# **CHAPTER THREE**

# **SYSTEM ANALYSIS AND DESIGN**

# **3.1 Introduction**

This chapter describes in detail the system analysis and design of the proposed system. It focuses on the system structure and interactions. The proposed system is an online tailoring system, It is created to be deployed on the web and is aimed at providing better services for customers. This chapter begins by examining the Systems Requirement Specification (SRS) document which is majorly focused on the functional requirements to be provided by the system. It proceeds to the system design which consists of the logic design. The logic design consists of various user interfaces and the chapter also explains the system design using Unified Modeling Language (UML) diagrams.

**3.2 System Analysis**

System analysis is a process of studying an organization’s business processes to determine the requirements for a new system. It involves identifying problems, goals and stakeholders, gathering data, and developing a detailed system design. The design is refined based on feedback and testing to ensure that the system is effective and efficient.

System analysis is conducted for the purpose of studying a system or its parts in order to identify its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system and work efficiently to accomplish their purpose. System analysis is a crucial step in the development of any new system and requires collaboration from various stakeholders for the success of the project.

Analysis is a factfinding Techniques where studies like what customer wants from the project, Requirement Specification, Feasibility Analysis and cost -benefit Analysis are carried out.

This is the most significant step in a software project since it allows us to acquire a basic concept about the needs of the customers or end users by having face-to-face conversations with them and learning about the many conditions and constraints that must be considered while designing the software application.

The purpose of this phase is to identify, analyze and document the exact requirement of the system, It is extremely important that the developer should carefully understand the customer requirement otherwise it is impossible to satisfy the needs of the user.

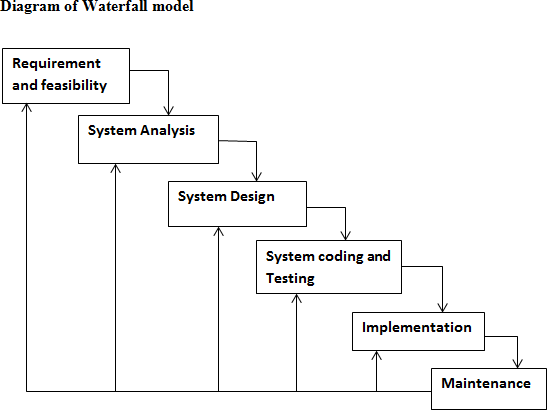
**3.2.1 Software Development Life Cycle (SDLC)**

# The Software development lifecycle (SDLC) is a conceptual model that development teams use to design and build high-quality software. The goal of SDLC is to minimize project risks through forward planning so that software meets customer expectations during projection and beyond. It illustrates the stages of an information system development project, from preliminary feasibility study to application maintenance.

The software development life cycle used in the design of this system is the waterfall model due to the following reason:

1. It phases are processed and completed one at a time
2. It determines the end goal early
3. It makes changes difficult
4. It is adopted when designing a complex system.

Figure 3.1 Shows the SDLC of the waterfall model



**3.2.2** **Requirement Analysis Technique**

Requirement Analysis, also known as Requirement Engineering, is the process of defining user expectations for a new software being built or modified. In software engineering, it is sometimes referred to loosely by names such as requirements gathering or requirements capturing. Requirements analysis encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product or project, taking account of the possibly conflicting requirements of the various stakeholders, analyzing, documenting, validating and managing software or system requirements.

**3.3 Description of the System**

**3.3.1 Description of How the Current System Works**

The existing manual or traditional tailoring management system typically is a method of processing and managing customers’ orders or clothing styles without the use of electronic devices or software. This system relies on paper forms, documents, and manual labor to complete the process.

The manual tailoring system begins with a customer visiting the tailoring shop with a sales representative who takes their measurement or in the case of ready-made dresses negotiates with the customers and afterwards proceed their order. The sales representative then records the order details on a paper form or document, including the customer's name, contact information, and order items.

Once the order has been recorded, it is usually sent to the relevant department or person for fulfillment. This may involve manually checking inventory levels, picking and packing items, and arranging for shipment or delivery.

Throughout the process, manual systems often rely on physical filing and storage systems to keep track of orders, measurements, invoices, and other important documents. This can include using filing cabinets, binders, or other organizational tools to keep track of paper records.

While the manual tailoring systems can be effective in certain contexts, they can also be time-consuming and prone to errors. For this reason, many tailoring shops are taking a step towards transitioning to electronic ordering systems, which offer greater efficiency and accuracy.

**3.3.2 Description of Proposed System**

The proposed online tailoring system is design to cover the primary procedures carried out in the manual system, the system is intended to work in a tailoring sector and the users of the system are Administrator and customers. The system has a comprehensive product catalog that provides a detailed description of product, product price and images to help customers make informed purchasing decision. The admin will login to the system (using his login details), add or delete products from the cart each of which has its own product description. When a customer completes a purchase, the administrator provides a data such as product name, quantity, order status, shipping address and total payment information. The Customer can sign up to the system by providing precise information, including his measurement, then log in (using his username and password). Place an order by selecting a fabric or Abaya of his choice based on the quantity he requires, delete a product when decided, choose a payment option and make payment, send a style of his choice, offer feedback, view and update profile and click a submit button.

**3.3.3 The Use case**

The actors:

1. Administrator
2. Customer

Customer Usecase

Admin usecase

Admin

**3.4 System Requirement**

The System Requirements are basically divided into two, namely Functional and Nonfunctional Requirement

3.4.1 **Functional Requirement**

**Input/output**

1. The system shall allow admin to manage customers
2. The system shall allow admin to add products
3. The system shall allow admin to manage orders
4. The system shall allow customers to log into the system
5. The system shall allow customers to view product
6. The system shall allow customers to place order
7. The system shall allow customers to add and delete product
8. The system shall allow customers to view/edit profile
9. The system shall Computes the total cost of Abayas or fabrics depending on the quantity selected.
10. The system shall allow customers to exit/logout

**Error Handling**

1. Should not accept any invalid input
2. Should report any data type mismatches any field on the forms

**3.4.1 Non-Functional Requirement**

These are basically the requirements that outline how well it will operate including things like speed, security, reliability, data integrity etc.

* 1. Performance: The system should respond quickly to user requests.
  2. Availability: The system should be available 24/7, with minimal downtime for maintenance and upgrades.
  3. Scalability: The system should be able to handle an increasing number of users and transactions over time, without degrading performance.
  4. Security: The system should be secure, with features such as encryption, secure payment processing, and protection against fraud and hacking.
  5. Usability: The system should be user-friendly, with a simple and intuitive interface that makes it easy for users to find what they're looking for and complete purchases.
  6. Reliability: The system should be reliable, with minimal errors or bugs that could interfere with user transactions.

**3.5** **Feasibility Study**

This study presents the assessment of the proposed system’s possible impact.

1. The concept is feasible within the limits of current technology
2. The system is reliable and can support remaining development
3. It is available within given resource constraint
4. The system specification is entirely complete and reliable

**3.6 System Design (The What)**

System analysis and design is a critical process that helps organizations to evaluate and improve their information systems. It involves the systematic study of what a company’s needs, identifying its flaws and shortcomings and designing a system that meets it requirements. The system analysis and design process

are a dynamic and iterative process that involves several stages and each with its unique characteristics.

**3.6.1 System Modeling**

System modeling is the process of creating abstract representations of a system in order to understand and analyze its behavior, structure, and interactions with other systems. System models are typically used in the design and development of software and hardware systems, but can also be applied to other complex systems such as social or ecological systems.

**3.6.2 The Activity Diagram**

Activity diagram describes the flow of actions or activities in a specific system or process. The purpose of an activity diagram is visually representing the sequence of activities that needs to be performed, the decision point, and the flow of control between them. By using activity diagrams, developers and stakeholders can have a clear understanding of the system’s behaviour and identify potential areas for improvement

Log in

Register

Customer activity diagram

YES

NO

Place order

Request delivery

Log out

Log in

NO YES

View/edit profile

Handle payment

Confirm order

Add/delete prod

Manage customer

Log out

Admin activity diagram

**3.6.3 The Class Diagram**

Database

user

Database

+saves profile

+saves product

+saves order information

+saves payment/delivery information

-username

-password

1\*\*

Admin

Customer

+Log in ()

+View/edit profile ()

+Add/delete product ()

+Confirm/cancel order ()

+Handle payment ()

+Manage customer ()

+Log out ()

+Name

-phone number

-email address

-Address

+Register ()

+Log in ()

+Place order ()

+Request delivery ()

+Log out ()

**3.7 Database Design**

Database design is the process of creating a detailed data model of a database, which includes the entities, attributes, relationships, and constraints that define the structure of the data. The database is achieved using MYSQL database. Below is the structure of database that shows Fieldname, data type and description.

Table 3.1 Admin Table

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data type** | **Description** |
| Id | Int (11) | Auto-increment |
| Username | Varchar (30) | Varchar username |
| Password | Varchar (30) | Password phrase to access the system |

Table 3.2 Customer Table

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data type** | **Description** |
| Id | Int (11) | Auto-increment |
| F-name | Varchar (30) | First name |
| L-name | Varchar (30) | Last name |
| Contact | Varchar (20) | Contact Details |
| Address | Varchar (300) | Address detail |
| Transaction | Varchar (10) | Transaction number |
| Status | Varchar (100) | Details of validity |

Table 3.3 Clothing order

|  |  |  |
| --- | --- | --- |
| **Field Name** | **Data type** | **Description** |
| Id | Int (11) | Auto-increment |
| Date | Varchar (11) | Post date |
| Material/Cloth Ordered | Varchar (11) | Auto increment |
| Transaction number | Varchar (11) | Transaction number |
| Delivery details | Varchar (100) | Description |

|  |  |  |
| --- | --- | --- |
| Field | Data type | Description |
| Id | Int (11) | Auto-increment |
| Date | Varchar (11) | Post date |
| Material/Cloth Ordered | Varchar (11) | Auto increment |
| Transaction number | Varchar (11) | Transaction number |
| Delivery details | Varchar (100) | Description |