# PROJECT PROPOSAL

# CST 392-2

**Group No: 01**

Online System For Dress Renting Company

**Computer Science and Technology**

**Department of Computer Science and Informatics**

**Faculty of Applied Sciences**

**Uva Wellassa University of Sri Lanka**

**May 2023**

Group No: 01

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# 1. Introduction

## 1.1. Project Title

Online System For Dress Renting Company.

## 1.2. Project Description

The goal of this project is to develop a comprehensive online web application for a dress renting company to replace their existing manual system. The web application will provide customers with a convenient and user-friendly platform to browse, select, and book dresses for rental, while also offering efficient inventory management and administrative functionalities for the company. Not only that we are going to develop a user-friendly interface where customers can browse through a wide range of dress options, including images, descriptions, sizes, and availability status. When integrating secure payment gateways to facilitate online transactions, allowing customers to make rental payments using various payment methods such as credit/debit cards. Create an intuitive dashboard for the company administrators to manage dress inventory, view and process bookings, generate reports, and access customer information. Provide administrative controls for adding, editing, and removing dresses from the catalog. Another thing is to incorporate reporting and analytics features to generate insights on dress rentals, popular choices, customer preferences, and other key performance indicators. This data can help the company make informed decisions to enhance their services and improve business strategies.

## 1.3. Background and Motivation

The dress renting industry has become increasingly competitive especially in Sri Lanka, with the emergence of online dress rental platforms and services. The company may have noticed a decline in their market share or customer base due to the convenience and accessibility offered by online platforms. To stay competitive, they recognize the need to adopt an online system that provides similar convenience to their customers. Customers today seek convenience and ease of access when it comes to renting dresses. They prefer the flexibility of browsing and booking dresses online from the comfort of their homes or using mobile devices. The company have received feedback from customers requesting an online platform to simplify the rental process and enhance the overall user experience. The manual system likely requires a significant amount of manual effort and resources to manage the dress inventory, handle bookings, and maintain customer records. The company/shop face challenges in accurately tracking availability, managing returns, and maintaining accurate records. By transitioning to an online system, they aim to streamline their operations, reduce manual errors, and improve overall efficiency. This company has ambitions to expand its business, reach a wider audience, or open new branches. Scaling a manual system can be challenging and time-consuming, whereas an online web application can be easily replicated and

scaled to accommodate growth. By embracing technology, the company can position itself for future growth opportunities. A manual system can often be cumbersome and time-consuming for customers, leading to potential dissatisfaction and a poor customer experience. By implementing an online web application, the company can provide a seamless and user-friendly platform for customers to browse dresses, check availability, make bookings, and complete transactions with ease. This improved customer experience can lead to increased customer satisfaction and loyalty.

## 1.4. Problem in Brief

"Sri Kula Madura" is a shop which rent dresses for weddings. They are keeping all their records by manually writing and keeping them inside different folders. Customers face difficulties in obtaining real-time availability information about the dresses they are interested in. They need to rely on phone calls or in-person inquiries to check if a specific dress is available for rental on their desired dates. The manual system involves a time-consuming and cumbersome booking process. Customers might need to fill out paper forms, provide identification documents, and make deposits in person. This process can be inconvenient and may require multiple visits to the store. The company struggles with manual inventory management, leading to challenges in keeping track of dress availability, tracking rental durations, and managing returns. This can result in errors, double bookings, and inconsistencies in inventory records. And also with a manual system, the dress-renting company has limited payment options available. Customers need to pay in cash or through traditional methods, making it difficult to offer flexible payment options like online payments or credit card transactions. Manual systems often lack the capability to generate detailed reports and analytics on dress rentals, customer preferences, and other business insights. This hinders the company's ability to make data-driven decisions and improve their services. Communication with customers, including notifications about dress availability, booking confirmations, and reminders, may heavily rely on phone calls or in-person interactions. This can be time-consuming, prone to errors, and difficult to manage effectively.

## 1.5. Proposed Solution

The purpose of this project is to develop an online system to replace the customer's existing manual wedding dressing system. The current manual system has limitations in managing customer relationships, dress rental details, inventory, and branch information. Currently, dress rental details are maintained manually, leading to a time-consuming and error-prone process. Automating this aspect will facilitate the efficient management of dress bookings, reservations, availability, and tracking. By transitioning to an online system, the customer aims to streamline their operations, enhance customer service, and improve overall efficiency. The existing system lacks a comprehensive mechanism to manage customer relationships effectively. There is a need for a centralized database that stores customer information,

including contact details, preferences, and transaction history, enabling personalized interactions and targeted marketing strategies. As the customer operates multiple branches, effective communication and coordination between branches are essential. The current manual system lacks a streamlined method to share information, resulting in delays, miscommunication, and potential data discrepancies. An online system would ensure seamless inter-branch communication, promoting better collaboration and information sharing. The customer's inventory management is currently performed manually, resulting in difficulties in tracking dress stock levels, sizes, and variations across different branches. An online system would provide real-time inventory updates, enabling efficient stock management and reducing instances of double booking or unavailability. Generating comprehensive reports manually is a tedious and time-consuming task for the customer. The proposed online system should incorporate reporting features to provide the customer with real-time insights and analysis on customer relationships, dress rental details, inventory status, and branch performance. These reports will enable data-driven decision-making and help identify areas for improvement.

## 1.6. Objectives

- To develop a system that enables comprehensive management of branch data, allowing for centralized control and efficient handling of information related to each branch, including location, contact details, and operational status.

- To implement a customer relationship management (CRM) module that facilitates effective management of customer interactions, inquiries, preferences, and booking history. The system should enable personalized communication and targeted marketing campaigns to enhance customer satisfaction and loyalty.

- To establish an inventory management system that efficiently tracks and manages the wedding dress inventory, including details such as dress availability, sizes, styles, and conditions. The system should provide real-time updates on dress availability and automate inventory replenishment processes.

- To integrate an augmented reality (AR) fitting feature within the system, allowing customers to virtually try on the rented dresses using an AR model. This feature will provide an immersive and interactive experience for customers, enabling them to visualize how the dress will look on them without physically trying it on.

- To incorporate a customer-wise account summary feature that provides a comprehensive overview of each customer's account, including rental history, payment details, outstanding balances, and any special offers or discounts applicable to their account. This feature aims to enhance transparency and facilitate seamless communication regarding account-related information.

- To enable secure and efficient payment processing within the system, allowing customers to make payments for dress rentals, additional services, and any outstanding balances. The system should integrate with secure payment gateways to ensure smooth and reliable transaction processing.

- To implement a functionality that displays all reserved functions and events, allowing staff to efficiently manage scheduled reservations. This feature need to provide a visual overview of the reservations.

## 1.7. Methodology

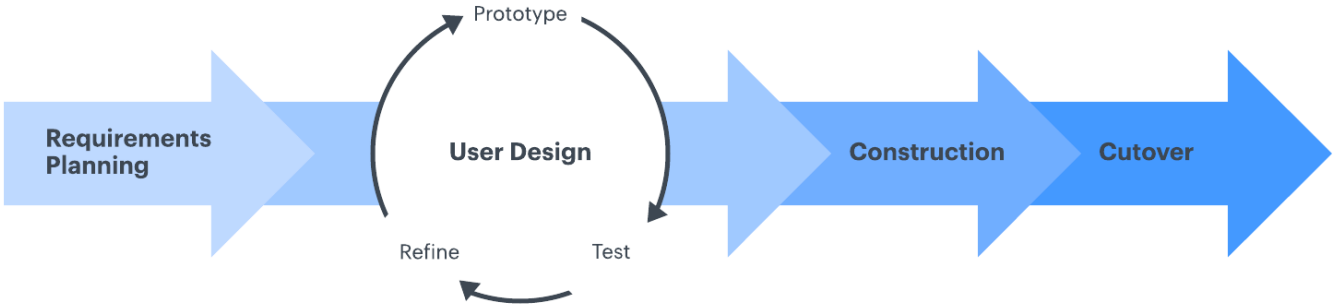


*Figure 01*

The Rapid Application Development (RAD) [1] methodology can be effectively used to develop the dress rental management system. RAD is a development approach that emphasizes iterative and rapid prototyping, frequent customer involvement, and a focus on delivering functional software quickly. We can use RAD in requirement gathering by engaging with stakeholders and end-users to gather initial requirements and understand their needs. Use techniques like interviews, workshops, and brainstorming sessions to quickly capture essential features and functionalities of the dress rental system. We can create a basic prototype of the web application, focusing on the core functionalities such as dress catalog browsing, basic booking system, and user authentication. This prototype can be developed rapidly using low-fidelity mockups or wire-framing tools to gather early feedback from stakeholders and users. Break down the project into small, manageable modules or features. Develop each module in iterations or sprints, focusing on delivering functional software in short development cycles. This allows for continuous

feedback and early user validation. We can encourage close collaboration between developers, designers, and stakeholders. Facilitate regular meetings and discussions to gather feedback, address issues, and ensure that the development aligns with the stakeholders' vision. We can achieve rapid prototyping by continuously refining and enhancing the prototype based on user feedback and evolving requirements. Conduct frequent user testing sessions to validate the usability and effectiveness of the application. Use the feedback to make necessary adjustments and improvements. We can continuously improve the system by continuously gathering feedback, measuring the system's performance, and identifying areas for improvement. Incorporate feedback and lessons learned from each iteration to refine and enhance the application in subsequent iterations.

# 2. Requirements Identification

## 2.1. Functional and Non-functional Requirements

### 2.1.1. Functional Requirements

- Inventory Management
    - ✓ There should be a functionality to categorize items in the inventory (Cavani, jackets, jewelry etc.)
    - ✓ There should be functionality to create, update, and delete items in the inventory.
    - ✓ There should be functionality to mark if rented dress is returned or not
    - ✓ There should be a functionality to add depreciation cost and cleaning costs to each dress after returning it
    - ✓ There should be a functionality to check the availability of any dress.
    - ✓ There should be a functionality to sort dresses according to the frequency of that particular dress has taken by customers
    - ✓ There should be a functionality to automatically generate a unique code for each item.
- Customer Relations Management
    - ✓ There should be a functionality to create and update the profile
    - ✓ There should be a functionality to sign up to the website by using only mobile number
    - ✓ There should be a wish-list functionality so that customers add their preferred dresses
    - ✓ There should be a functionality to try dresses virtually.
    - ✓ There should be a functionality to change the system language to Sinhala or English.

- Reservations Management

  - ✓ There should be functionality to create, update, postpone, cancel a reservation
  - ✓ There should be a functionality to automatically generate a unique code for each reservation including branch code.
  - ✓ There should be a functionality to suggest several kind of data when creating a reservation ( Such as wedding location, bridal salons, photography studio should be suggested by using data from the previous customers )
  - ✓ There should be a functionality to show all the reservations on a calendar. (When clicking on the any date all the reservations on that date should visible clearly)
  - ✓ There should be a functionality to separate each reservation by using color code according to their status in the calendar. (Ex: Canceled reservations should be indicated with red color)
  - ✓ There should be a functionality to add special notes if needed about the reservation
  - ✓ There should be a functionality to add measurements for each dress (Head, Shoulder, Chest, Waist, T. Length, S. Size, Arm, J. Height, etc.)
  - ✓ There should be a functionality to auto-suggest dress names when starting to type its unique code.

- Reports Management

  There must be several reports. Such as,

  - ✓ Reservations report: This should show all the reservations between the ranges of two dates of two months.
  - ✓ Reserved Items report: This should show all the reserved items between the ranges of two dates of two months.
  - ✓ Dress Frequency: In this report, it should generate a list that contains the dress unique code and how many times it has been reserved by customers.
  - ✓ Measurement report: Measurements of the dresses of each customer should be included in this report between the given ranges of two dates of two months.
  - ✓ Account Summary report: This report should show the summary of transactions of the company.

- Branch Management
    - ✓ There should be functionality to create, update, and delete branches.
    - ✓ There should be a functionality to automatically generate branch code for each branch by using branch name.
    - ✓ There should be a functionality to communicate among each branch.
- User Management
    - ✓ There should be functionality to create, update and delete users for the system.
    - ✓ There should be a functionality to view all the users.
    - ✓ There should be a functionality to assign roles to users (Managers and standard users)
    - ✓ There should be a functionality to attach or detach branches to users.
    - ✓ There should be functionality to change and reset the password of users.
    - ✓ There should be a functionality to check how many reservations have been done through each user.
- Payments Management
    - ✓ There should be a functionality to do the payment online via credit/debit cards through a secured payment gateway.
    - ✓ There should be a functionality to add interim payments, and additional payments to the bill.
    - ✓ There should be a functionality to add a description as a note if an additional payment must be done.
    - ✓ There should be a functionality to generate an invoice and can be able to send it to the customer by email.
    - ✓ There should be a functionality to provide discounts.
    - ✓ There should be functionality to edit the bill.

### 2.1.2. Non-functional Requirements

- Performance: The system should be responsive and provide quick response times, allowing users to browse and search for clothes without significant delays. The system should also be able to handle concurrent users and maintain performance under peak load conditions.

- Reliability: The system should be highly reliable, ensuring minimal downtime and interruptions. It should have robust error handling and recovery mechanisms to handle unexpected failures gracefully. This is important to maintain customer trust and prevent any disruption in service.

- Security: The system should employ strong security measures to protect users' personal information, payment details, and sensitive data. It should incorporate mechanisms such as encryption, secure data transmission, and secure storage of user information. Access controls should be in place to prevent unauthorized access to user accounts.

- Scalability: The system should be designed to handle a growing number of users and an increasing inventory of clothes. It should be able to scale up its resources, such as servers and databases, to accommodate the expanding user base without sacrificing performance or reliability.

- Usability: The system should be user-friendly and intuitive, allowing users to easily navigate, browse, and rent clothes. The user interface should be visually appealing and provide clear instructions and feedback. It should also support multiple languages and accessibility features to cater to a diverse user base.

- Compatibility: The system should be compatible with different web browsers, operating systems, and devices. It should be responsive and provide an optimal user experience across various platforms, including desktops, laptops, tablets, and mobile devices.

## 2.2. System Requirements (Hardware / Software)

### 2.2.1. Hardware Requirements

- Internet connection
- Laptop / Desktop computer / Smart Mobile Phone

### 2.2.2. Software Requirements

- **Visual Studio Code Editor**

  Visual Studio Code is a streamlined code editor that uses for developing various kind of projects, task running, and consist of the version control system. It provides to the user build more complex and attractive websites, software as well as many applications with debugging options.

- **WebStorm**

  WebStorm is a user-friendly software tool developed by JetBrains for web development. It offers features like code completion, syntax highlighting, and error detection to help developers write clean and error-free code. It also includes a debugger for finding and fixing bugs and integrates with popular web technologies and frameworks. WebStorm simplifies the development process and enhances productivity for web developers.

- **XAMPP Server**

  XAMPP is a free and open-source cross-platform web server solution that consists of the Apache HTTP Server, Maria DB database, and interpreters for scripts written in the PHP and Perl programming languages. It is used to test clients or websites before publishing them to a remote web server.

- **Figma**

  Figma is a graphic editor and prototyping tool that is web-based with various kinds of tools. It is often used before building a website or an app to create the prototype and it helps to save time and the cost because through the Figma design, it can show to the customer and can get feedback.

- **Canva**

  Canva is an online tool that uses for logo designing, image editing and it is used to create images on the website.

- **Web browser**

  A web browser is a program that lets you visit websites on the internet. It displays web pages, images, videos, and other online content. You can enter a website's address or click on links to navigate between pages. Popular web browsers include Chrome, Firefox, Safari, Edge, and Opera.

- **Docker**

  Docker is a tool that helps you package and run applications in a simple and consistent way. It uses containers to isolate and organize everything an application needs to run, making it easy to deploy and move between different machines. Docker simplifies application management and ensures that your applications run reliably across different environments.

- **GitHub**

  GitHub is a website where developers can store and share their code with others. It helps them track changes to their code over time and collaborate with teammates on projects. GitHub makes it easy for developers to work together and manage their code repositories.

- **IntelliJ IDEA**

  IntelliJ IDEA is a user-friendly software tool created by JetBrains for Java development. It helps developers write better code by providing features like code completion, error detection, and code analysis. The IDE also includes tools for debugging, testing, and building Java applications. IntelliJ IDEA makes it easier for developers to create high-quality Java programs.

## 2.3. User roles

- **Guest User**

  Role:

  - A visitor who has not yet registered or logged into the website.

  Capabilities:

  - Browse the dresses and see all the details of them.
  - Try any dress by using virtual reality
  - Can change the language to Sinhala or English
  - Check availability of any dress

- **Customer**

  Role:

  - Customer is the person who has been registered to the system

  Capabilities:

  - All capabilities of the guest user
  - Add any dress to the wish list.
  - Pay for a dress and rent it.

- **Administrator**

  Role:

  - A system administrator responsible for managing the website and user accounts.

  Capabilities:

  - Can view, create, edit, all the customers (And also individually)
  - Can view, create, edit items
  - Can create, edit, delete branches
  - Can create, edit, and delete item categories.
  - Can create, edit, delete users and assign them branches (and also can detach branches from users)
  - Can reset user's password when they request
  - Can access the inventory
  - Can postpone, cancel, edit any reservation

- Can communicate with other branches by using chat feature
- Can change the language to Sinhala or English
- Can generate all the reports.

❖ **Manager**

Role:

- A manager responsible for managing some functionalities of the system.

Capabilities:

- Can view, create, edit, all the customers (And also individually)
- Can add measurements
- Can only create items
- Can access the inventory
- Can communicate with other branches by using chat feature
- Can postpone, cancel, edit any reservation
- Can change the language to Sinhala or English
- Can generate some of the reports (without account summary reports and cost summary reports)

❖ **Standard User**

Role:

- A standard user responsible for doing some tasks of the system and engaging with customers.

Capabilities:

- Can view, create, edit, all the customers (And also individually)
- Can add measurements
- Can access the inventory
- Can only edit any reservation
- Can communicate with other branches by using the chat feature.
- Can change the language to Sinhala or English
- Can generate some of the reports (without account summary reports and cost summary reports)

## 3. Project Plan (Gantt chart)

A Gantt chart is a visual tool that helps to plan and track tasks for a project. It uses bars to represent tasks and shows when they start and finish. It is an easy way to see what needs to be done and when so anyone can stay organized and meet deadlines.

| Task | Week | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Identify topic, gathering requirements | | | | | | | | | | | | | | | |
| Requirements Analysis & specification | | | | | | | | | | | | | | | |
| Proposal submission | | | | | | | | | | | | | | | |
| Proposal presentation | | | | | | | | | | | | | | | |
| Design(Database, Interface) | | | | | | | | | | | | | | | |
| AR Design | | | | | | | | | | | | | | | |
| Development | | | | | | | | | | | | | | | |
| Testing and debugging | | | | | | | | | | | | | | | |
| Verification | | | | | | | | | | | | | | | |
| Progress presentation | | | | | | | | | | | | | | | |
| System implementation | | | | | | | | | | | | | | | |
| Full system Testing | | | | | | | | | | | | | | | |
| Final report submission | | | | | | | | | | | | | | | |
| Documentation | | | | | | | | | | | | | | | |

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