Cairo University  
Faculty of Computers and Artificial Intelligence



**CS251**

**Introduction to Software Engineering**

Toffee

Software Design Specifications

Version 1.0

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# Team

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Name** | **Email** | **Mobile** |
| 20210184 | Shawky Ebrahim Ahmed | shawky.ebrahim2514@gmail.com | 01004579971 |
| 20210055 | Adham Mahmoud Abdelrahman | adhammahmoud0163@gmail.com | 01281024583 |
| 20210090 | Basmala Mohamed Sayed Gad | basmalahgad@gmail.com | 01066712968 |

# Document Purpose and Audience

**Document Purpose:**

The purpose of this document is to clarify software requirements that have been agreed upon by the business owner. It also provides a clear vision to the development team about the functionality and features that provide client’s needs in the system, so we can save the development time and cost, and satisfy the client at the same time, and then all parties will be satisfied.

**Audience:**

* Client (Business owner).
* Software Development team.
* Customers.

# System Models

## Diagram Description automatically generatedI. Architecture Diagram

Three-tier architecture

* The product's time to market is optimized, and developers can use the newest tools and the best languages for each layer as they enhance each tier simultaneously by working with various teams.
* Increased scalability: By dividing the application into distinct tiers, you can scale any tier on demand without affecting the others.
* You may also increase availability and dependability by executing separate parts of your application on multiple servers and using cached results because it has different tiers.
* A well-designed application tier can be used to increase security since it acts as a kind of internal firewall and guards against harmful vulnerabilities like SQL injections.

Diagram

Description automatically generated

## A picture containing text, diagram, screenshot, parallel Description automatically generatedII. Class Diagram(s)

## III. Class Descriptions

| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | AppSystem | Responsible for main functions in the website, show menu, login, registration |
| 2 | ManageItems | Responsible for all methods that related to items |
| 3 | ManageUsers | Responsible for all methods that related to the users either admins or buyers |
| 4 | Login | Responsible for all methods that related for login users either admins or buyers |
| 5 | Registration | Responsible for all methods that related for register users either admins or buyers |
| 6 | Item | Has all item attributes and its related methods |
| 7 | Order | Collect items to be ordered and make many methods on it |
| 8 | Cart | Has a collection of items chosen by buyer and calculate its cost |
| 9 | Payment | Responsible for all methods to finish the payment of orders |
| 10 | User | Has common methods with admins and buyers |
| 11 | Buyer | Has user attributes and additional attributes and his related methods |
| 12 | OTP | Responsible for sending of OTP |
| 13 | ItemCart | This class contains the item and the number of prices of it inside cart |

## IV. Sequence diagrams

1. A picture containing text, diagram, parallel, line

   Description automatically generatedLogin Sequence Diagram
2. A picture containing text, diagram, parallel, screenshot

   Description automatically generatedRegistration sequence diagram
3. A picture containing text, diagram, parallel, line

   Description automatically generatedChoose Order Sequence Diagram
4. A picture containing text, screenshot, parallel, diagram

   Description automatically generatedSearch Item Sequence Diagram
5. A diagram of a system

   Description automatically generated with medium confidenceUpdate Buyer Info Sequence Diagram
6. A picture containing text, diagram, line, screenshot

   Description automatically generatedAdd Item Sequence Diagram

### Class - Sequence Usage Table

| **Sequence Diagram** | **Classes Used** | **All Methods Used** |
| --- | --- | --- |
| 1. Login user | Class AppSystem  Class Login  Class ManageUsers | Method login  Method checkExistUser  Method displayMenu |
| 1. Registration User | Class AppSystem  Class Registration  Class ManageUsers  Class OTP | Method register  Method checkValidation  Method checkExistBuyer  Method addNewUser |
| 1. Choose Order | Class AppSystem  Class Buyer  Class Cart  Class Order  Class Payment | Method chooseOrder  Method confirmCart  Method calculateCost  Method pay |
| 1. Search Item | Class AppSystem  Class ManageItems  Class Item | Method search  Method view |
| 1. Update Buyer Info | Class AppSystem  Class Buyer | Method updateInfo  Method checkValidation |
| 1. Add Item | Class AppSystem  Class ManageItems  Class Item | Class addItems |

## State Diagram

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# Tools

Draw.io, Adobe XD, Adobe Illustrator, Visual Paradigm, Wondershare EdrawMax

# Ownership Report

|  |  |
| --- | --- |
| **Student** | **Items created** |
| Shawky Ebrahim Ahmed (**Leader**) | System Architecture  Classes:   * AppSystem Class * ManageUsers Class * ManageItems Class * Buyer   Choose Order sequence  State Diagram |
| Adham Mahmoud Abdelrahman | Documentation Purpose  Classes:   * Login * Registration * Items * ItemCart   Login Sequence  Update Buyer Info Sequence  Add Item sequence  State Diagram |
| Basmala Mohamed Sayed Gad | Classes:   * Order * Item * Payment * User * OTP   Registration Sequence  Search Item Sequence  State Diagram |