: Notification pop-up mentioning that the Item has been Added to the Cart. If the Quantity is 0, An Error Message would be displayed asking the Customer to choose a Quantity.

2. Buy Now- On Clicking this button, they will automatically be redirected to the Payment Page. If the Quantity is 0, An Error Message would be displayed asking the Customer to choose a Quantity.
3. Favorites- The User can Select an Item as a Favorite which they intend to buy later.

Additionally, Below Each Product Item, A section should showcase the Similar Products.

- Cart Screen- This Screen would mention all the items added to the Cart. Each Product Along with its Images would be displayed. Beside Each Product two Buttons would be provided:
    1. Cross Button: This button would let the Customers Remove from the Cart which they don't wish to buy anymore. On clicking this button, The item would be deleted from the cart and a notification confirming the process would be displayed.
    2. Add To Favorites: This button enables the User to add the item which they wish to buy later to the favorites list. On clicking this button, The item would be sent to the Favorites Screen from the cart and a notification confirming the process would be displayed.

  Below all the items, The Total Price and a "Checkout" Button would be displayed. This would redirect the user to the Checkout Screen

- Checkout Screen- Customers would be able to successfully place their order from this Screen. This Screen considers Two Sections. Only after completing the previous section can the User go to the next section. They have the option to come back to the previous Section:
    1. Address: The Customer can enter the address they wish the order to be shipped to. If a customer is logged in and ordered before, they can choose from the Saved Addresses.
    2. Payment: This Section would let the Customer choose their payment method. If The User chooses to pay via debit or credit card, a prompt would enable them to enter the card details. If they otherwise wish to pay Via some Third-Party Payment, Each button would have the Logo of the third party Gateways. On clicking any of the buttons, It would redirect them to the Third-party page. This section also has the option for the User to enter a discount/ promo code.

  Once the Customer has paid the order, a notification as well as an Order confirmation email will be sent to them. If payment fails, an error message will be displayed.

- Customer Forum Screen- This Screen is like a portal for Customers to discuss new ideas and new innovations for product development. It would let Customer's write, add images/videos and discuss shortcomings/ benefits for each idea further.

- Profile Screen- This screen would display the customer's profile and allow them to track their shipment. It includes their name, contact information, and a drop-down menu. The following items are stated in the menu:
    1. Orders: This includes the customer's previous orders as well as the tracking and shipment of the current order..
    2. Cart: This Button redirects to the Cart Screen.
    3. Favorites: This Button displays the things that the consumer has added to their Favorites List.
    4. Privacy and Settings: This Button showcases the user username and passwords and lets the Customer customize the settings (mode, notifications etc.) according to their preferences.

  Each Customer Information can be edited by the Customer once they Log In.

3.2 Hardware Interfaces

- The New System is deployed and hosted on Amazon Web Services (AWS). To optimize resource allocation and be efficient in cost, It uses Spot Instances.
- The data centers (which store the physical hardware components like servers) are placed across multiple endpoints in the US for instant data availability.
- The System makes use of AWS General Purpose EC2 Instances (M4 and M5 instance families). These instances are a balance of CPU, Memory and network resources which will help them handle various tasks on the system.
- The System is hosted on a Public Subnet for the external Customers. This segment handles user-generated data interactions like customer information, searches etc.
- The Database as well as the system integration with the Inventory, Accounting and the Shipping system is placed on the Private Subnet. This segment handles internal processes such as Warehousing Management, Database Management etc. which is only accessible to the employees.
- It is compatible with different device types.The customers can access it via PC, Mac, Mobile or Tablet. The employees can access it on PC or Mac.
- The system will work with typical web browsers like Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.
- Load Balancers are placed above Public Subnet to distribute the network traffic across multiple servers.
- The Architecture further enables Auto Scaling which means that the instances can scale up or down based on the user demand.

3.3 Software Interfaces

- Database System: The Database System, which is Placed in the Private Subnet would be used to store essential information about BMB website like Customers, Products etc. The following data would be stored in each table:
    1. Customers: Customer ID, Customer name, address, contact information (email), account credentials (username and password), saved payment information
    2. Products: Product ID, Product Name, Product Description, Product Price, Quantity, Images (Multiple)
    3. Orders: OrderID, Ordered Date, Shipped Date
    4. OrderLine: Order ID, Product ID.

  Each table is related to each other. The database is integrated with all the systems (e-store, inventory, Accounting etc.) . The communication between these systems and the database occurs using API (SQL Queries).
  We will be spinning the AWS RDS Instance, a Managed database service. Choosing AWS RDS would ease out the burden of all the operational aspects of the database system.

- Operating System: The Operating System on which the e-store is hosted is Linux for both server-side and client-side components.
- Third-party Payment System: The e-store is integrated with Third-party payment gateways like PayPal, GooglePay etc to process payments and generate invoices and Order Confirmation. Both the systems communicate via REST API.
- Report System: The database system is linked to the Report System, which generates timely reports depending on each product's sales.

- Inventory System: The Inventory System communicates with the database system for warehouse management. It manages product availability and quantity in hand, Orders Processing etc.
- Shipping System (UPS and USPS): The Inventory System is integrated with UPS and USPS, which optimizes the shipping process and provides customers with regular updates on the status of their goods shipment.

3.4 Communications Interfaces

- TCP/IP: TCP/IP is the basic communication protocol which supports the various system networks.
- SSH (Secure Shell): Employees who need access to the system, databases and other systems placed in the Private Subnet gain access through the SSH. It operates on Port 22.
- HTTPS: HTTPS would be utilized for client and e-store communication. All web browsers support it, and it runs on default port 443.
- SSL: In addition to HTTPS, the SSL protocol is used to encrypt data for safe user data transmission. Data like Customer information, Payment information etc. needs to be transferred securely.
- SMTP: SMTP Protocol is used for email communication and is typically used for sending emails from the System to the Customer. It operates on Default Port 25.
- Emails: Emails will be sent to customers for certain events such as creating user accounts, placing orders, shipping and delivery updates, password resets, and so on. All email messages are formatted using HTML and should be designed to be compatible with all device kinds.
- REST API Protocols: REST API Protocols would be used to connect with the New System. HTTP methods such as GET, POST, PUT, and DELETE would be utilized. API Scripts would follow JSON Format.

4. System Features

4.1 Auto-Inventory Management:

4.1.1 Description and Priority

This feature would be needed to handle inventory and warehouse. This feature would be implemented to auto-update the inventory and automate ordering process as well as integrate it with Peachtree.

Priority: High

Benefit: 9 (Gives an estimation of parts available as well as reduces manual labour)

Penalty: 8 (Imperfect inventory management can lead to stock deficiency and customer dissatisfaction)

Cost: 5 (This feature will require considerable amount of monetary investment)

Risk: 7 (This feature comes with increased risk if the inventory management is subpar)

4.1.2 Stimulus/Response Sequences

Stimulus 1: The customer adds the order to the cart

Response 1: The system records the order of the customer, checks the stock in the inventory, records it in the customer's profile, displays the price with its taxes, calculates it with the help of Peachtree and updates the inventory accordingly.

Stimulus 2: The customer deleted the order from the cart

Response 2: The system records the action, deletes the item from the customer profile, displays the cart in its original format and updates the stock in the inventory.

Stimulus 3: The customer places the order

Response 3: The system records the action, deletes the order from the inventory, displays the price with taxes, calculates it with the help of Peachtree, deducts the payment from the customer's payment method and updates the inventory accordingly.

4.1.3 Functional Requirements

Inventory Status:

- IS-01: The inventory should hold the items temporarily in another database and add/delete the item virtually when a customer adds that particular item to their carts.
- IS-02: The system should delete items from the inventory when the customer places an order and should update the inventory accordingly
- IS-03: The system should add items to the inventory when the customer deletes an order or when the manager updates the items procured from the vendor and should update the inventory accordingly.
- IS-04: If the item is unavailable, the system should indicate the item as "out of stock".

4.2 Customer Profile Management:

4.2.1 Description and Priority

This feature would manage all the necessary details required from the customers. From creating an account to uploading the images, this feature would handle everything related to the customer's account. It would also display the order status to the customer and save payment information.

Priority: High

Benefit: 9 (Flexibility in modifying customer details would increase customer satisfaction and engagement)

Penalty: 8 (Unavailability of modification may lead to misinformation of customers and breach of privacy if appropriate login information isn't stored)

Cost: 5 (This feature may require monetary investment in protecting the customer's data)

Risk: 6 (There is a risk of less customer engagement and inaccurate report analysis)

4.2.2 Stimulus/Response Sequences

Stimulus 1: The customer registers on BMB

Response 1: The system records the details of the customer and displays it in their account information.

Stimulus 2: The customer logs into BMB and edits phone number

Response 2: The system records the action of the customer and provides the editable feature, updates the phone number in the database, and displays the modified phone number on their account.

Stimulus 3: The customer places the order and clicks on the track status

Response 3: The system records the action and displays the status of the order after fetching the information from the status.

Stimulus 4: The customer adds their payment information

Response 4: The system temporarily stores the payment information, verifies whether the information is correct or not and then stores the information for future reference.

4.2.3 Functional Requirements

Profile Updating:

- UR-01: The customer should be able to add their name, email address, phone number and register themselves on BMB.
- UR-02: The system should validate the email address and phone number and throw an error if they are incorrect.
- UR-03: If the customer is unable to log in, the system should throw an error and suggest the customer to retry or change password.

- UR-04: The customer should be able to upload multiple images on the system

Payment Information:

- PI-01: The customer should be able to add their payment type and payment details.
- PI-02: The system should validate the payment details and throw an error if the payment method is wrong.

4.3 Peachtree Integration:

4.3.1 Description and Priority

This feature consists of integrating the inventory with the accounting system of BMB i.e Peachtree. It would be used to update the prices of specific products and maintaining the transactions of customers.

Priority: High

Benefit: 9 (Required to maintain update price records with the specified product and up-to-date financial record synchronization)

Penalty: 8 (Imperfect accounts integration can lead to financial discrepancies and customer dissatisfaction)

Cost: 7 (This feature will require considerable amount of monetary investment as the system needs up-to-date financial synchronization)

Risk: 8 (This feature comes with increased risk if the accounts integration is not smooth)

4.3.2 Stimulus/Response Sequences

Stimulus 1: The customer places an order

Response 1: The system records the order of the customer, displays the price with its taxes and syncs with the inventory, calculates it with the help of Peachtree and updates the inventory accordingly.

Stimulus 2: The customer pays for the order

Response 2: The system records the payment method, fetches the prices from Peachtree, taxes and payment are done accordingly, records the transaction, updates in Peachtree and generates as well as displays the transaction bill to the customer.

4.3.3 Functional Requirements

System Connection:

- SC-01: The system should connect with the accounting system, Peachtree.
- SC-02: If the system fails to connect with the accounting system, the system should display error message.

Transaction Tracker:

- SC-03: After the system connects, the prices of the orders should be synchronized along with taxes and the transactions should be carried out smoothly after the customer places an order.

- SC-04: Incase of a transaction failure, the payment should be reversed to the customer's account.

4.4 Payment System:

4.4.1 Description and Priority

This feature consists of including additional payment methodologies and ensuring a secure payment processing when a customer places an order.

Priority: High

Benefit: 9 (Secure payment processing and multiple payment options will ensure a trustworthy and accessible system for the customers)

Penalty: 9 (Any loopholes in security might lead to financial fraud and loss of business)

Cost: 6 (This feature will require some technological integrations and third-party apps)

Risk: 9 (This feature comes with increased risk if there are any breaches in transaction)

4.4.2 Stimulus/Response Sequences

Stimulus 1: The customer goes to places an order and initiates a checkout

Response 1: The system redirects the customer to a payment gateway which displays multiple modes of payment including cards, net banking or payment applications like PayPal.

Stimulus 2: The payment gateway processes the transaction

Response 2: The system displays a payment confirmation to the customer after the system gets a confirmation from the payment gateway regarding the payment.

Stimulus 3: The payment gateway detects a fraudulent transaction

Response 3: The system displays an error to the customer, implements security procedures and notifies the authorities.

4.4.3 Functional Requirements

Payment Processing:

- PP-01: The system supports multiple payment methods like PayPal, Apple Pay, netbanking, etc.
- PP-02: The system uses appropriate security protocols for secure transactions.
- PP-03: The system should check the authenticity of the payment methods.
- PP-04: In case of fraudulent transaction, the system throws an error message and notifies appropriate security authorities.
- PP-05: The system provides an option for the customers to store multiple cards or payment information.

4.5 Shipment Tracking:

4.5.1 Description and Priority

This feature would be able to communicate with inventory and warehouse to track the order and update its live status on BMB.

Priority: High

Benefit: 9 (Live status tracking would increase customer satisfaction and reduce requests directed towards support)

Penalty: 8 (Unavailability of status tracking can lead to increased enquiries by the customers to support department)

Cost: 7 (This feature may require monetary investment in installation of trackers on shipments or getting live updates from the shipment company)

Risk: 5 (There is a risk of less customer engagement and increase in customer queries)

4.5.2 Stimulus/Response Sequences

Stimulus 1: The customer navigates to their order and clicks on “Track Order”

Response 1: The system understands the action and communicates with the inventory and warehouse.

Response 2: The system then fetches the updates from these departments and displays the live status of the order to the customer

4.5.3 Functional Requirements

Order Tracking:

- OR-01: The customer should be able to request a order tracking for their product.
- OR-02: The system should be in sync with the supply chain and inventory department.
- OR-03: The system should display live updates to the customer.
- OR-04: The system should automatically notify the customers regarding their order status.

4.6 Report Generation:

4.6.1 Description and Priority

This feature should analyze factors such as customer engagement, sales, customer purchases, orders and provide customizable dashboards for stakeholders like CEO, CIO, CFO, Finance Manager, etc.

Priority: Medium

Benefit: 7 (Detailed reports will be useful for informed decision making regarding purchasing new products and implementing new ideas)

Penalty: 5 (It is not of high importance, but inaccurate reports can lead to improper business decisions)

Cost: 6 (This feature will require monetary investments to integrate Business Intelligence tools like Tableau)

Risk: 5 (The only risk associated with the failure of this system would be inaccurate reporting which can lead to improper business decisions)

4.6.2 Stimulus/Response Sequences

Stimulus 1: The stakeholder(CFO or Manager) requests the system for a weekly report

Response 1: The system analyses the particular columns of the specified field and generates a report based on those analysis.

Response 2: The system then displays the report in the form of a dashboard or downloadable file format to the stakeholder.

Stimulus 2: The stakeholder customises the report by filtering the fields

Response 2: The system records the action, saves the filters, initiates analysis on chosen fields and then displays the results in the form of a dashboard or downloadable file format to the stakeholder.

4.6.3 Functional Requirements

Report Records:

- RR-01: The system should store historical reports and dashboards.
- RR-02: The system should display historical reports and dashboards on the interface or should be available in a downloadable format such as PDF, Excel, etc.
- RR-03: The system should have modifiable features and should provide editable fields to the stakeholders.
- RR-04: In case of any error in generating the report, the system should display the error and stop the analysis so it won't display inadequate report.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- Improved Uptime/Smaller Maintenance Window: The New System should anticipate a significantly shorter Maintenance Window (15 minutes) and a maximum Uptime (up to 98%). This would guarantee that the system is available to the customers majority of the time, improving their user experience.
- Support Each Device Type for Customers: The E-store should be accessible to the customer on various device types including PC, Mac, Mobile and Tablet. The system should also be accessible to the employees via PC and Mac.
- System Responsiveness: The new system should be highly responsive. This includes:
    1. Rapid page loading time: The Web Page along with its content should be rendered quickly.
    2. Fast retrieval & Display of Data: Data like Product Information, Customer Information etc. should be displayed rapidly.
    3. Smooth User Interactions: This includes high responsiveness to User Inputs like Form Submission, Clicking of Buttons etc.

  This would improve the overall User experience and improve performance and reliability of the e-store.
- Easy To Use/ Navigate: The New System, like the Old System, should be easy to use, navigate, and manage. To utilize the system, minimal or none of the training should be required.
- Smooth Payment Processing- The system should easily redirect the user to the third party software. Redirection ought to happen quickly, reducing waiting periods and ensuring a smooth transition to the environment of the payment gateway.
- Tech Support- If A customer raises a Ticket, The Tech Support should respond to the query within an estimated time of 24-48 hours.

5.2 Safety Requirements

- **Network Traffic Congestion:**
    1. Load Balancing: The system should be able to manage traffic congestion with the help of Load Balancers placed above the subnet. Load Balancing would ensure even traffic distribution to all the instances reducing workload on a single instance.
    2. Network Monitoring: Automatic and Continuous Monitoring of Network Traffic, to gain insights about Load Traffic is necessary.
- **Data Loss:**
    1. Regular Data Backups need to be implemented to prevent data loss in case of Database failure or System Breakdown.
    2. Replica instances can be deployed to act as backups in case the main system fails ensuring Minimal Data Loss.
- **Instance Breakdown Safety:**
    1. To ensure that the System is still available and usable in the event that an Instance malfunctions or stops functioning, an Automatic Recovery and Backup plan that includes resource allocation to multiple instances should be put into place.
- **Slow System Responsiveness:**
    1. We will Utilize AWS Endpoints in Each selected AWS Region. This would ensure quick data retrieval.
    2. While Loading media files, Images and Videos should be compressed to Load Faster.

5.3 Security Requirements

- **Multi Factor Authentication:** The system needs to implement two-factor authentication once the User Logs In. Integration of third-party software (E.g. Duo) can also be supported. This would ensure a secure Customer Login
- **Customer Credentials Verification:**
    1. Strong Password: The System should prompt the user to use Strong passwords. Additionally The system can also reject passwords entered by Users if they have appeared in Data Leaks.
    2. Email Confirmation: Once the Customer Registers their account, An email would be sent to them to confirm their contact details. This not only helps to ensure that the email is Valid but also authorizes the User.
- **Data Encryption:**
    1. Use of HTTPS/TLS: The System is bound to use HTTPS whose SSL protocol is used to encrypt data for safe user data transmission. Data like Customer information to be communicated from the System to the Database securely.
    2. Additional Data Encryption: Data Like Payment Information of Users should be stored very securely in the database. Using Encryption algorithms like AES or RSA would ensure data security and protect such sensitive data from the hands of hackers.
- **Data Validation:**
    1. The system must validate User Inputs to prevent attackers from installing malicious code in the system (SQL Injection Attack) and produce the System to fail.
    2. The Input Data should be sanitized before it is stored in the database. This would help in better analyzing and result in more accurate sales reports.
    3. The Database can use Prepared Statements or Stored Procedures to ensure that every parameter is validated.

5.4 Software Quality Attributes

- **Availability:**
    - The New System should be available the majority of the time. This indicates that there should be a shorter Maintenance Window (15 minutes) and a maximum Uptime (up to 98%).
    - The Tech Support should be readily available whenever a Customer raises a query. Whenever a Ticket is Raised either by a Customer or by an Employee, It is expected to be solved within 24-48 hours.

- **Usability:**
    - The System should be easy to use, easy to navigate and easy to administer. It should have a User friendly interface.
- **Scalability:**
    - Since we have deployed the System on Cloud and enabled the Auto Scaling Mechanism, The system would automatically scale up and down based on the network traffic on the website. The Resource Efficiency is expected to increase by 30%.
- **Compatibility:**
    - The System should be compatible with multiple device types like PC, Mac, Phone and Tablet. It should also be compatible with modern web browsers like Chrome, Firefox, Safari etc.
- **Cost-Friendly:**
    - Deploying Spot Instances and RDS Instances, The system should be cost friendly and produce annual cost savings of 30,000$.
- **Interoperability:**

- The System should easily integrate with third party softwares (Payment Gateways, Multi factor Authentication softwares) as well as other systems internally (Warehouse/Inventory System, Shipping System).

- **Security Compliance:**
  - System security is required. We must make sure that the Data is transmitted from one system to another securely. The Industry Safety Standards should be followed. Testing and audits must be performed often.

5.5 Business Rules:

- Database Administrators have access to the entire database and are responsible for database management.
- The Administrative Staff (mentioned above) have access to the entire system.
- Specific Employees should be able to access specific interfaces:
  1. Tech Support- e-store via Employee Login
  2. Inventory Employees- Inventory System
  3. Accounting Team- Accounting System
- Customers- Only Customers with a verified account can place Orders.

6. Other Requirements

6.1 Database Requirements:

- The system will utilize a RDBMS based on Amazon Aurora to store and retrieve information regarding payment credentials, customer credentials and inventory management.
- It is a scalable database and it offers features like auto-management and auto-backup of data which is useful in keeping track of customer credentials and inventory.
- It also stores the frequently asked questions from customers and stores it for chatbot's references.

6.2 Internationalization:

- The system should be available for customers internationally and should be compliant with international policies and regulations for countries like Mexico.
- The system should be available in languages compatible with international customers and should have a feature which provides translation into Spanish language.
- The system should be able to handle currency exchange and display the products in the local currency.

6.3 Legal Policies:

- The system must comply with national and international regulatory requirements and legal policies related to online hosting, taxes, data securities, data privacy, server regulations, customer policies and terms and conditions.
- The system should have fixed national and international consumer policies, inventory rules, transaction policies, trading regulations and purchasing processes.

6.4 Support:

- There should be 24/7 customer support virtually provided by the system
- The system should have on-call technical support available for the e-store, on Android, Apple, IOS and Windows platforms.
- A virtual user support system should be available for the customers through chatbot, email or phone support.

6.5 BMB Community:

- The system should have a forum which enables users to interact with each other and provide feedback on BMB products.
- The customers should have fields to rate the products and provide feedback or present new ideas for product development of BMB.

Appendix A: Glossary

- BMB: Build-My-Bot
- AWS: Amazon Web Services
- RDBMS: Relational Database Management System
- RDS: Relational Database Service
- HTTPS: HyperText Transfer Protocol Secure
- TLS: Transport Layer Security
- SSL: Secure Sockets Layer
- SQL: Structured Query Language
- CEO: Chief Executive Officer
- CIO: Chief Information Officer
- CFO: Chief Financial Officer

Appendix B: Analysis Models

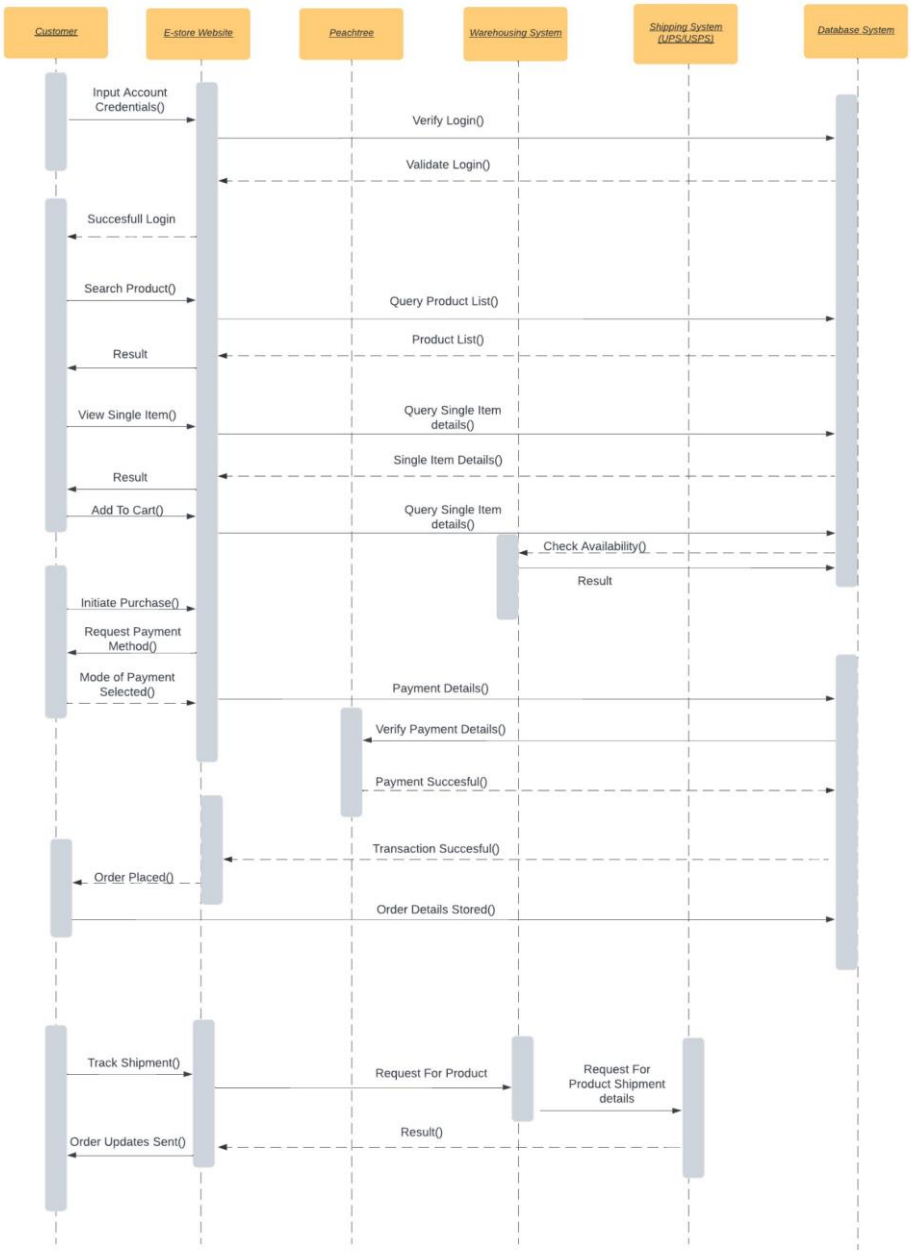

Fig 1: Sequence Diagram

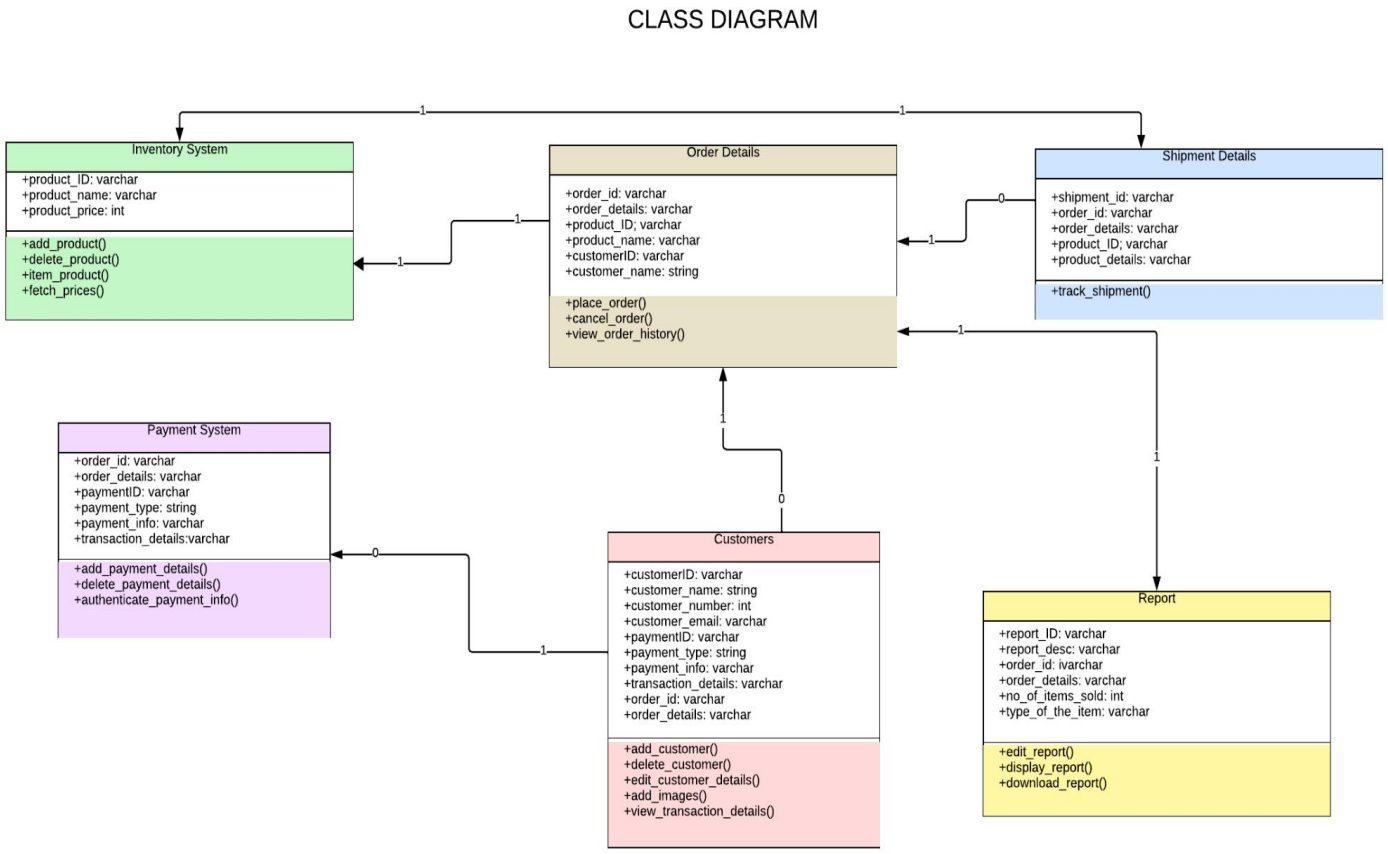

Fig 2: Class Diagram

Appendix C: To Be Determined List

- Multiple Languages: The System can be translated in Spanish, French and English.