

Web Engineering

Atec Mart - Online Shopping Store

Project Report

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29th January 2021.

Introduction and Motivation

Atec Mart is an online shopping store website developed with the goal of easy navigation, high usability, and aesthetically pleasing design. The design was inspired some of the best online shopping stores including Walmart, Target, etc. Atec Mart aims to provide users with an easy-to-use functionality to order products online. The focus was to develop a shopping store combining some of the strengths of the most successful shopping stores and at the same time addressing the common weaknesses. In the planned incremental development, it is an initial version of the website build on the subset of decided functionality.

Atec mart currently has following attributes:

- Easy to navigate User Interface.
- High accessibility, it can be accessed from all kinds of devices including Computers, Tablets and Smartphones (Responsive Web Design).
- Dynamic website (fetching content dynamically from the database)

The motivation behind the development of Atec Mart is that a lot of products which are manufactured in a specific city or region of Pakistan are priced reasonably there, but for other regions their price increases drastically because a lot of middlemen are involved in the process of taking the product from the region of manufacturing to other cities. This price increase still does not assure that the product reaching the other city will be original or not. There is a big probability that the items being sold in other cities are not the same as advertised, i.e., they are not original products. A simple example is of a very famous sweet in Pakistan called Sohan Halwa. Multan is the place where it is originally prepared, and people of Pakistan always want to purchase the original Multani Sohan Halwa. Although locals enjoy a fair price for this product, but people from other cities face a huge price increase and still they are not getting the original product. Same is the case with similar sweet products in Mardan. Thus, the motivation of Atec Mart is to provide original signature products of different cities to its users at the most reasonable price, so that buyers can get what they want by just paying the shipment costs and enjoy the same product and price as the locals do.

Description of Website

Type of Content

Our website is an online shopping portal, so it includes product listing as a content. The product listings include following information:

- Category of Product
- Subcategory of Product
- Price of Product
- Description of Product
- Company of Product
- Image of Product

Organization of Website

We have different pages like home page, product details page, add to cart page etc. We maintain consistency throughout the website using different sections like header, footer, category section etc. as a reusable component.

- The starting point of the website is the home page which displays the featured products and other products present in the database.
- The products are organized in categories, which are further divided into subcategories.
- Category page shows products that belong to a category, while subcategory page shows further specificity by displaying products that only belong to that specific subcategory.
- Information is organized on product page by displaying the relevant details of the product and having a section which displays the related products, that belong to the same subcategory.
- Add to cart page show detail of products user has added to cart and allow to add shipping or billing address before proceeding to payment. Items are organized in the form of a table on the shopping cart page.

All the products maintain same header, footer, category, subcategory section throughout the website.

Normal User Scenarios of Website

User Scenario

Our website normally work like an unregistered user can view or browse products and add or remove these products to cart. User can create an account to buy product and inserts his shipping and billing address finally at checkout user chooses payment method and his order will place successfully. While an unregistered user will not be able to add products to Wishlist.

Admin Scenario

Admin can add product to specific category and subcategory. Moreover, admin can manage products by changing products description or even deleting them. Admin can manage orders place by customers.

Layout of website

The website is largely built using reusable components to follow best practices. Further to make website responsive and ease of development we have used **bootstrap** and to beautify our website with different icons **font awesome library** was used.

Our website layout is divided into **header**, **sidebar**, **body** and **footer** section.

Header Section

Header section includes brand name then navigation links and search bar further it includes user specifies links like wishlist, my cart.

Sidebar

Sidebar includes categories and subcategories sections through which user can navigate to products.

Body

Body view is according to the page selected like home page includes product in the database while details page includes product details and related products as a body.

Footer

Footer section includes site map to navigate to different pages of the website. Footer also has contact details.

Layout and different pages of website

Account | Wishlist | My Cart | Login

Atec Mart | Home | About Us | Contact Us | Privacy Policy | Search here...

CATEGORIES

- ACADEMICS
- ELECTRONICS
- HOME EQUIPMENT
- SHOES
- MOTOR VEHICLES

TRENDING PRODUCTS

Apple iPhone 6 (Silver, 16 GB)
★★★★★
Rs.36990

Redmi Note 9
★★★★★
Rs.36000

SAMSUNG Galaxy S20
★★★★★
Rs.7490

SMART PHONES

Apple iPhone 6 (Silver, 16 GB)
★★★★★
Rs. 36990

Redmi Note 9
★★★★★
Rs. 36000

SAMSUNG Galaxy S20
★★★★★
Rs. 7490

LAPTOPS

Acer ES 15 Pentium Quad Core
★★★★★
Rs. 19990

Micromax Canvas Laptab II (WIFI) Atom 4th Gen
★★★★★
Rs. 10999

Lenovo Ideapad 110 APU Quad Core A6 6th Gen
★★★★★
Rs. 22990

FASHION

R Blue sock shoe
★★★★★
Rs. 5000

Black Sports Shoes
★★★★★
Rs. 8000

Leather Shoes
★★★★★
Rs. 4500

Atec Mart

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur scelerisque diam et orci mattis accumsan. Vestibulum consequat dolor non tellus quisque maximam. Donec euismod faucibus dolor, et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat.

SITE LINKS

Brands

Store Locations

Categories

About Us

Privacy Policy

CONTACT

Map Icon

 Main Office, 19, Islamabad

Phone Icon

 (+92) 345 6606603

Email Icon

 atecmart@gmail.com

The overall layout of the website is shown in the screenshot above which shows the home page of the website. The website consists of 4 sections:

1. Header
2. Footer
3. Content Section
4. Sidebar area

Register / Login page

The registration and login page of Atec Mart is shown below:

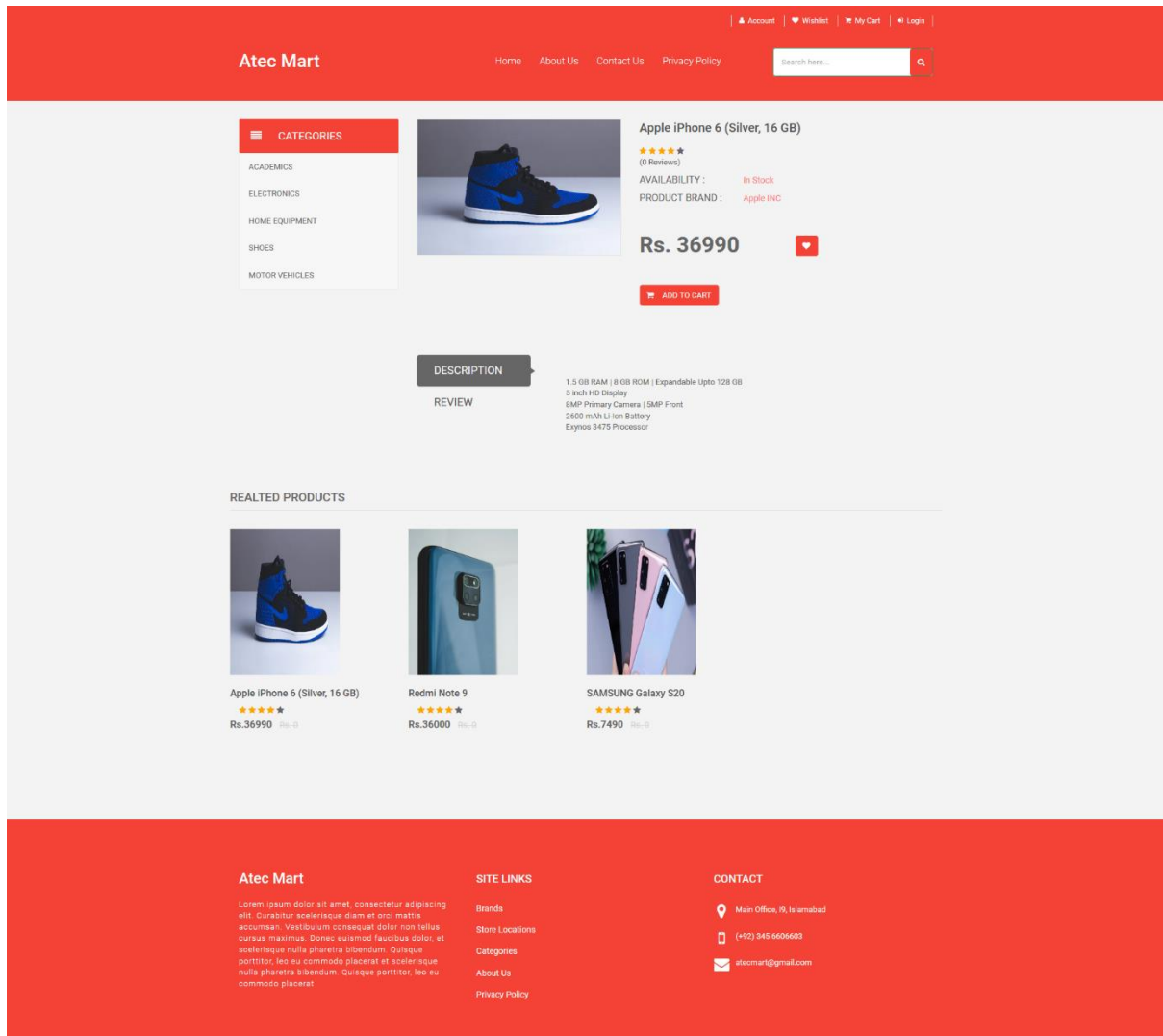
This page allows a user to register an account and if the user already has an account, then it allows the user to log into the account.

- **Registration** functionality allows a user to create an account, this account will be saved in the database and user can use the same credentials to log into the system again. To register an account, user must provide the following details:
 - Full Name
 - Email Address
 - Password
- **Login** functionality allows a user to log into the system using credentials previously used to create an account. Following details are required to log into the system:
 - Email Address

- Password

Product page

The product details page looks like this:



It also follows the same layout. In the content area it displays the title of the product and gives some basic information about its brand, availability of product along with its image.

Some functionalities of this page are:

- **Add to cart** functionality to add this item to the cart of the user.
- **Wishlist** icon to add the product to wish list to view later or add to cart.
- **Review** functionality so user can add a review for this product.
- **Related products** functionality to see information of products from same subcategory.

My Cart page

After user has logged in, my cart page looks like this:

Welcome Demo User | Account | Wishlist | My Cart | Logout

Atec Mart | Home | About Us | Contact Us | Privacy Policy | Search here...

Remove	Image	Product Name	Quantity	Price Per unit	Grandtotal
<input type="checkbox"/>		APPLE IPHONE 6 (SILVER, 16 GB) (0 Reviews)	1	RS 36990.00	36990.00
CONTINUE SHOPPING		UPDATE SHOPPING CART			

SHIPPING ADDRESS

Billing Address*
Islamabad

Billing State*
Islamabad

Billing City*
Islamabad

Billing Pincode*
44000

UPDATE

BILLING ADDRESS

Shipping Address*
Islamabad

Shipping State*
Islamabad

Shipping City*
Islamabad

Shipping Pincode*
44000

UPDATE

TOTAL

GRAND
36990.00

PROCEED TO CHECKOUT

Atec Mart

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisabitur scelerisque diam et orci mattis accumsan. Vestibulum consequat dolor non tellus curius maximus. Donec euismod faucibus dolor, et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat

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(+92) 345 6606603

atecmart@gmail.com

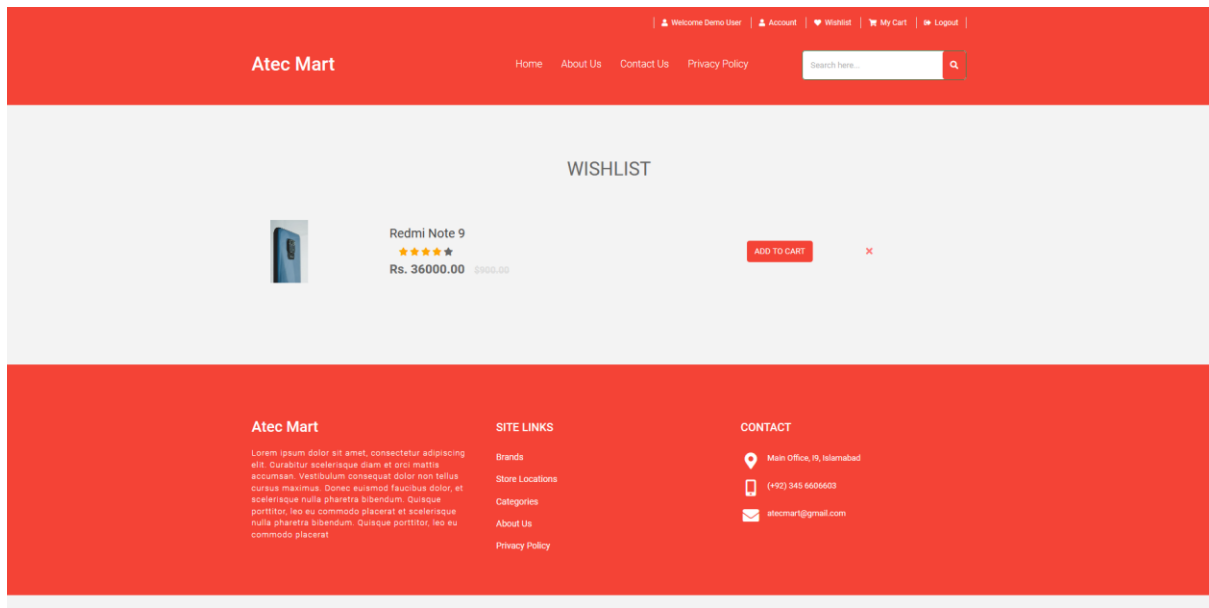
The cart page shows a table of items added to the cart, and other information like shipping and billing addresses and grand total of all items in cart.

Some functionalities on this page are:

- **Shipping and Billing address** options to add new addresses, and once added it will maintain it for the user in the database.
- **Grand total** functionality to show the total of all the items in the cart.
- **Removing items from cart** functionality to remove items from the cart.
- **Proceed to checkout** button will take the user to the checkout page to place an order.

My Wishlist

The wishlist page has items added to the wishlist.



This page has the following functionalities:

- **Add to Cart** functionality can be used to add the item to the cart from where it can be further taken to the checkout page.

My Account page

The **my account** page looks like this:

The screenshot displays the 'My Account' page for 'Atec Mart'. The page layout includes a red header with the site name and navigation links, a main content area with a white background, and a red footer with contact and site information.

Header: Atec Mart | Home | About Us | Contact Us | Privacy Policy | Search here... | Welcome Demo User | Account | Wishlist | My Cart | Logout

Main Content Area:

- MY PROFILE**
 - Personal info**
 - Name*
Demo User
 - Contact No. *
12345
 - UPDATE**
- YOUR CHECKOUT PROGRESS**
 - My Account
 - Shipping / Billing Address
 - Order History
 - Payment Pending Order

Footer:

- Atec Mart**
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisquam scelerisque diam et orci mattis accumsan. Vestibulum consequat dolor non tellus cursus maximus. Donec euismod faucibus dolor, et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat.
- SITE LINKS**
 - Brands
 - Store Locations
 - Categories
 - About Us
 - Privacy Policy
- CONTACT**
 - 📍 Main Office, R/I, Islamabad
 - 📞 (+92) 345 6606603
 - ✉️ atecmart@gmail.com

- **My Profile** option can be used to change details of the profile including Name and Contact number.

My Account – Shipping / Billing address

This functionality in user account allow the user to modify default billing and shipping address.

Welcome Demo User | Account | Wishlist | My Cart | Logout

Atec Mart | Home | About Us | Contact Us | Privacy Policy | Search here...

1 BILLING ADDRESS

Billing Address*

Islamabad

Billing State *

Islamabad

Billing City *

Islamabad

Billing Pincode *

44000

UPDATE

2 SHIPPING ADDRESS

YOUR CHECKOUT PROGRESS

My Account

Shipping / Billing Address

Order History

Payment Pending Order

Atec Mart

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Quisquam scelerisque diam et orci mattis accumsan. Vestibulum consequat dolor non tellus cursus maximus. Donec euismod faucibus dolor, et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat.

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Privacy Policy

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Main Office, R, Islamabad

(+92) 345 6606663



atecmart@gmail.com

My Account – Order History

The order history page allows a user to look at the previously placed orders and to track their status.

Welcome Demo User | Account | Wishlist | My Cart | Logout

Atec Mart | Home | About Us | Contact Us | Privacy Policy |

#	Image	Product Name	Quantity	Price Per unit	Grandtotal	Payment Method	Order Date	Action
1		SAMSUNG GALAXY S20	1	7490	7490	COD	2021-01-26 19:06:04	Track
2		BLACK SPORTS SHOES	1	8000	8000	COD	2021-01-26 19:46:29	Track

Atec Mart
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Curabitur scelerisque diam et orci mattis accumsan. Vestibulum consequat dolor non tellus cursus maximus. Donec euismod faucibus dolor, et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat et scelerisque nulla pharetra bibendum. Quisque porttitor, leo eu commodo placerat

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[Brands](#)
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[Categories](#)
[About Us](#)
[Privacy Policy](#)

CONTACT
[Main Office, 09, Islamabad](#)
[\(+92\) 345 6606603](#)
atecmart@gmail.com

Admin Login Page

The admin login page allows an admin to log into the admin panel:

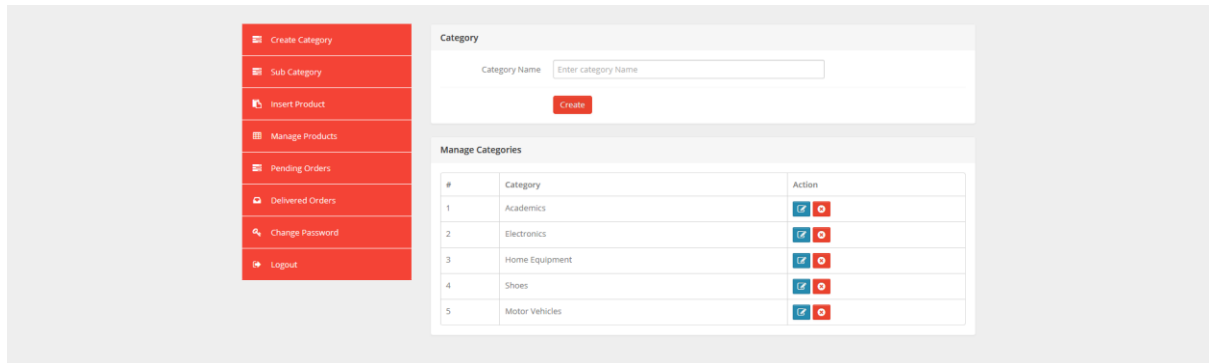
AtecMart Admin Panel

Sign In

Login

Admin – Add / Modify Category page

This page allows the admin to view current categories in database, add new categories, edit or delete previously added categories.



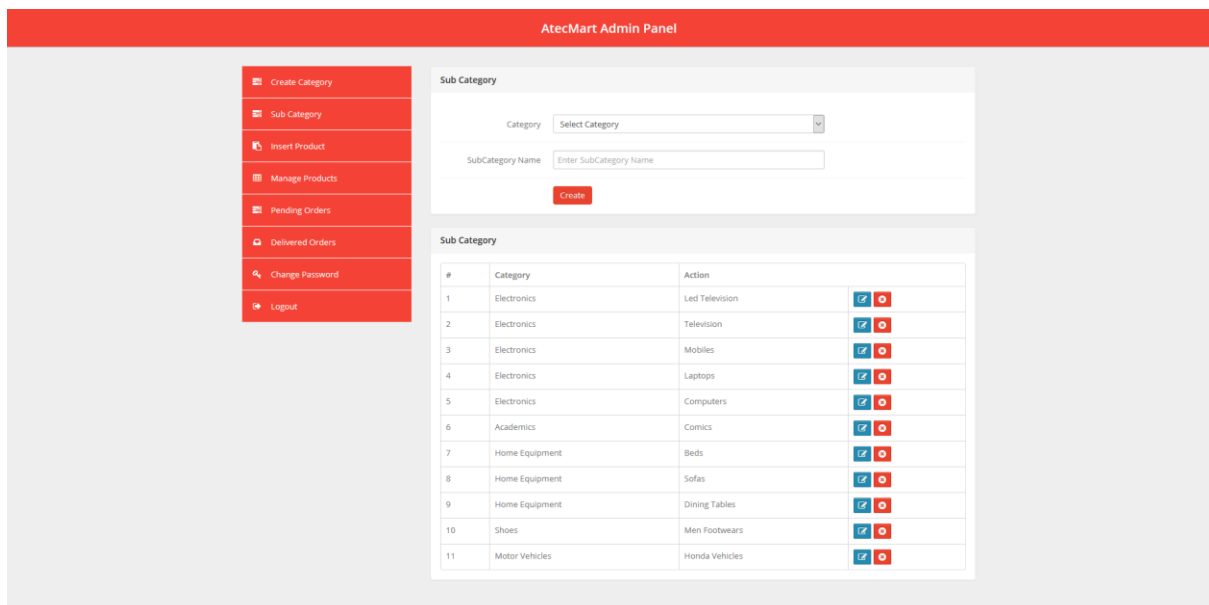
#	Category	Action
1	Academics	Edit Delete
2	Electronics	Edit Delete
3	Home Equipment	Edit Delete
4	Shoes	Edit Delete
5	Motor Vehicles	Edit Delete

The basic functionality on this page is:

- **View Categories** currently present in the database.
- **Add new Categories** to the database.
- **Edit Categories** to modify their information.
- **Delete Categories** from the database.

Admin – Add / Modify Subcategory page

This page allows the admin to add new subcategories, edit or delete previously added subcategories.



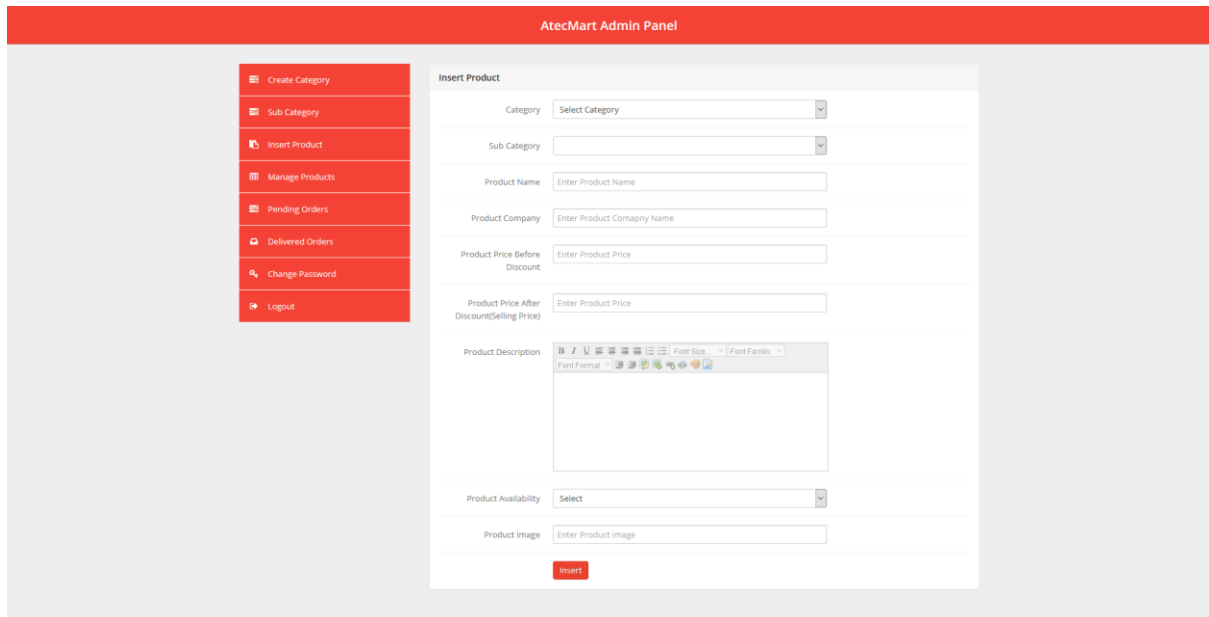
#	Category	Action
1	Electronics	Led Television Edit Delete
2	Electronics	Television Edit Delete
3	Electronics	Mobiles Edit Delete
4	Electronics	Laptops Edit Delete
5	Electronics	Computers Edit Delete
6	Academics	Comics Edit Delete
7	Home Equipment	Beds Edit Delete
8	Home Equipment	Sofas Edit Delete
9	Home Equipment	Dining Tables Edit Delete
10	Shoes	Men Footwears Edit Delete
11	Motor Vehicles	Honda Vehicles Edit Delete

The basic functionality on this page is:

- **View Subcategories** currently present in the database.
- **Add new Subcategories** to the database.
- **Edit Subcategories** to modify their information.
- **Delete Subcategories** from the database.

Admin – Add new product page

This page allows an admin to add new product to the database:



The screenshot displays the AtecMart Admin Panel interface. On the left, a red sidebar contains a menu with the following options: Create Category, Sub Category, Insert Product, Manage Products, Pending Orders, Delivered Orders, Change Password, and Logout. The 'Insert Product' option is highlighted. The main content area is titled 'Insert Product' and contains a form with the following fields:

- Category: A dropdown menu with 'Select Category' as the placeholder.
- Sub Category: A dropdown menu.
- Product Name: A text input field with the placeholder 'Enter Product Name'.
- Product Company: A text input field with the placeholder 'Enter Product Company Name'.
- Product Price Before Discount: A text input field with the placeholder 'Enter Product Price'.
- Product Price After Discount(Selling Price): A text input field with the placeholder 'Enter Product Price'.
- Product Description: A rich text editor with a toolbar and a large text area.
- Product Availability: A dropdown menu with 'Select' as the placeholder.
- Product Image: A text input field with the placeholder 'Enter Product image'.

At the bottom of the form is a red 'insert' button.

Admin can add new product to the database by providing the necessary information about the product.

Admin – Manage Products page

This page allows admin to look at current products in the database:

Create Category

Sub Category

Insert Product

Manage Products

Pending Orders

Delivered Orders

Change Password

Logout

Manage Products

#	Product Name	Category	Subcategory	Company Name	Action
1	Apple iPhone 6 (Silver, 16 GB)	Electronics	Mobiles	Apple INC	Edit Delete
2	Redmi Note 9	Electronics	Mobiles	Redmi	Edit Delete
3	SAMSUNG Galaxy S20	Electronics	Mobiles	SAMSUNG	Edit Delete
4	Acer ES 15 Pentium Quad Core	Electronics	Laptops	Acer	Edit Delete
5	Micromax Canvas Laptab ii (WiFi) Atom 4th Gen	Electronics	Laptops	Micromax	Edit Delete
6	Lenovo Ideapad 110-APU Quad Core A6 8th Gen	Electronics	Laptops	Lenovo	Edit Delete
7	Marvel Encyclopedia, New Edition	Academics	Comics	Marvel	Edit Delete
8	Batman Comic	Academics	Comics	DC	Edit Delete
9	The comic book Price Guide	Academics	Comics	ABC	Edit Delete
10	Royale Tufted Bed with USB Power Connection	Home Equipment	Beds	Belle Isle Furniture	Edit Delete
11	Luxury Bed	Home Equipment	Beds	ABC	Edit Delete
12	Sofa	Home Equipment	Sofas	Sofa Company	Edit Delete
13	Big Luxury Sofa	Home Equipment	Sofas	Sofa Company	Edit Delete
14	R Blue sock shoe	Shoes	Men Footwears	Shoe Company	Edit Delete
15	Black Sports Shoes	Shoes	Men Footwears	Shoe Company	Edit Delete
16	Leather Shoes	Shoes	Men Footwears	Shoe Company	Edit Delete
17	Electric Car	Motor Vehicles	Honda Vehicles	ABC	Edit Delete
18	Honda Freed	Motor Vehicles	Honda Vehicles	Honda	Edit Delete
19	EV Electric Vehicle	Motor Vehicles	Honda Vehicles	Toyota	Edit Delete
20	Toyota Land Cruiser	Motor Vehicles	Honda Vehicles	Toyota	Edit Delete
21	Honda Luxury Car	Motor Vehicles	Honda Vehicles	Honda	Edit Delete

This page has following major functionality:

- **Viewing Products** currently present in the database.
- **Editing products** present in the database by changing their information.
- **Deleting products** from the database.

Admin – Pending Orders

This page shows the pending orders placed by users of the Atec Mart.

Create Category

Sub Category

Insert Product

Manage Products

Pending Orders

Delivered Orders

Change Password

Logout

Pending Orders

#	Name	Email /Contact no	Shipping Address	Product	Qty	Order Date	Action
1	Demo User	demo@demo.com/12345	Islamabad,Islamabad,Islamabad-44000	Black Sports Shoes	1	2021-01-28 19:46:29	Edit

Admin – Delivered Orders

This page shows the orders delivered to the user:

Create Category

Sub Category

Insert Product

Manage Products

Pending Orders

Delivered Orders

Change Password

Logout

Pending Orders

#	Name	Email /Contact no	Shipping Address	Product	Qty	Order Date	Action
1	Demo User	demo@demo.com/12345	Islamabad,Islamabad,Islamabad-44000	Black Sports Shoes	1	2021-01-28 19:46:29	✎

Admin – Change password

This page allows an admin to change password.

Create Category

Sub Category

Insert Product

Manage Products

Pending Orders

Delivered Orders

Change Password

Logout

Admin Change Password

Current Password

Enter your current Password

New Password

Enter your new current Password

Current Password

Enter your new Password again

Submit

All the passwords of the website, including user and admin are being encrypted with MD5 encryption.

Requirements

Functional

1. System shall allow a new user to register an account and allow registered users to log into the system.
2. System shall fetch item details from database and display them on the items page.
3. System shall allow the user to add / remove items to / from cart.
4. System shall have functionality to allow user to enter their shipment address and to maintain that for a user in next purchase.
5. System shall have functionality to allow user to place an order after checking out items in the cart.
6. System shall allow admin to login to the admin panel.
7. System shall have functionality for admin to add new items to the catalogue by providing necessary details.
8. System shall allow admin to edit details of previously added items or delete current items from the website.
9. System shall allow admin to add / edit / remove categories and subcategories from the website.
10. System shall have functionality to allow admin to view order details in terms of pending orders and delivered orders.
11. System shall have functionality for user and admin to log out of the system.
12. System shall have functionality to search for items.
13. System shall maintain user, order and shipping details

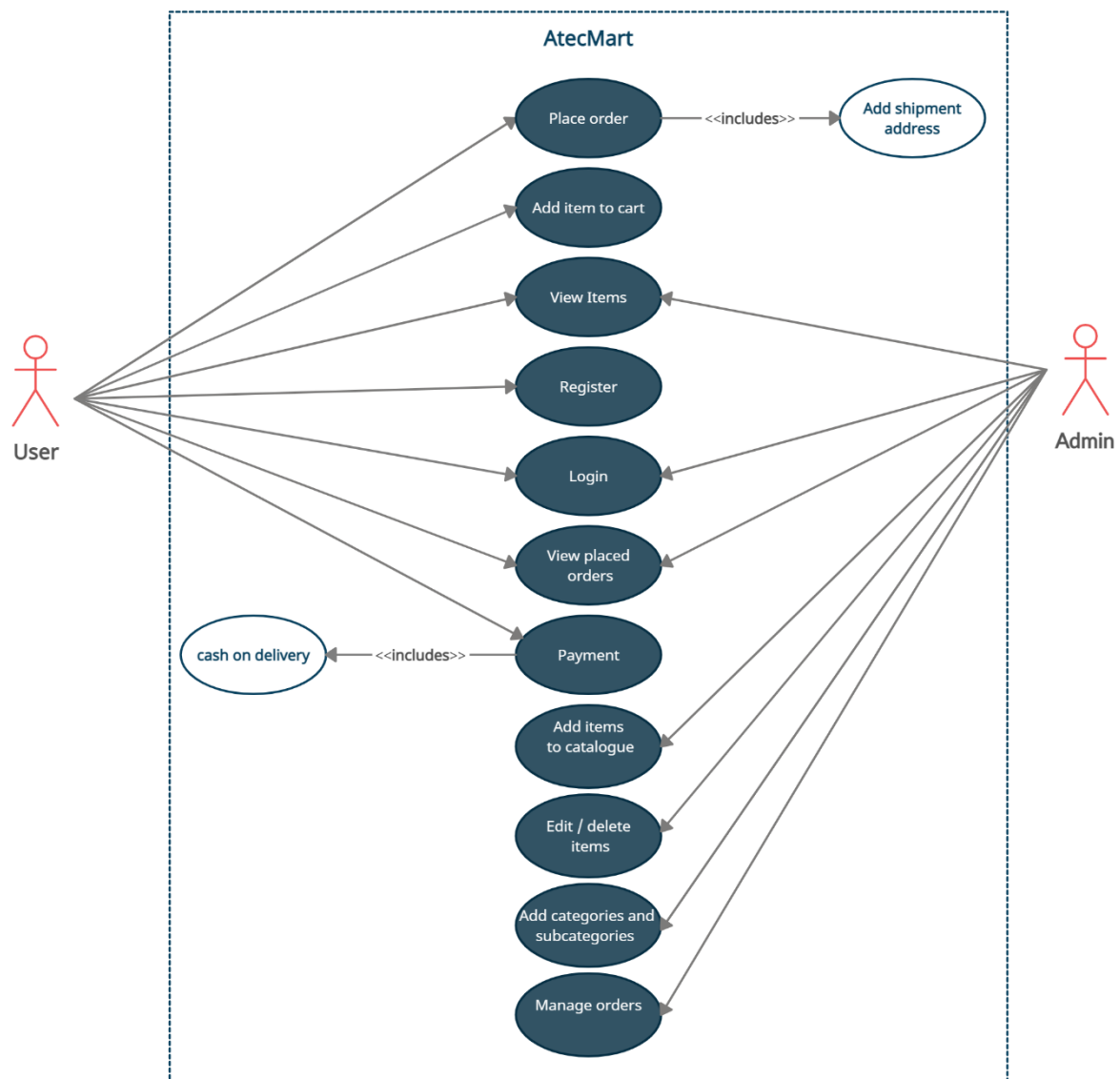
Non-functional

1. System shall be able to support 10,000 authentications per month.
2. System shall support cloud storage of 1 GiB (1.074 GB)
3. System server shall have network egress of up to 10GiB/month.

4. System shall have the server capacity that allows 20,000 document writes per day, 50,000 document reads per day and 20,000 document deletes per day.
5. System shall ensure data integrity and security of customer data.
6. System's database server shall be available ideally 99% of the time.

These non-functional requirements can be fulfilled by using any good web hosting server.

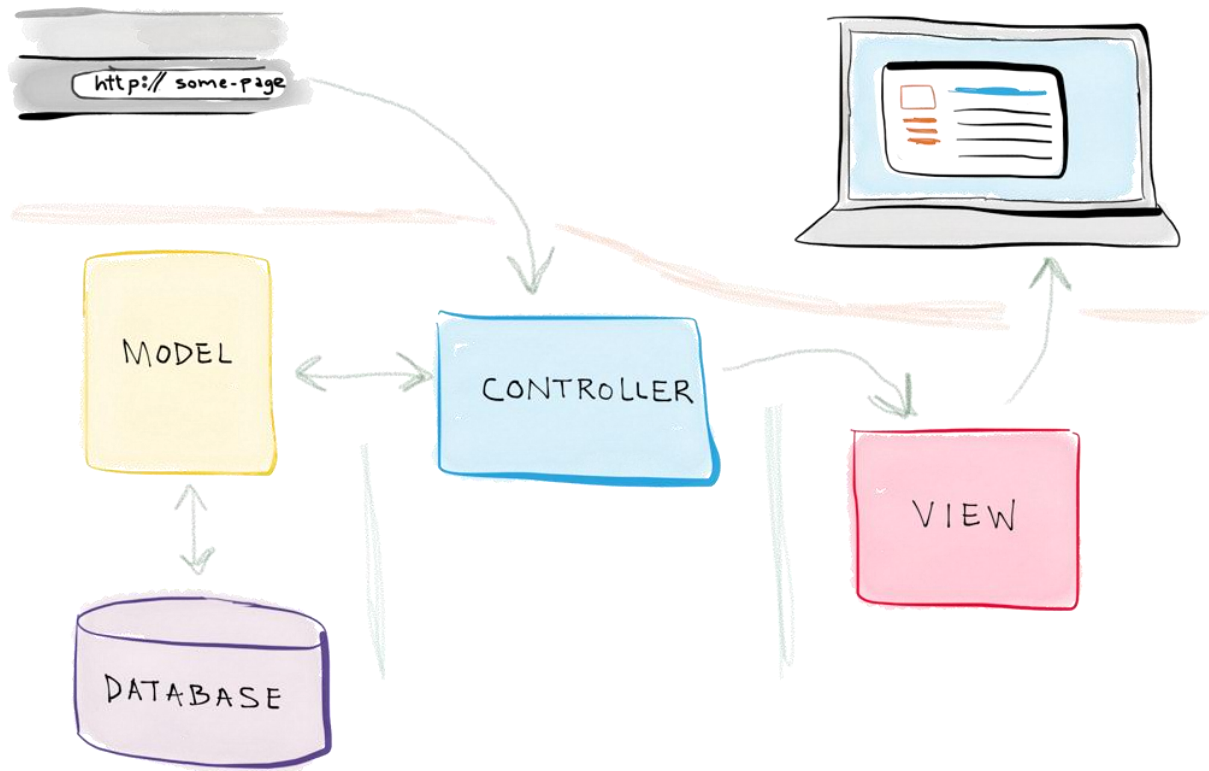
Use Case Diagram



Architecture and Design

MVC Architecture

Model View Controller (MVC) architecture was used for the Atec Mart website. It is an architecture quite popular for creating web and android applications which need to be scalable, or those applications which are already large.



This architecture has three parts:

1. Model
2. View
3. Controller

Model is the part of the architecture which contains all the data related components like databases, etc. It is an essential part of the application from where data is fetched from, saved to, and interacted with.

For example, a student object will retrieve grade information from the database or update current information.

View is the component of the system which contains the components responsible for the User Interface (UI) of the application. It is the part where a user interacts with the system.

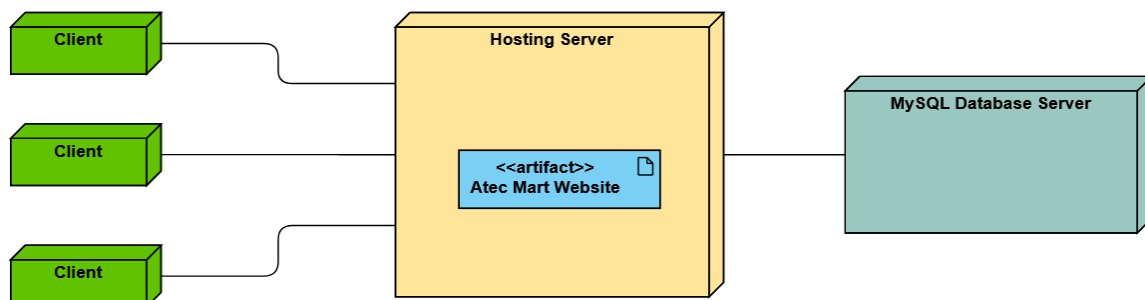
Controller is the component connecting both the model and the view. It acts as a translator of requests. This part contains most of the back end logic of the application.

The reasons why MVC architecture was chosen for this application are as follows:

- Easy and fast deployment
- Collaborative development (multiple developers working on different components) is easier.
- Relatively easier to debug.
- Based on research on internet found that it is best for complex but lightweight applications.

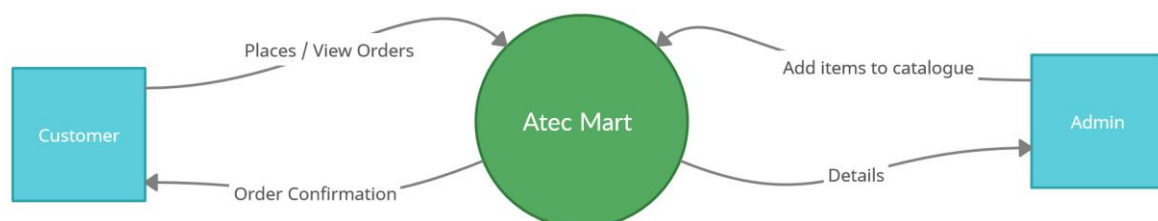
Deployment Diagram

The deployment diagram of Atec Mart is shown below:



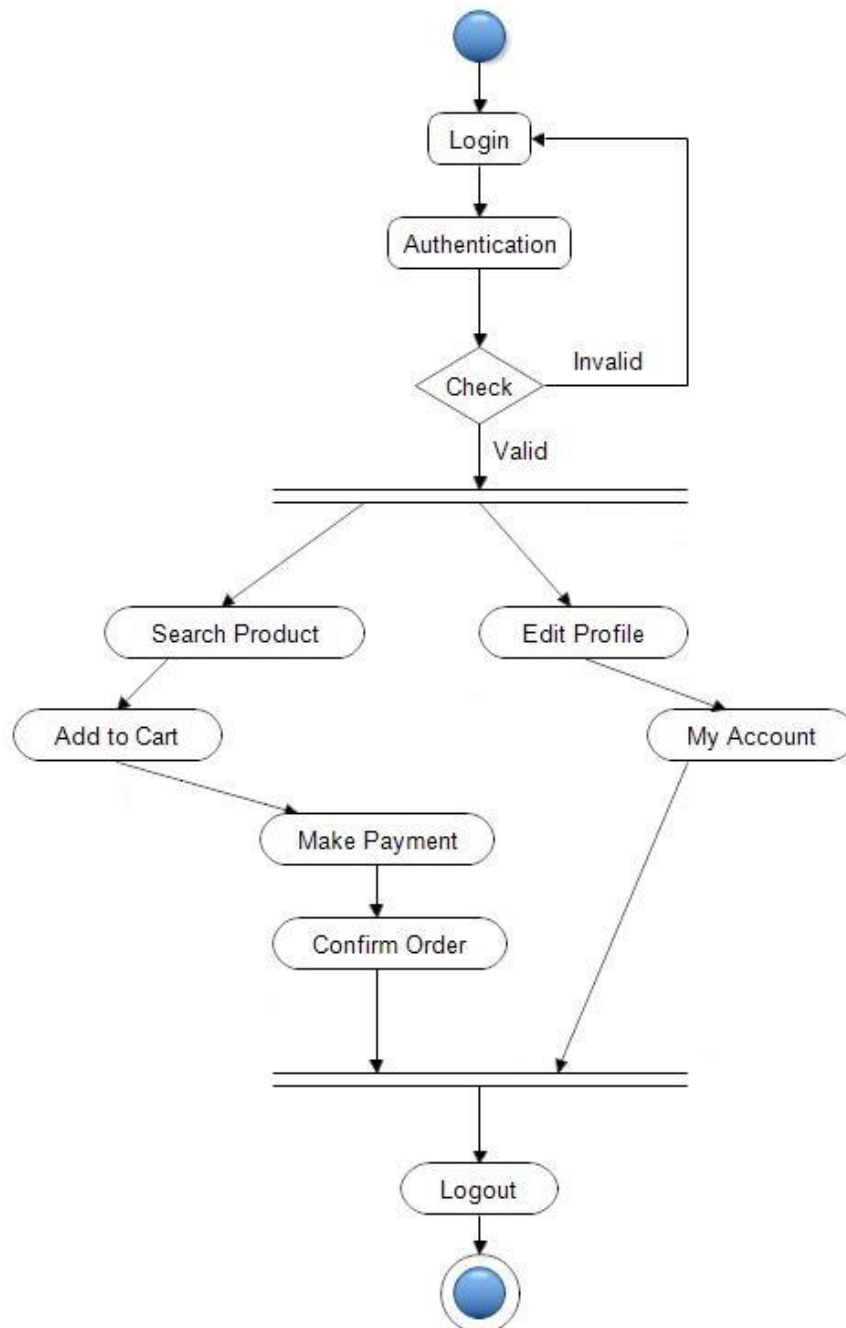
Context Diagram

Context diagram gives a high level information about interaction of entities with Atec Mart.

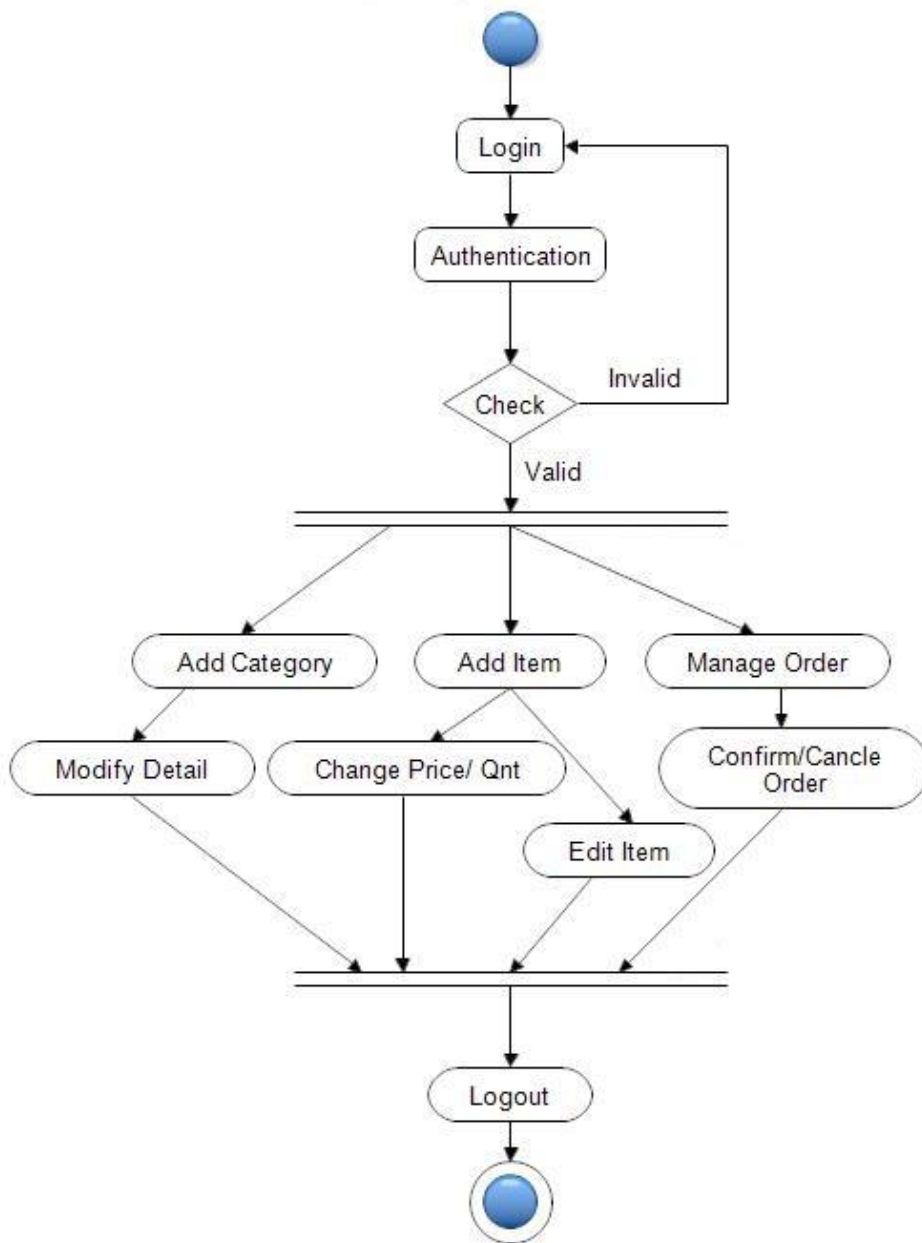


Activity Diagrams

User Activity Diagram

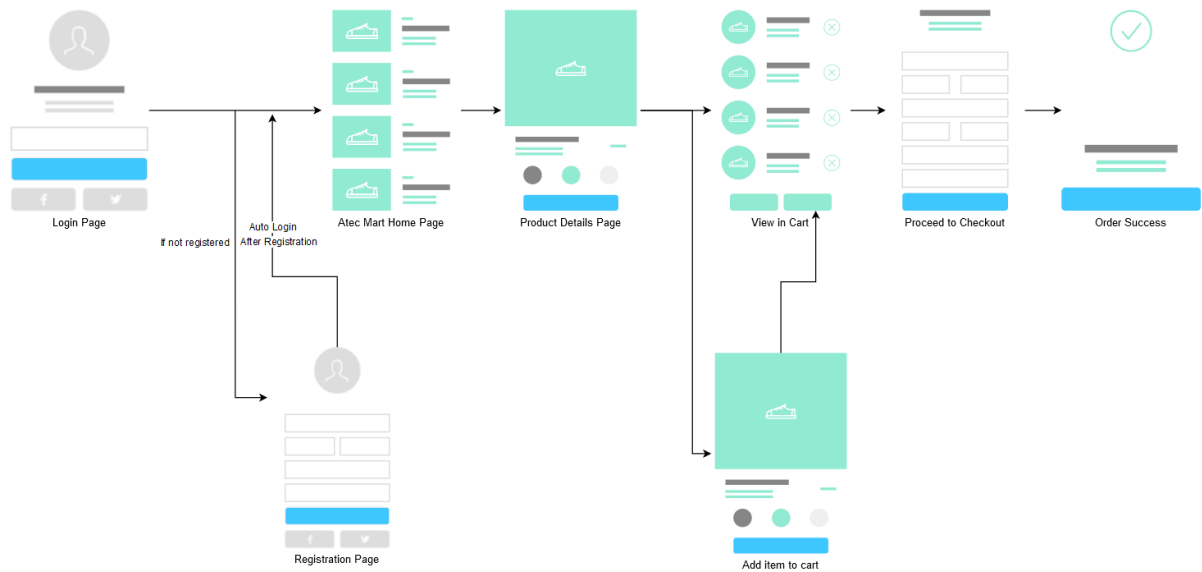


Admin Activity Diagram



Flow diagram

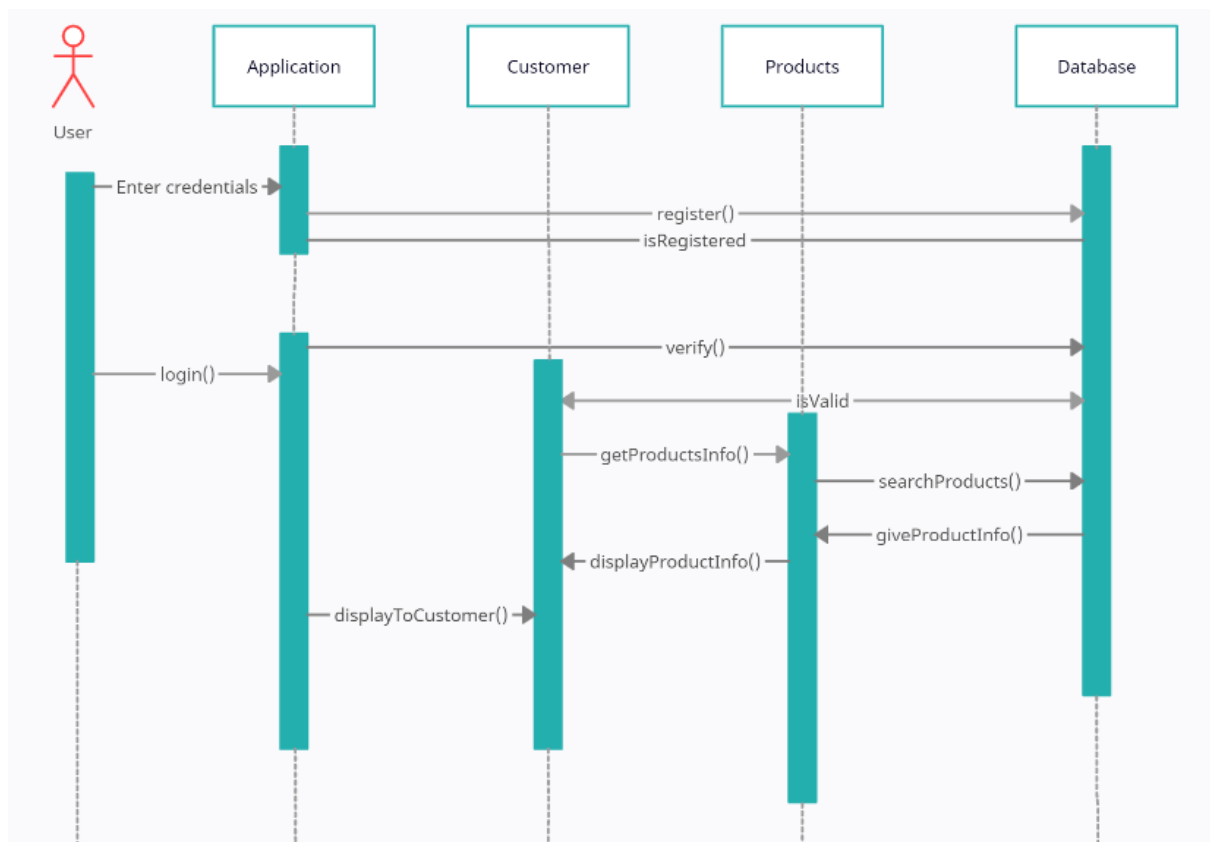
This is the flow diagram for the scenario when user logs into the system and orders an item.



Sequence Diagrams

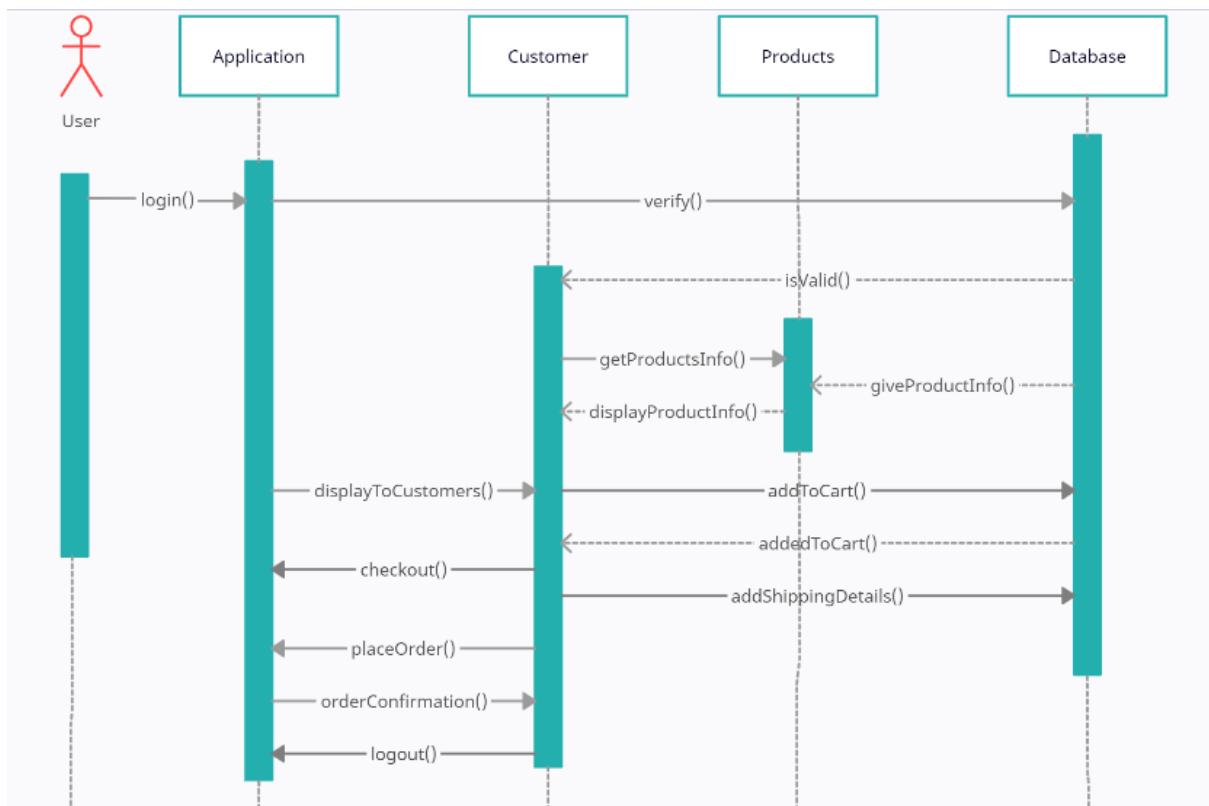
User Login / Register Scenario

The scenario where user logs in or registers on the system then browses details of a product.



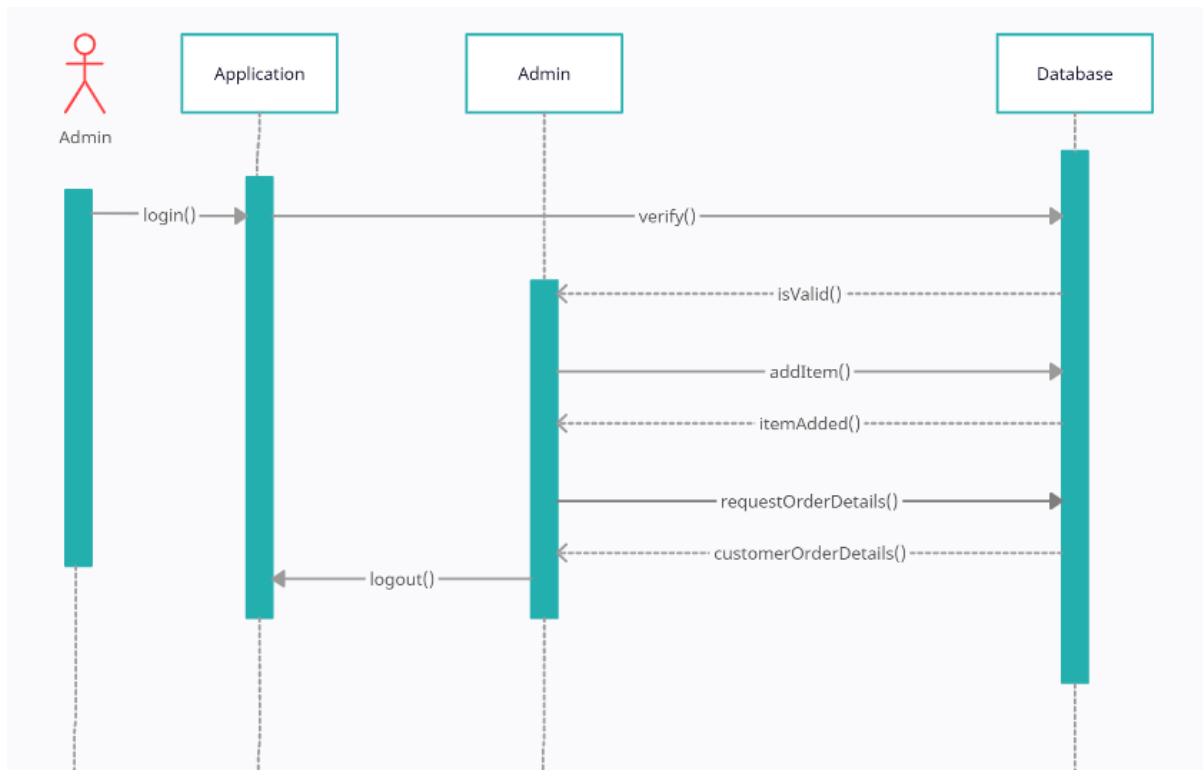
User adding item to cart Scenario

The scenario where user adds item to cart in addition to authenticating and browsing items.



Admin adding a new item Scenario

The scenario in which admin adds a new item to the catalogue.



Conclusion

Our Website solves the problems faced by many consumers in Pakistan that the prices vary immensely from place to place. For example, the blankets which cost very less in northern areas of Pakistan would cost extremely high as they arrive in Southern Punjab and Sindh, there are a lot of middlemen involved in the process and the cost keeps increasing incrementally. Atec Mart would allow consumers to directly order from locations where the items are in low cost by just paying the shipment charges to their location. In this way, it is a good deal for both the supplier and the customer as more orders would be placed to the supplier and customer gets the item in considerably lower cost.