

**Faculty of Computers and Data Science**  
**Intelligent Systems Department**  
**Fall 2023 -2024**

**Team 15**

**System analysis and design project**  
**Company Sells Laptops**



## Team Members

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# 1 Introduction

## 1.1 Idea of project

A company sells laptops in a shop and wants to improve their business by setting up a new website to be reached by more people.

## 1.2 problems

The problem that the company faces is that they have a limited customer base and a low online presence. They want to reach more people and increase their sales by creating a new website that showcases their products and allows customers to order online.

## 1.3 objectives

- The name of the company be popular.
- Increase the rate of sales.
- The company provide more people with laptops.
- The company name spread among youth.
- Ease the way of selling the products.
- Take a share from the online shopping in this field.
- We need a friendly interface and use buttons to make website ease for use and quick

## 1.4 Information Requirements from the program

- **Product Details:** Accurate and detailed information about laptops, including descriptions, models, prices, brands, images, and availability, is essential for customers to make informed purchase decisions.
- **Inventory Status:** Real-time updates on available stock levels ensure that customers are not misled by out-of-stock items and help manage restocking efficiently.
- **Customer Information:** Collecting and managing customer data, such as purchase history, enables personalized service and targeted marketing efforts.

## **2 The system requirements**

### **2.1 The functional Requirements**

#### **2.1.1 user login**

- The user uses this functionality to log into the system and the users must first input their email and password.
- The user email and password will be validated, and if invalid, the user will be denied access to the system.

#### **2.1.2 Register New user**

This function is available to all users in order to register new users and create accounts.

- System must be able to verify information

#### **2.1.3 Cart**

In this functionality the selected user laptops will be previewed for him.

#### **2.1.4 Checkout**

In this functionality after the user choose the desired laptops it able him to check out his order for payment

### **2.2 The Non-functional requirements**

#### **2.2.1 Efficiency**

- The system should swiftly handle customer orders and inquiries without delays.
- It must keep track of available laptops accurately to avoid overselling or stock shortages.

#### **2.2.2 Usability**

- The user interface of the system should be very friendly.
- It should not take long time for a new user to register for an account

### 2.2.3 Reliability

- The system needs to function consistently without unexpected shutdowns or errors, ensuring it's always available for customers and sellers.
- It should maintain accurate information about laptops, prices, and availability, preventing confusion or incorrect details for customers.

### 2.2.4 Security

- The system must stay updated with the latest security patches and software updates to be safe against potential threats.

### 2.2.5 Organization Rule

- The system must follow the company policy of sale

## 3 Database explanation:

	Code	Explanation
Cart	<pre>CREATE TABLE `cart` (   `cart_id` int(11) NOT   NULL,   `customer_id` int(11)   NOT NULL,   `status` varchar(50) NOT   NULL DEFAULT 'open',   `date_created` datetime   NOT NULL )</pre>	<ul style="list-style-type: none"><li>• It Stores information about shopping carts.</li><li>• <code>cart_id</code>: Unique identifier for each cart.</li><li>• <code>customer_id</code>: Foreign key referencing the customer who owns the cart.</li><li>• <code>status</code>: Current state of the cart</li><li>• <code>date_created</code>: date of when the cart was created.</li></ul>
cart_item	<pre>CREATE TABLE `cart_item` (   `cart_item_id` int(11)   NOT NULL,</pre>	<ul style="list-style-type: none"><li>• It Stores information about each item in cart.</li><li>• <code>cart_item_id</code>: Unique identifier for each cart item.</li></ul>

	<pre> `cart_id` int(11) NOT NULL,  `laptop_id` int(11) NOT NULL,  `quantity` int(11) NOT NULL,  `total_price` decimal(10,2) DEFAULT 0.00 ) </pre>	<ul style="list-style-type: none"> <li>• <code>cart_id</code>: Foreign key referencing the cart the item belongs to.</li> <li>• <code>laptop_id</code>: Foreign key referencing the laptop in the cart.</li> <li>• <code>quantity</code>: Number of units of the laptop in the cart.</li> <li>• <code>total_price</code>: Calculated price of the item based on quantity and laptop price.</li> </ul>
customer	<pre> CREATE TABLE `customer` (   `customer_id` int(11) NOT NULL,   `username` varchar(50) NOT NULL,   `password` varchar(255) NOT NULL,   `email` varchar(100) NOT NULL,   `phone_number` varchar(20) DEFAULT NULL,   `street` varchar(255) DEFAULT NULL,   `city` varchar(50) DEFAULT NULL, </pre>	<ul style="list-style-type: none"> <li>• It Stores information about customers.</li> <li>• <code>customer_id</code>: Unique identifier for each customer.</li> <li>• <code>username</code>: Customer's username for login.</li> <li>• <code>password</code>: Hashed password for secure login.</li> <li>• <code>email</code>: Customer's email address.</li> <li>• <code>phone_number</code>: Customer's phone number .</li> <li>• address information: street, city, country, building .</li> </ul>



	<pre> `country` varchar(50) DEFAULT NULL,  `building` varchar(50) DEFAULT NULL  ) </pre>	
laptop	<pre> CREATE TABLE `laptop` (   `laptop_id` int(11) NOT   NULL,   `model` varchar(100)   NOT NULL,   `brand` varchar(50) NOT   NULL,   `description` text NOT   NULL,   `price` decimal(10,2)   NOT NULL,   `image_url` varchar(255)   DEFAULT NULL,   `stock` int(11) NOT NULL ) </pre>	<ul style="list-style-type: none"> <li>• It Stores information about laptops.</li> <li>• laptop_id: Unique identifier for each laptop.</li> <li>• model: Model name of the laptop.</li> <li>• brand: Brand of the laptop.</li> <li>• description: Detailed description of the laptop.</li> <li>• price: Price of the laptop.</li> <li>• image_url: URL to the laptop's image</li> <li>• stock: Remaining number of laptops in stock.</li> </ul>
payment	<pre> CREATE TABLE `payment` (   `payment_id` int(11)   NOT NULL,   `card_name`   varchar(255) DEFAULT   NULL, </pre>	<ul style="list-style-type: none"> <li>• It Stores information about customer payment methods</li> <li>• payment_id: Unique identifier for each payment method.</li> <li>• card_name: Name of payment method.</li> </ul>

	<pre> `balance` decimal(10,2) DEFAULT NULL, `customer_id` int(11) DEFAULT NULL ) </pre>	<ul style="list-style-type: none"> <li>• balance: Remaining balance on the payment method</li> <li>• customer_id: Foreign key referencing the customer the payment method belongs to.</li> </ul>
_order	<pre> CREATE TABLE `_order` (   `order_id` int(11) NOT   NULL,   `customer_id` int(11)   NOT NULL,   `total_amount`   decimal(10,2) NOT NULL,   `order_date` datetime   DEFAULT   current_timestamp() ) </pre>	<ul style="list-style-type: none"> <li>• It Stores information about orders.</li> <li>• order_id: Unique identifier for each order.</li> <li>• customer_id: Foreign key referencing the customer who placed the order.</li> <li>• total_amount: Total amount paid for the order.</li> <li>• order_date: date of when the order was placed.</li> </ul>

## 4 Diagrams

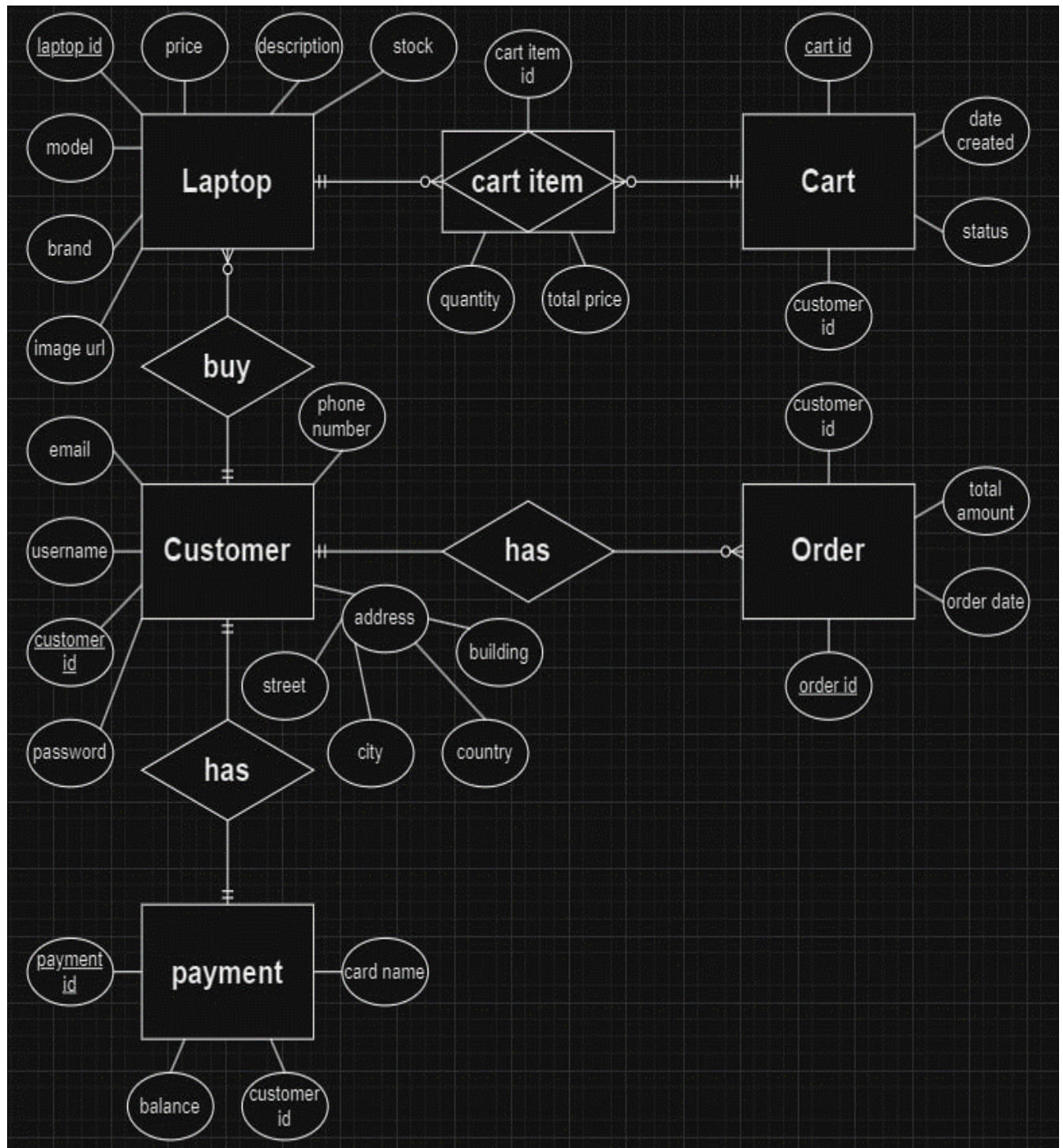
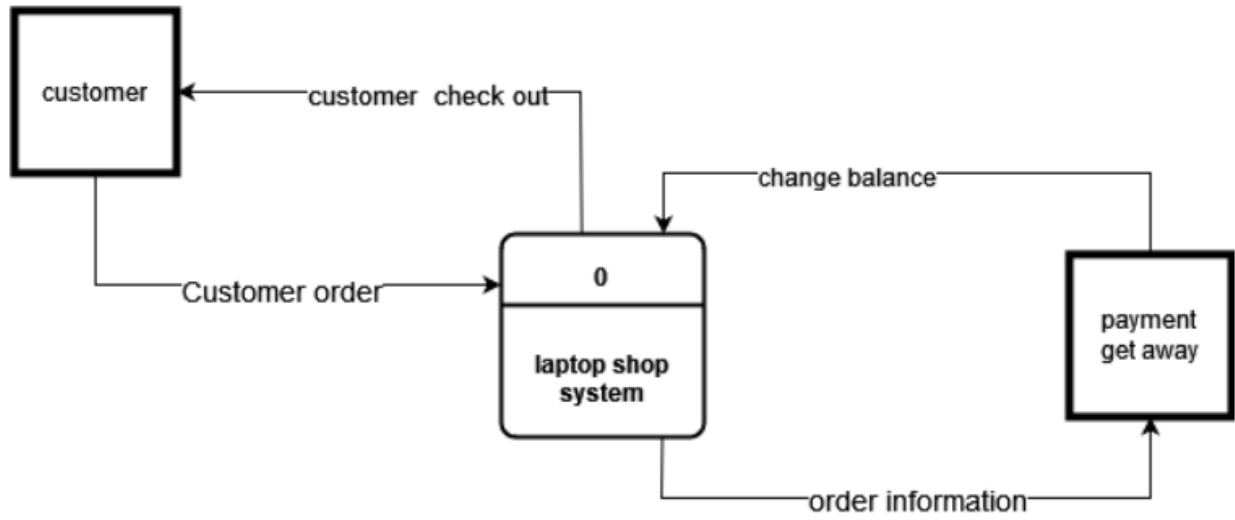
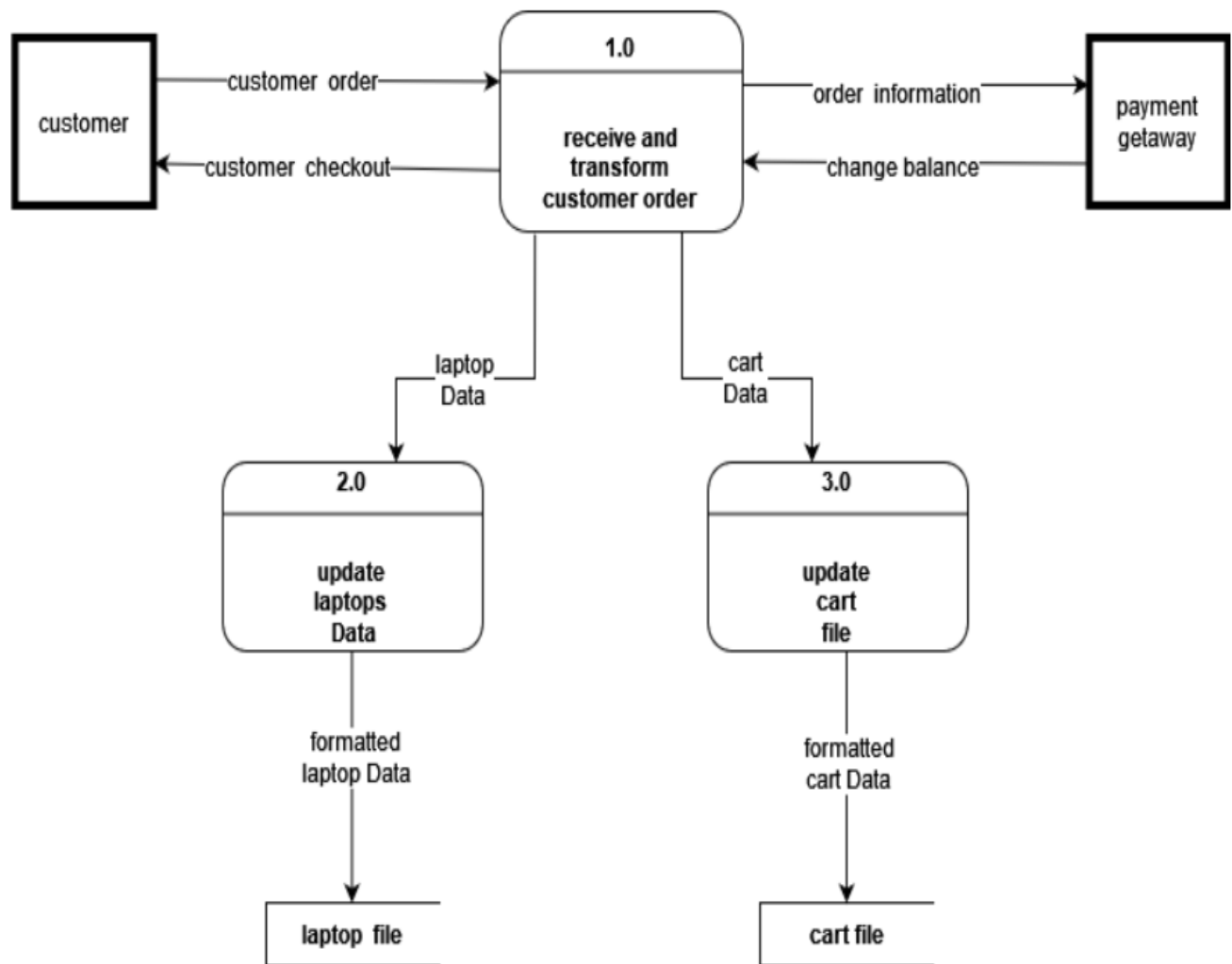


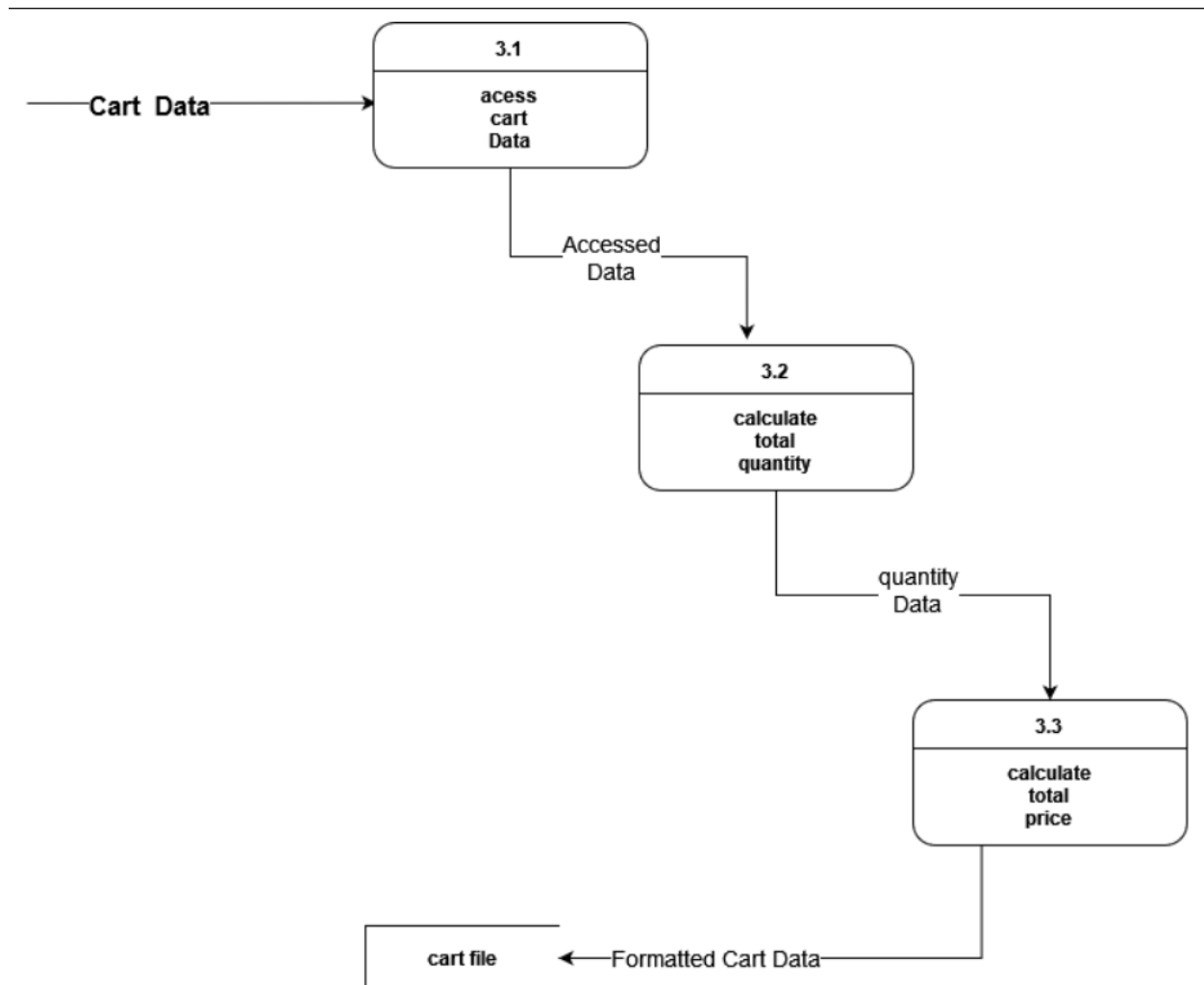
Figure 1: ERD



**Figure 2: DFD: CONTEXT DIAGRAM**



**Figure 3: DFD: Level 1**



**Figure 4: DFD: Level 2**

**Login**

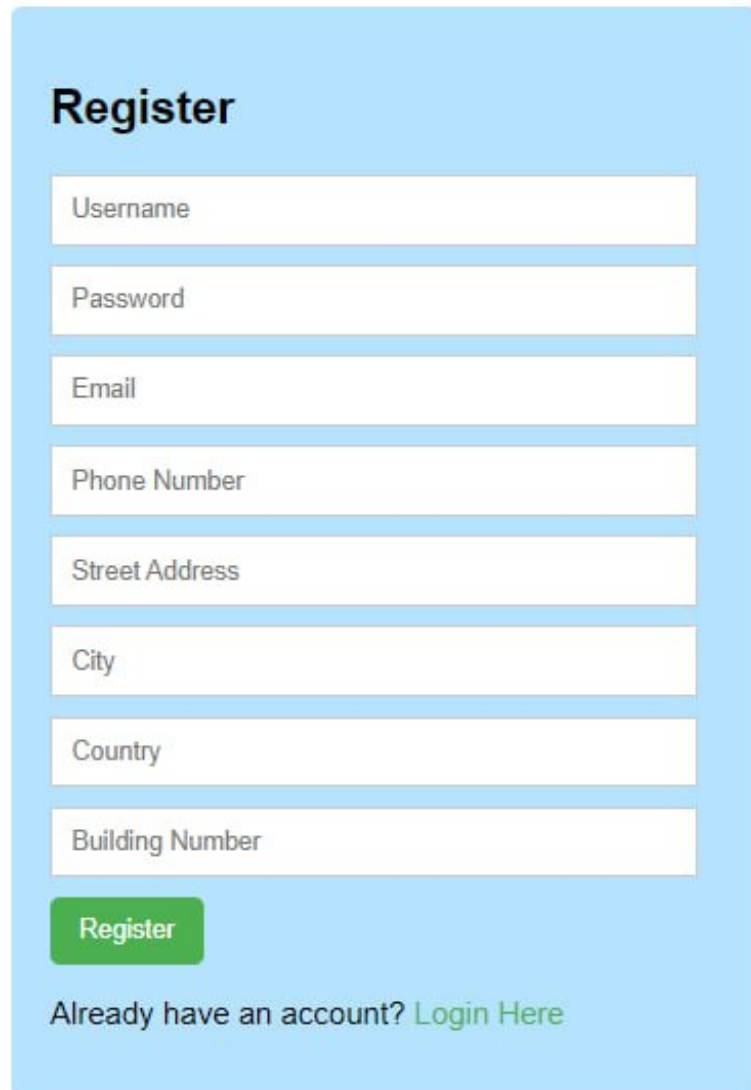
Username

Password

Login

Don't have an account? [Register Here](#)

**Figure 5: User login**



The image shows a user registration form titled "Register" on a light blue background. The form consists of eight white input fields stacked vertically, each with a light blue border. The fields are labeled "Username", "Password", "Email", "Phone Number", "Street Address", "City", "Country", and "Building Number". Below the last field is a green "Register" button with white text. At the bottom of the form, there is a link that says "Already have an account? Login Here" in green text.

**Register**

Username

Password

Email

Phone Number

Street Address

City

Country

Building Number

**Register**

Already have an account? [Login Here](#)


**Figure 6: User Registration**



[Cart](#) [Logout](#)

FTAM Online Store


Error: Missing laptop\_id in POST data



**Dell - XPS 13**

Powerful and thin laptop with stunning 13.4" Full HD display, Intel Core i7 processor, 16GB RAM, and 512GB SSD storage. Perfect for students, professionals, and creatives.


£1299.99 - 2 in stock [Select](#)



**Apple - MacBook Air M2**

Lightweight and versatile laptop with long battery life, 13.3" Retina display, Apple M2 chip, 8GB RAM, and 256GB SSD storage. Ideal for portability and everyday tasks.


£1499.00 - 5 in stock [Select](#)



**Lenovo - ThinkPad X1 Carbon**

Durable and business-oriented laptop with excellent keyboard, 14" QHD display, Intel Core i5 processor, 16GB RAM, and 1TB SSD storage. Built for productivity and security.


£1549.99 - 20 in stock [Select](#)



**HP - Spectre x360**

Sleek and convertible laptop with premium design, 15.6" 4K OLED touchscreen, Intel Core i7 processor, 32GB RAM, and 1TB SSD storage. Offers stunning visuals and powerful performance.

£1799.99 - 15 in stock [Select](#)



**Acer - Swift 3**

Affordable and portable laptop with great performance, 14" Full HD display, AMD Ryzen 5 processor, 8GB RAM, and 512GB SSD storage. A budget-friendly option for everyday computing.



£699.99 - 30 in stock [Select](#)

**Figure 7: Laptop Store**

## FTAM Online Store

Laptops

### Your Cart

Laptop	Quantity	Total Price	Action
 Dell - XPS 13	1	£1,299.99	<a href="#">Remove</a>
 Apple - MacBook Air M2	2	£2,998.00	<a href="#">Remove</a>

Total: £4,297.99

Note: Payment using credit card only

[Checkout](#)

Figure 8: Cart