

**UNIVERSITY INSTITUTE OF COMPUTING  
CHANDIGARH UNIVERSITY  
MOHALI, PUNJAB**

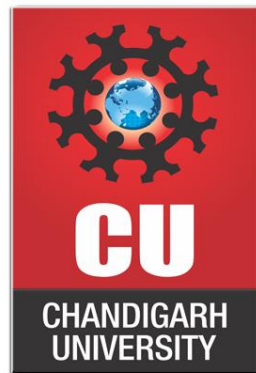
**Final Report**

A Major Project

(Based on MCA-4<sup>th</sup> Semester)

On

Title – Apna Bazar



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Date: 09/04/2023

# BONAFIDE CERTIFICATE



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## BONAFIDE CERTIFICATE

I have the pleasure in certifying that **PANKAJ KUMAR** is a bonafide student of **IV th Semester** of the Master's Degree in Computer Application (Batch 2021-2023), of Chandigarh University, Gharuan, Mohali, Punjab with UID No. 21MCA3188.

I certify that this is his/her original effort & has not been copied from any other source. This project has also not been submitted in any other institute / University for the purpose of award of any Degree.

This Project fulfills the requirement of the curriculum prescribed by this university for the said course. I recommend this project work for evaluation & consideration for the award of Degree to the student.

Signature: .....  
Dr. Abdullah  
HEAD OF THE DEPARTMENT  
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Signature: .....  
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SUPERVISOR  
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Submitted for the project viva-voce examination held on.....

.....  
INTERNAL EXAMINER

.....  
EXTERNAL EXAMINER

## **ACKNOWLEDGEMENT**

I hereby do solemnly acknowledge that I have taken my sincerest efforts in this project. However, it would not have been possible without the support and help of many individuals and organizations indulged along the way. I would like to extend my sincere thanks to all of them. I am highly indebted to **Mr. Arvinder Singh** for his guidance and the constant supervision as well as for providing all the necessary information to me regarding the project and also for the support in completing the project. I would like to express my sincere gratitude towards my parents, friends & members of project for their kind co-operation and encouragement which help me in completion of this project. I would also like to express my special gratitude and thanks to the industry persons for giving me such kind attention and time. My thanks and appreciations also go to all of my colleague who formed a part in developing the project and the people who have willingly helped me out with their special abilities.

## **ABSTRACT**

This project is an ecommerce based website for online shopping through the internet . The project objective which is delivered the online shopping system application into the internet . This project is an attempt to provide the advantage of online shopping to customers of a real shop . It helps buying the products in the shop anywhere through the internet by using an ecommerce website . Thus the customer will get the services of online shopping and home delivery from this favorite shop . This system could be implemented to any kind of shop in the locality or to the multinational branded shops having retail outlet chains If the shops are providing an online portal where their customers can enjoy easy shopping from anywhere the shops would not be losing any more customers to the trending online shop such as flipcart , amazon aliExpress or ebay . Since the services should be available in the internet it is easy to accessible and available always.

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# **Introduction**

It is known globally that, in today's market, it is extremely difficult to start a new small- scale business and its sustenance with competition from the well-established and settled/brand owners.

Most often, even if the quality of the product is really good, due to a lack of advertisement or business at the small scale, it just becomes another face in the sea, and the product does not reach a larger group of customers. In fast paced life of today when everyone is squeezed for time, the majority of people are finicky when it comes to doing physical shopping. Logistically, a consumer finds a product more interesting and attractive when they find it on the website of a retailer directly and are able to see item's details online.

The customers of today are not only attracted because online shopping is

very convenient but also because they have broader selections, highly competitive prices, better information about the product (including people's reviews) and extremely simplified navigation for searching regarding the product.

Moreover, business owners often offer online shopping options at low rates because the overhead expenses in opening and running a physical store are higher. Further, with online shopping, their products have access to a worldwide market, which increases the number of customers from different ethnic groups, adds customer value, and overall sustainable in the marketing.

Online web stores, such as Amazon and eBay, have gained huge popularity over the years because one can buy almost everything at these stores. These web stores also give an opportunity to a lot of small-scale companies and manufactures to reach the global market and to directly sell their products to people without involving different other companies or middlemen before their product can reach the shelves of a physical store. Further, instead of using the available platforms, manufacturers can bring a concept of designing their own web store to sell their products directly to the masses.

## **Client Identification and Recognition of Need**



The motivation for designing this ApnaBazar application came because I love online shopping rather than spending a lot of time at physical markets. Further, using the available stores to sell the products, there is also the possibility of designing one's own customized ApnaBazar application from scratch because custom-designed platforms are expensive.

The identification of potential clients and their needs is crucial for the success of any e-commerce platform such as Apna Bazar. Here are some potential client identification and recognition of needs for Apna Bazar:

**Demographics:** Apna Bazar needs to identify the demographics of its target customers such as age, gender, income, education, and location.

Understanding these demographics will help Apna Bazar create targeted marketing campaigns and tailor its products and services to meet the needs of its customers.

**Product Needs:** Apna Bazar needs to recognize the product needs of its customers and offer a wide range of products and services to meet those needs. This could involve conducting market research to identify the most popular products in its niche, tracking customer feedback, and adapting its product offerings accordingly.

**Convenience:** With the increasing preference for online shopping, Apna Bazar needs to recognize the need for convenience in its e-commerce platform. This could involve providing a user-friendly interface, fast and reliable delivery, and easy payment options.

**Trust and Security:** Customers want to feel secure when shopping online, so Apna Bazar needs to recognize the need for trust and security in its platform. This could involve implementing secure payment gateways, ensuring customer data privacy, and providing excellent customer service.

**Personalization:** Customers appreciate personalized experiences, so Apna Bazar needs to recognize the need for personalization in its platform. This could involve offering personalized product recommendations, loyalty programs, and targeted marketing campaigns.

By identifying potential clients and recognizing their needs, Apna Bazar can create a platform that meets the needs of its customers and drives customer loyalty and retention.

## **Recognition & knowledge of relevant contemporary issues.**

The objective of this project is to develop a general-purpose e-commerce store where any product (such as books, CDs, computers, mobile phones, electronic items, and home appliances) can be bought from the comfort of home through the Internet. However, for implementation purposes, this paper will deal with an online e-commerce store. An online store is a virtual store on the Internet where customers can browse the catalog and select products of interest. The selected items may be collected in a ApnaBazar. At checkout time, the items in the ApnaBazar will be presented as an order. At that time, more information will be needed to complete the transaction handled smoothly.

The project aims at the following matters

- Automation of product manipulation.
- Buying products.
- To manage information of different types of items.
- Consistently update information of all the item.
- Managing security by providing authorized email & password. Manages database efficiently

## **Task Identification**

1. Display all the categories available for shopping on the system's main page.
2. Display all the items linked to each category listed on the main page.

3. Allow the administrator to add new items to the existing list of available items.
4. Allow users/administrator to remove items.
5. Allow the administrator to modify the price of each item.
6. Allow the administrator to update the description about each item.
7. Allow the administrator to view and edit information about each user that checkouts the items from the system

## **PROJECT IDENTIFICATION**

Identifying potential projects is essential for the growth and success of Apna Bazar. Here are some potential project ideas for Apna Bazar:

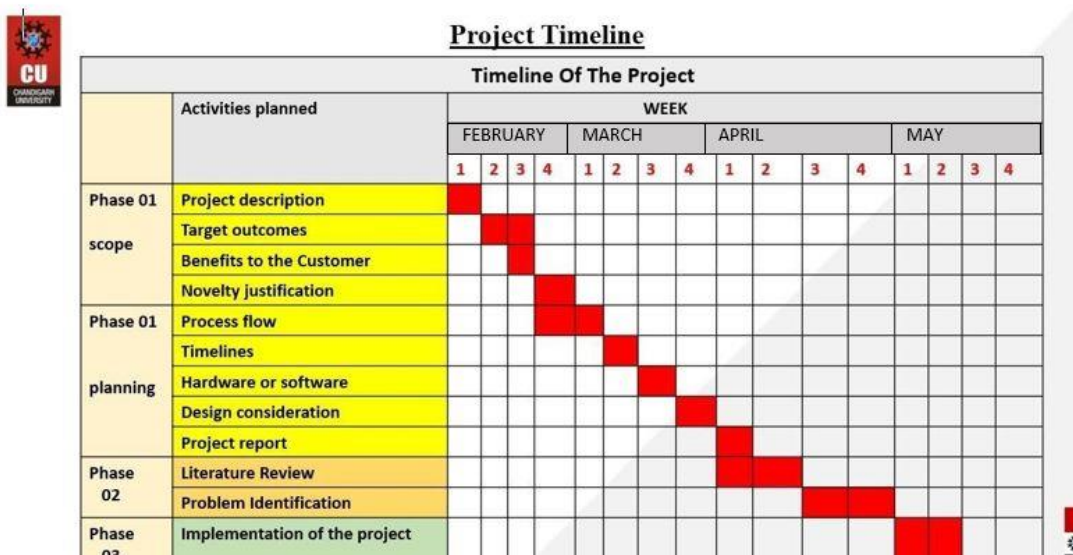
1. **Website Optimization:** Apna Bazar can undertake a project to optimize its website for better user experience and improved conversion rates. This could involve improving site navigation, redesigning the user interface, and optimizing the website for mobile devices.
2. **Marketing Campaigns:** Apna Bazar can develop and launch targeted marketing campaigns to attract new customers and retain existing ones. This could involve running social media ads, email marketing campaigns, and offering exclusive discounts and promotions.
3. **Supply Chain Management:** Apna Bazar can undertake a project to improve its supply chain management system for

better inventory control and faster order fulfillment. This could involve integrating the inventory system with the website, implementing an automated order fulfillment process, and partnering with reliable suppliers.

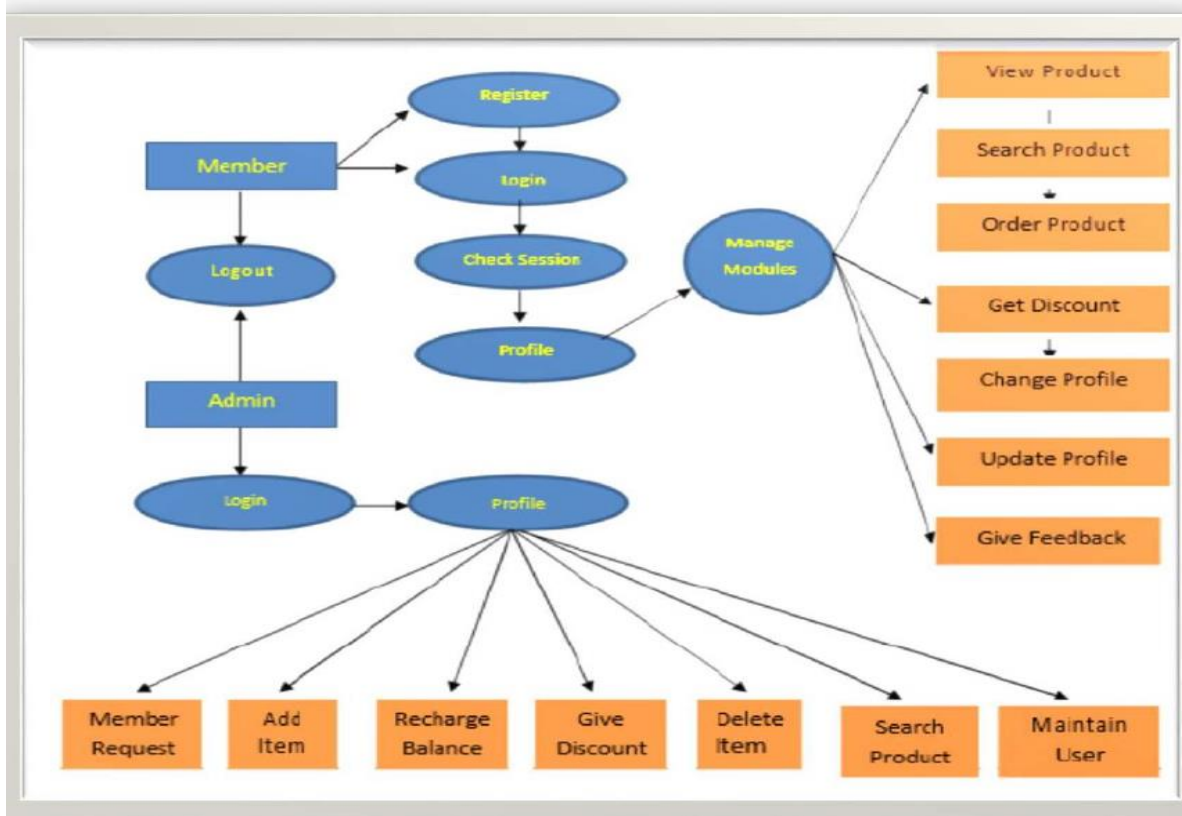
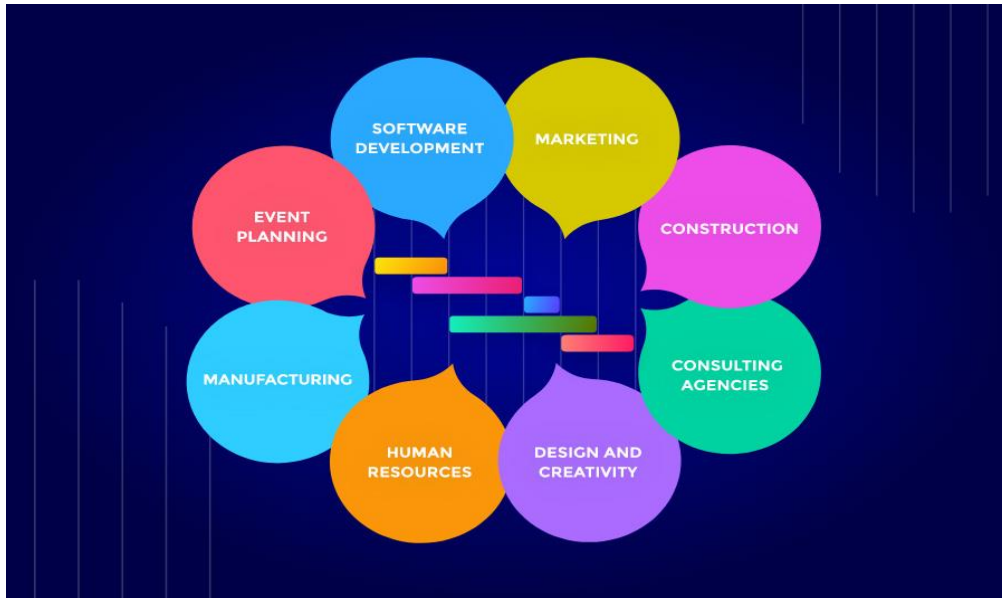
4. **Customer Service:** Apna Bazar can undertake a project to improve its customer service capabilities to enhance customer satisfaction and retention. This could involve hiring more customer service representatives, implementing a 24/7 chat support system, and improving the return and refund policy.
  
5. **Product Expansion:** Apna Bazar can undertake a project to expand its product offerings to cater to a wider range of customers. This could involve introducing new product categories, partnering with new suppliers, and sourcing unique and exclusive products.

By identifying and prioritizing potential projects, Apna Bazar can create a roadmap for its future growth and success.

## Timeline of the project



## Gant Chart/ Use of modern project planning tools.



# **Tool**

## **BackEnd**

- **Node.js**
- **Express.js**
- **mongoDB(mongoose)**
- **cloudinaryStorage)**
- **Payment(stripe)**

## **FrontEnd**

- **React.js**
- **Bootstrap**
- **HTML**
- **CSS**

# **Relevant topics identified for literature review**

The history of ecommerce ApnaBazars began immediately after the World Wide Web, or WWW, became a major medium to communicate information around the world. Ecommerce ApnaBazar applications allow consumers to buy goods or services directly over the internet using a web browser. This online shopping evokes the business-to-consumer (B2C) process where a consumer buys directly from the business. The process where a business buys from another business is called a business-to-business (B2B) process. The best examples of shoppingcart applications using B2B process are eBay and Amazon, both of which were launched in 1995.

At present, most users of these online ApnaBazar applications are people who have higher levels of education, have exposure to technological advancements, and are in a better income group. Such users develop a positive attitude towards these convenient shopping techniques. According to a study in December 2011, Equation Research surveyed 1,500 online shoppers and found that 87% of tablet owners made online transactions during the early Christmas shopping season. Building a new successful



ApnaBazar is simple because of high competition in the market, and the designer of a ApnaBazar application must consider the information load, complexity, and novelty. Complexity refers to the number of features available on the ApnaBazar and the levels of marketing, whereas novelty involves the unexpected or unfamiliar aspects of the site.

A designer must also consider the consumers' needs and expectations. A user for friendly design is very critical to the success of any ApnaBazar application because, unlike physical stores, consumers at online stores come from all ages, genders, and cultures. Logistics clearly says that, to have a successful and profitable online shopping application, businesses have to spend a significant amount of time and money for designing, developing, testing, and maintaining the application. Apart from the high-class design and user interface, a good practice needs to be done to provide quality customer service.

A typical ApnaBazar should contain certain features such as adding items to the cart and checking out those items using the available payment methods. Most ApnaBazar applications are implemented using HTTP cookies or query strings, and an HTML setup is required to install the ApnaBazar on the servers that ultimately hosts the site on the internet. Most of these server-based applications require data related to the items added in the ApnaBazar to be kept in a session object which can be accessed later and manipulated dynamically because the users can add or remove one or more items from

the cart. Most simple ApnaBazar applications do not allow checkout to be done before any items are added to the cart. Data are often stored in an external database or application-based databases which can be accessed in real time by the application administrator. There are many examples of online shopping applications developed in different languages.

Choosing a development platform and language depends on policies set by the company for which the application is being designed.

It also depends on several other factors which are very important when considering the platform to design an application, for example, how portable the application will be after being built or if the application is open sourced. is chosen for this application because various reasons: it is a simple, robust, and cross-platform language. Applications written in Node.js can be transported and run on any environment, be it 5 MAC or Linux, because Node.js programs are compiled into platform-independent. Because of the robustness of Node.js, it is a very safe language, as they provide exception handling and a layer method to communicate with the database, which prevents the system from crashing easily.

Another very important factor from the development point of view is that the Node.js language is object oriented, where everything is treated as an object and where class methods are implemented instead of functions or procedures, which makes it very simple to understand the code. Several

Node.js ApnaBazar applications were examined, and implementation details were compared with the proposed design for this application to build an even simpler architecture was developed which is very easy to understand from the learning perspective.

Some online shopping applications are as follows:

- SoftSlate
- Commerce
- Cs. Cart
- Apache Ofbiz

These applications are designed for industrial purposes to generate revenue by providing these applications to customers looking to launch a website for their respective businesses. The application proposed in this paper is more focused on developing a simple, yet complete, application specifically designed for computer science students to learn the basics about application design and development. This application performs all the basic functions that the above-mentioned applications do, such as selecting an item and adding it to the ApnaBazar, user login or registering, checkout of the item, etc. Other functions that can be added to this application are proposed in the future work, and they would be necessary under a more complete and complex design. The final application is expected to teach students enough to start them on a course to implement more complex functionalities, as mentioned in the Future Work.

# **Problem Definition**

## **Cybersecurity**

Small businesses that focus their attention in the e-commerce space need policies and procedures to create a solid cybersecurity framework for the organization.

## **Competition**

As a small business, you can overcome price competition by having a very clear company value proposition that consumers can't get elsewhere,

## **Quality website traffic and visitor conversion**

To turn your traffic into converting customers, you must have a website that is modern, clean, user-friendly, trustworthy and virus-free," Chu said. "Every industry is different, so understanding your audience is crucial to designing a website that resonates with your audience

# **ER-MODEL**

## **Entity-Relationship Diagram**

This portrays connection between information objects. The property of every information objects noted in the element relationship chart can be portrayed utilizing an information object depiction. Information stream chart fills two

needs:

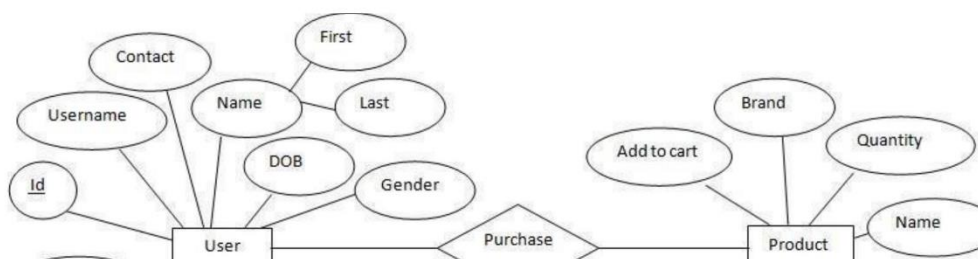
1. To give a sign of how information are changed as they travel through the framework.
2. To portray the capabilities that change the information stream.

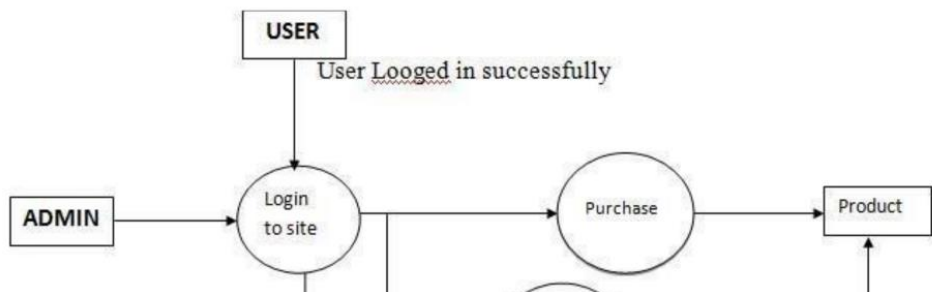
**Data Objects** An information object is a portrayal of practically any composite data that should be grasped by the product. By composite data, we mean something that has various properties or characteristics. An information object exemplifies information just there is no reference inside an information object to tasks that follow up on the information.

**Attributes** Credits characterize the properties of an information item and take on one of three distinct qualities. They can be utilized to: Name an occasion of information object. Portray the case. Make reference to one more occasion in other table.

**Relationships:** Information objects are associated with each other in a wide range of ways. We can characterize a bunch of item relationship coordinates that characterize the important connections.

**ER DIAGRAM IS AS FOLLOWS**





## **Goals and Objectives**

This software is developed to help computer science students learn about application designing using JavaScript and React.js from their basic

capabilities. This application allows the student to understand the basics about the appearance of a first web page and how a complete working application can be built from scratch. It allows students to understand the concept of user-integrated graphics and how JavaScript can be embedded into HTML. Further, it gives insight about how the client-side language interacts with the server-side language, Node.js, and finally with the database. This ApnaBazar application is designed, primarily, for computer science students to learn and understand the concept of application development, and can also be used to teach ecommerce and web-application topics. The application can be downloaded and installed on different machines, and students can view the source code for all the different parts shown on the UI to visually understand how a particular piece of code works. This AnpaBazar application is very versatile and can be enhanced by adding more functions and modified graphics for use with commercial purpose

The goals and objectives of an e-commerce website Apna Bazar may include:

**Increase Sales:** One of the primary goals of an e-commerce website is to increase sales. The objective would be to provide a platform where customers can browse and purchase products easily and securely.



**Expand Customer Base:** Another goal would be to expand the customer base. The objective would be to reach out to potential customers through online marketing, search engine optimization, social media, and other digital channels.

**Build Brand Awareness:** The goal would be to create brand awareness for Apna Bazar. The objective would be to establish a unique identity and value proposition that resonates with customers, and to promote this identity through various marketing channels.

**Enhance Customer Experience:** The goal would be to provide customers with a seamless and enjoyable shopping experience. The objective would be to optimize the website for user-friendliness, ease of navigation, and quick loading times. Also, provide excellent customer service, including fast and reliable shipping and easy returns.

**Increase Repeat Business:** The goal would be to increase repeat business from satisfied customers. The objective would be to provide incentives such as loyalty programs, personalized recommendations, and promotions to encourage customers to come back and purchase again.

**Monitor and Improve Performance:** The goal would be to continually

monitor and improve the performance of the website. The objective would be to track key performance indicators such as conversion rates, bounce rates, and average order value, and use this data to make informed decisions about site design, marketing, and customer experience.

Overall, the ultimate goal of Apna Bazar would be to establish a strong online presence and become a leading e-commerce platform in its niche.

### **Feature/Characteristic selection**

Selecting the right features and characteristics for Apna Bazar is essential for its success as an e-commerce platform. Here are some potential features and characteristics that Apna Bazar could consider:

1. **User-Friendly Interface:** Apna Bazar should have a user-friendly interface that is easy to navigate, with clear calls-to-action and intuitive design
2. **Product Catalogue:** Apna Bazar should have a comprehensive product catalogue that includes a wide range of products in different categories, with detailed descriptions, images, and customer reviews.

3. Search and Filter: Apna Bazar should have a search and filter functionality that allows users to find specific products easily, with options to filter by price, category, brand, and other relevant criteria.
4. Shopping Cart: Apna Bazar should have a shopping cart feature that allows users to add products to their cart, update quantities, and review their order before checkout.
5. Secure Payment Gateway: Apna Bazar should have a secure payment gateway that accepts different payment methods such as credit cards, debit cards, and online wallets.
6. Fast and Reliable Shipping: Apna Bazar should offer fast and reliable shipping options to ensure timely delivery of products to its customers.
7. Customer Reviews and Feedback: Apna Bazar should have a section for customer reviews and feedback, allowing users to rate products and provide comments.
8. Order Tracking: Apna Bazar should have an order tracking feature that allows users to track the progress of their orders and receive notifications on their delivery status.

9. Customer Support: Apna Bazar should provide excellent customer support, with options for email, chat, or phone support, and a comprehensive FAQ section.

By selecting the right features and characteristics, Apna Bazar can create a user-friendly, secure, and reliable e-commerce platform that meets the needs and expectations of its customers.

### **Regulations & Design constraints considered in design**

When designing Apna Bazar, there are several regulations and design constraints that need to be considered to ensure compliance and a seamless user experience. Here are some examples:

1. Data Privacy Regulations: Apna Bazar needs to comply with data privacy regulations such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA). This means that Apna Bazar needs to ensure that customer data is collected and stored securely and that customers have control over their data.
2. Accessibility Guidelines: Apna Bazar should comply with accessibility

guidelines to ensure that the website is accessible to users with disabilities. This could involve designing the website with high contrast colors, providing alternative text for images, and ensuring that the website is navigable using keyboard controls.

3. **Payment Gateway Regulations:** Apna Bazar needs to ensure that its payment gateway is compliant with regulations such as the Payment Card Industry Data Security Standard (PCI DSS). This means that Apna Bazar needs to ensure that customer payment data is collected and stored securely.
4. **Intellectual Property Rights:** Apna Bazar needs to ensure that all content, images, and products offered on the website do not violate intellectual property rights such as trademarks and copyrights.
5. **Web Design Best Practices:** Apna Bazar needs to adhere to web design best practices to ensure a seamless user experience. This could involve designing the website with a responsive layout that is optimized for different devices, using appropriate font sizes and styles, and ensuring that the website loads quickly.

By considering these regulations and design constraints, Apna Bazar can create a website that is not only compliant but also provides a seamless and

enjoyable user experience.

### **Analysis and feature finalization subject to constraint**

When finalizing features for Apna Bazar, it is essential to consider any constraints that may impact their implementation. Here are some constraints that Apna Bazar could consider:

1. **Budget Constraints:** Apna Bazar needs to consider its budget when finalizing features. This means that the cost of implementing each feature should be taken into account, and features that are too expensive may need to be delayed or dropped.
2. **Time Constraints:** Apna Bazar needs to consider its timeline when finalizing features. This means that features that require a significant amount of development time may need to be delayed or phased in over time.
3. **Technical Constraints:** Apna Bazar needs to consider its technical capabilities when finalizing features. This means that features that require specialized skills or technologies may not be feasible to implement.

4. Legal Constraints: Apna Bazar needs to consider any legal constraints that may impact the implementation of features. For example, features that violate data privacy regulations or intellectual property laws may need to be dropped.
5. User Constraints: Apna Bazar needs to consider the needs and preferences of its users when finalizing features. This means that features that are not relevant or useful to its target audience may need to be dropped.

By analyzing and finalizing features subject to these constraints, Apna Bazar can create a website that meets the needs and expectations of its customers while staying within its budget, timeline, and technical capabilities.

## **Generate multiple design alternates**

Generating multiple design alternatives for Apna Bazar can help ensure that

the final design meets the needs and preferences of its users. Here are some steps that can be taken to generate multiple design alternatives:

1. **Conduct User Research:** User research can provide valuable insights into the needs and preferences of Apna Bazar's target audience. This can involve conducting surveys, interviews, and usability testing to gather feedback on the current design and identify areas for improvement.
2. **Identify Design Goals:** Based on the user research, identify the primary design goals for Apna Bazar. These goals could include improving the website's usability, increasing engagement, or updating the website's visual design.
3. **Brainstorm Design Ideas:** Once the design goals have been identified, brainstorm a wide range of design ideas that could help achieve these goals. This can involve sketching out different design concepts, exploring different color palettes, or experimenting with different typography.
4. **Create Wireframes:** Using the design ideas generated in the brainstorming process, create wireframes that represent different design alternatives for Apna Bazar. This can involve creating low-fidelity wireframes using pen and paper or using digital wireframing



tools to create more detailed designs.

5. Evaluate Design Alternatives: Once multiple design alternatives have been created, evaluate each design against the design goals and user feedback. This can involve conducting usability testing or gathering feedback from stakeholders to identify the strengths and weaknesses of each design.

By following these steps, Apna Bazar can generate multiple design alternatives that are informed by user research and focused on achieving specific design goals. This can help ensure that the final design is effective, user-friendly, and visually appealing.

### **Selection of best design and implementation plan**

Selecting the best design and implementation plan for Apna Bazar can be a complex process that involves evaluating each design alternative against various criteria. Here are some steps that can be taken to select the best design and implementation plan:

1. Review Design Goals: Review the design goals for Apna Bazar to ensure that each design alternative aligns with these goals. This can involve evaluating each design against factors such as usability,

engagement, and visual appeal.

2. Evaluate User Feedback: Evaluate user feedback collected during the design process to identify which design alternative is most likely to meet the needs and preferences of Apna Bazar's target audience.
3. Consider Technical Feasibility: Consider the technical feasibility of each design alternative to ensure that it can be implemented within the required budget and timeline.
4. Assess Implementation Complexity: Assess the complexity of implementing each design alternative to ensure that it can be accomplished without undue risk or disruption to Apna Bazar's operations.
5. Consider Resource Availability: Consider the availability of resources, including personnel and equipment, required to implement each design alternative.
6. Review Constraints: Review any constraints that may impact the implementation of each design alternative, such as budget, time, or legal constraints.
7. Make a Decision: Based on the evaluation of each design alternative, select the design and implementation plan that best meets the needs of Apna Bazar, considering all the above factors.

Once the best design and implementation plan have been selected, it is important to develop a detailed project plan that outlines the steps required

to implement the design and allocate resources accordingly. This plan should include timelines, milestones, budget estimates, and risk mitigation strategies. By following this process, Apna Bazar can select a design and implementation plan that is effective, feasible, and aligned with its goals and resources.

## **TESTING**

This chapter includes the methods that were used for testing, validating, and evaluating the system. The Conclusion and the Future Work for the software are also given.

## **FACTORS THAT INFLUENCE CUSTOMER**

### **SATISFACTION ACCESSIBILITY**

You want to guarantee that clients can find and access your items and administrations effectively, without boundaries and contact, on their favored channel. Likewise, ensure that they can arrive at your organization and get great help at whatever point they have an inquiry

or need help to settle on a buy choice.

## **Navigation**

Exploring and perusing your store ought to be a direct and basic cycle.

This incorporates giving clients who understand what they need with a

successful watchword search or channels yet additionally coordinating

arrangements that guide uncertain customers to assist them with

distinguishing reasonable items rapidly. A site that is hard to explore will

just prompt client disappointment and a deficiency of expected clients.

## **Page Load Speed**

It's a basic rule: the quicker your site stacks, the more joyful your

guests. In the event that one of your pages doesn't seem lightning-

quick, your client will continue on toward speedier web-based stores.

## **Language**

Addressing your clients in their favored language is vital for your business. Over half of shoppers won't make a buy in the event that data about an item isn't accessible in their language.

Utilize easy to understand language and keep away from industry

explicit language that could create turmoil and deny you of a valuable chance to interface on an individual level.

□ Without incredible correspondence, there can be no extraordinary client experience.

## **Memory**

As indicated by Harvard Business Audit, clients become baffled on the off chance that they need to rehash the same thing. Shoppers feel happy with changing starting with one channel then onto the next and anticipate that their data and information should follow them along. They would rather not be requested similar subtleties again and again, no matter what the channel or office, they're connecting with. Memory likewise implies recalling your client's requirements and needs to try not to attempt to offer items to clients, which they as of now have or obviously care very little about.

## **Personalized**

By customizing the experience and sharing the right satisfied,

brilliantly with the ideal individuals, you can make connections quicker, simpler and more effective for your clients. This outcomes in expanded consumer loyalty and the probability of rehash visits. The method involved with purchasing items and administrations through the channel of the web is called web based shopping. It enjoys extraordinary upper hands over genuine business sectors. Numerous internet based stores are giving their best administrations to individuals. The arrangement of web based shopping has expanded it so immense. By sitting at any side of the world you can benefit the administrations. Because of the web based shopping framework, you can search for any item from any spot and get the conveyance at your home. This web-based framework has made it conceivable to effectively move toward any world's market. You can go on the web or different nations effectively by means of the web. Behind the web based shopping framework there are numerous goals that you ought to be aware:

**Manage the shopping details:** The whole system of online shopping

manage the detail of each shopping done by the customers. They extract the product details of what consumers shopped.

**Manage the payment details:** In online shopping, customers get many options for mode of payments. Websites give them the option of online payment through debit or credit cards. Customers have also the option of net banking or cash on delivery payment option. It is the objective of an online shopping system to manage all the payment details of each product. Generate the information of customers and products: Online shopping system manages the whole information about the customers and the purchased products.

Reduce the cost of management: Online shopping or digital shopping help in reducing the management cost of products.

## **Methodology**

With this testing approach, all the specs were ready for a prototype, and a plan was already built to be shown; the tester started writing his or her code and saw if he or she could obtain the same results that the

specs mentioned. This way, the specs were tested on each prototype, and continuous testing was applied. This also helped to minimize the testing that would have to be implemented at the end of the software lifecycle. In the process, all aspects of the software were tested. Steps to follow while implementing the methodology are as follows:

1. Start with a base function that you want to implement.
2. Create a document with the detailed requirement definition, an activity diagram with a description of the flow, database tables to be used, a component diagram, and a description of each component with the precondition and tables that would be affected by the component.
3. Give the document to the tester, and work with the tester while he or she writes the code to check if the steps in the document can be implemented and if the result of each use case can be achieved.
4. If the tester finds a step difficult to implement or thinks he or she is missing additional information to implement the functionality, then go to step 2; otherwise, go to step 3.



5. Ask the tester to log on all the errors and difficulties he or she encountered while working on the prototype implementation.
6. Once the prototype is done and the results between the developer's prototype and tester's prototype match, work on the other requirement, and expand the prototype to final software
7. When the testing approach was implemented, the following pros and cons regarding the testing approach were realized.

#### Pros of using the methodology

- Helps give a better understanding about the requirements.
- Better design at the end of the cycle.
- Reduced testing to be performed at the end of the cycle
- Documents produced would be of higher quality.

## Cons of using the methodology

- The person working on the document should be experienced.
- There are increased time and money involved with testing.
- Different viewpoints for the same problem can lead to varying results.

## **Interface Testing**

This section lists the functional requirements used for creating the test-case table, the testcases that were used to verify the interface table, and the results for the test-cases table.

Table 1 lists the functional requirements for the interface built for the online shopping-cart application, along with a short description of each requirement

**Table 1.** List of Functional Requirements.

Functional Requirement Number	Functional Requirement Short Description
FR01	The online shopping-cart application shall have two types of authentication: User authentication and Admin authentication.
FR02	The online shopping-cart application shall be accessible to all the users to browse all the categories and the items.
FR03	The users shall be able to view the items they added to the shopping cart.
FR06	The Admin shall be able to upload new/revised items as well as to add/modify the categories.
FR07	The Admin shall be able to view all the users registered in the system.
FR08	The Admin shall be able to view all the information about users who placed an order from the shopping cart.
FR09	The users shall not be able to check out with an empty cart.
FR10	The users shall not be able to place an order without providing valid information for all rows in the order form.
FR11	The users shall not be able to place an order if any of the columns in the order form are left empty.

## Test Cases

Table 2 shows the functional requirements used to write the test cases along with the test-case numbers for each test case and a short description of the test cases.

**Table 2.** List of Test Cases.

Functional Requirement No.	Test Case No.	Test-Case Short Description
FR01	TC01	To test the Login/Authentication interface for the Admin
	TC02	To test the Login/Authentication interface for the users
FR03	TC03	To test, users can view the items they add in the shopping cart.
FR06	TC04	To test, Admin can upload new/revised categories.
	TC05	To test, Admin can upload new/revised items.
FR07	TC06	To test, Admin can view all the users registered in the system
FR08	TC07	To test, Admin can view the information about all the users who successfully placed an order.
FR09	TC08	To test that users cannot check out with an empty shopping cart.
FR10	TC09	To test that users are not able to submit an order form if the information in any of the fields is not valid.
FR11	TC010	To test that users are not able to submit an order form if the information in any of the fields is left blank.

The following list includes the steps that should be taken by the user, the conditions that should be met for the successful execution of the test case, and the end result that should be met for the test cases to pass.

1. TC01: To test the Login/Authentication interface
  - Input: Username and Password
  - Output: Valid Destination Page
  - Valid Range: User Name  Alphanumeric, Password  Alphanumeric
  - End Messages/Result
    - i. If (User == Valid User), an order form appears to complete the checkout process
    - ii. If (User != Valid User), an error message is displayed on the Login interface.
2. TC02: To test, the users can view the items they add to the shopping cart.

- Description of Purpose: The system shows all the saved items in shopping cart for a particular user. The user can choose to check out the items or go back to continue shopping.
  - Input: The user adds an item to the shopping cart from any of the available categories.
  - Output: The shopping-cart page pops up, showing the item that is added by the user.
  - End messages/Result
    - i. If (Selection == Item and document == exists), the user is able to add that item to the cart, and the item shows up in the shopping cart, prompting user to delete the item, to continue shopping, or to check out the item.
    - ii. If (Selection = Item and Selection = View Cart), an empty shopping cart pops up with buttons to check out or to continue shopping.
3. TC03: To test, the Admin can upload new/revised categories and items.
- Description: The Admin can add or upload more items to a category or can add a completely new category. The Admin

can also modify the price, information and shipping taxes, etc.

for the existing items and categories.

- Input

- i. User=Admin

- ii. Selection=Items

- iii. Selection=Categories

- Output: New or modified items or categories in the shopping cart.

- End messages/Result

- i. If (User type = “Admin” & Selection = (Items || Category) && Item/Category

=existing), then display the modified items or categories in the shopping cart.

- ii. If (User type == “Admin” & Selection == (Items || Category) & Item/ Category=existing), then display newly added items or categories in the shopping cart.

4. TC04: To test, the Admin can view all the users registered in the system.
- Description: The Admin can view all the users who are registered in the system in the database.
  - Input
    - i. User Name  Alphanumeric, Password  Alphanumeric
    - ii. User==Admin
    - iii. Selection==View Database
  - Output: User List
  - End messages/Result
    - i. If( login type == “Admin” & Database.clicked = ‘true’ and list.clicked=true and userlist.exists=true), then display users.
    - ii. If (login type == “Admin” & Database.clicked = ‘true’ and list.clicked=true and userlist.exists=false), then display the empty database.
5. TC05: To test, the Admin can view the information about all users who successfully placed an order.



- Description: For the Admin, a database, which contains all information about the users, is created after each user checks out the items and successfully places an order.
- Input
  - i. User Name  Alphanumeric, Password  Alphanumeric
  - ii. User==Admin
  - iii. Selection==DatabaseUsers Info
- Output: A database with the user's information or an empty database.
- End messages/Result
  - i. If (login type == "Admin" & Checkout.clicked = 'true' and Place Order.clicked=true and userlist.exists=true), then display the database containing the user's personal information.
  - ii. If (login type = "Admin" &Checkout.clicked = 'true' and PlaceOrder.clicked=true and userlist.exists = false), then display the empty database.
  - iii. If (login type = "Admin" & Checkout.clicked = 'true' and PlaceOrder.clicked=false and userlist.exists=true), then do not update the row in the database.

6. TC06: To test that users cannot checkout with an empty shopping cart.
- Description: If there are no items in the shopping cart, the checkout button is disabled, and the users cannot click the checkout button. A user cannot check out with an empty cart.
  - Input
    - i. User Name  Alphanumeric, Password  Alphanumeric
    - ii. User==Users
    - iii. Selection==View Cart  No Items in the Shopping Cart
  - Output: Disabled checkout button.
  - End messages/Result
    - i. If (login type == “Users” & Items.AddToCart = ‘false’ & ViewCart.clicked=’true’), then display the empty shopping cart with no items and a disabled checkout button.

- ii. If (login type == “Users” & Items.AddToCart = ‘true’ & ViewCart.clicked=’true’ & Checkout.clicked==’true’), then display items in the shopping cart with the checkout button enabled so that users can check out.
7. TC07: To test that users are not able to submit an order form if the information in any of the fields is invalid.
- Description: The users cannot place a successful order if any information on the order form is invalid (i.e., A zip code is a 5-digit number, so any non-numeric value will be invalid.) or if any of the information is incomplete or left blank.
  - Input
    - i. User Name  Alphanumeric, Password  Alphanumeric
    - ii. User==Users
    - iii. Selection==Checkout  Order Form  Place Order
  - Output: User successfully or unsuccessfully places the order.
  - End messages/Result
    - i. If (login type == “User” & CheckoutButton.clicked = ‘true’

- andOrderFormInformation.Valid==’false’ or  
OrderFormInformation.Invalid==’false’&&  
PlaceOrder.clicked=true), then display an error message after the  
place order button is clicked.
- ii. If (login type == “User” & CheckoutButton.clicked = ‘true’  
andOrderFormInformation.Valid==’true’ and  
OrderFormInformation.Invalid==’true’PlaceOrder.clicked=tr  
ue), then successfully place the order and display the success  
message.

# Output of the Project :

The screenshot shows the Shop IT homepage. The header includes the Shop IT logo, a search bar with the placeholder text "Enter Product Name ...", and a user profile for Pankaj Kumar with a cart icon showing 1 item. The main content area is titled "Latest Products" and displays four product cards. Each card features a product image, a title, a price, a star rating with the number of reviews, and a "View Details" button. The products are: SanDisk Ultra 128GB SDXC UHS-I Memory Card (\$45.89, 32 reviews), CAN USB FD Adapter (GC-CAN-USB-FD) (\$315, 2 reviews), CHARMOUNT Full Motion TV Wall Mount Swivel (\$26.99, 12 reviews), and Bose QuietComfort 35 II Wireless Bluetooth Headphones (\$299, 112 reviews). The Windows taskbar at the bottom shows the time as 09:59 AM on 07-05-2023.

The screenshot shows the Shop IT cart page. The header is identical to the homepage. The main content area is titled "Your Cart: 1 items" and displays a single product card for the SanDisk Ultra 128GB SDXC UHS-I Memory Card. The card shows the product image, name, price (\$45.89), and quantity (1). To the right of the product card is an "Order Summary" box. The summary shows a subtotal of 1 (Units) and an estimated total of \$45.89. A "Check out" button is located at the bottom of the summary box. The Windows taskbar at the bottom shows the time as 10:00 AM on 07-05-2023.

WhatsApp | Chandigarh University Managem | DevProjects: Learn programming | Buy Best Products Online - Shop | +

http://localhost:3000/search/SanDisk%20Ultra%20128GB%20SDXC%20UHS-I%20Memory%20Card%20up%20to%2080MB/s


Shop IT | SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s | Cart 1 | Deepanshu khandelwal

## Latest Products

\$1 — \$1000  
\$1 — \$1000

**Categories**

- Electronics
- Cameras
- Laptops
- Accessories
- Headphones
- Food
- Books
- Clothes/Shoes
- Beauty/Health
- Sports



SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s

★★★★★ (32 Reviews)

\$45.89

[View Details](#)

26°C Partly sunny | 10:01 AM | 07-05-2023

WhatsApp | Chandigarh University Managem | DevProjects: Learn programming | SanDisk Ultra 128GB SDXC UHS-I | +

http://localhost:3000/product/645524ce1025b42ac8c4c6dd

Shop IT | SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s | Cart 1 | Deepanshu khandelwal

## SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s

Product # 645524ce1025b42ac8c4c6dd

★★★★★ (32 Reviews)

**\$45.89**

- 1 + [Add to Cart](#)

Status: **In Stock**

**Description:**

Ultra-fast cards (2) to take better pictures and Full HD videos (1) with your compact to mid-range point-and-shoot cameras and camcorders. With SanDisk Ultra SDXC UHS-I cards you'll benefit from faster downloads, high capacity,

26°C Partly sunny | 10:02 AM | 07-05-2023

Shop IT Admin Dashboard - ShopIT

SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s

Cart 1  
Deepanshu khandelwal

## Dashboard

Total Amount \$0

Products 9 View Details	Orders 0 View Details	Users 2 View Details	Out of Stock 1
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26°C Partly sunny 10:03 AM 07-05-2023

Shop IT Admin Dashboard - ShopIT

SanDisk Ultra 128GB SDXC UHS-I Memory Card up to 80MB/s

Deepanshu khandelwal

## All Users

Show entries: 10

User ID	Name	Email	Role	Actions
645523655ba19117680800a2	Deepanshu khandelwal	Deepanshukhandelwal1201@gmail.com	user	<a href="#">Edit</a> <a href="#">Delete</a>
64572694089eb01d5854e0c2	Deepanshu khandelwal	Deepanshu@gamil.com	admin	<a href="#">Edit</a> <a href="#">Delete</a>

Showing 1 to 2 of 2 entries

Previous 1 Next

26°C Partly sunny 10:03 AM 07-05-2023

## Results

This section lists the results that were produced by running the test cases. Table 3 lists the test cases that were used while testing the interface along with the expected result and the actual results for each test case.

**Table 3.** List of Test-Case Results.

Test Case Number	Expected Result	Actual Result
TC01	Pass	Pass
TC02	Pass	Pass
TC03	Pass	Pass
TC04	Pass	Pass
TC05	Pass	Pass
TC06	Pass	Pass
TC07	Pass	Pass

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