CUSTOM PC BUILDER

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Indiana University Online
System Implementation

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Problem Statement:

The custom PC building journey can be quite complex with challenges to tackle, particularly when it comes to ensuring that the different components are compatible in terms of socket type, power requirements, and physical dimensions. Our platform's goal is to simplify this process by providing a simple user interface where individuals can confidently choose and verify compatible PC components in an intuitive and seamless process. This way we aim to transform what can seem like a daunting task into an engaging and well-informed experience. Whether you're a beginner looking for guidance or an experienced enthusiast, the goal of this website is to make custom PC building available to all people.

Glossary Of Terms:

- **CPU (Central Processing Unit)**:
  The primary processor responsible for executing most computer functions.
- **GPU (Graphics Processing Unit)**:
  Manages rendering graphics and video, crucial for gaming and professional applications.
- **PSU (Power Supply Unit)**:
  Provides essential power to the computer, crucial for system stability and component longevity.
- **RAM (Random Access Memory)**:
  Temporary storage for quick data access by the CPU.
- **SSD/HDD**:
  Storage devices for operating systems and files, with SSDs offering faster, more reliable performance.
- **CPU Cooler**:
  Maintains optimal CPU temperatures for efficient operation.
- **Motherboard**:
  The central hub connecting all computer components.
- **Case**:
  Encloses and protects the computer components.
- **Compatibility Checker**:
  A tool within the platform ensuring selected components work seamlessly together.
- **Part Selector**:
  An interactive feature allowing users to choose components based on specifications, performance, and compatibility.

- **User Build Gallery**:
  A community-driven showcase where users can share and discuss their custom builds.

System Requirements:

No.	Priority Weight	Description
Req-1	High	Implement a compatibility checker for all components.
Req-2	High	Develop a secure, user-friendly online marketplace for components.
Req-3	High	Integrate user reviews and ratings for each product.
Req-4	Medium	Offer detailed product specifications and images.
Req-5	Medium	Provide a build guide and recommendations for novices.
Req-6	Low	Feature a community forum for user discussions and advice.

Nonfunctional Requirements:

1. **Usability:**
   Our platform is designed with the intent of providing a trustworthy and approachable process for all people in the PC building endeavor. We want users with little to no technical knowledge to be able to easily navigate and use the system. Features like intuitive navigation paths and a simplistic design are incredibly important in achieving this goal.

2. **Reliability:**
   Ensuring the reliability of our system is important especially when it comes to compatibility checks and transaction processes. We want users to have trust in our platform for all their custom PC building needs without encountering any errors or experiencing downtime.

3. **Performance:**
   Delivering high performance is crucial in providing real-time feedback throughout the PC building process as well as ensuring that our website loads quickly. A lack of performance could trigger a lack of trust in our platform being as we are in the

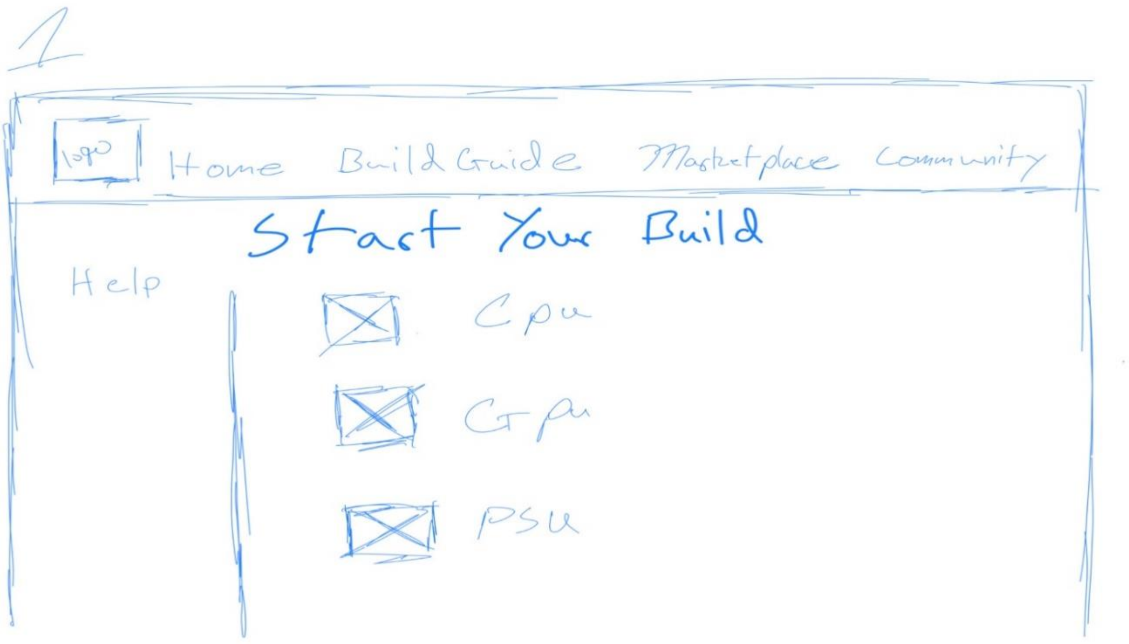
PC building market.

4. **Supportability:**
We are fully committed to offering support to our users at every step of their journey. This includes FAQs, user guides, and responsive customer service that will be available whenever assistance is required.

5. **Functionality:**
The functionality of our platform will undergo testing to ensure that all features from the part selector to the checkout process, work exactly as intended and meet all of our user's needs

User Interface Requirements:

1. **Intuitive Design:**
The user interface will have a layout and design that's easy to understand allowing users of all levels from beginners to experts to navigate seamlessly.



2. **Real-Time Feedback and Alerts:**
As users select components, they will receive alerts about compatibility and performance suggestions. This feature ensures that users can make educated decisions regardless of skill or knowledge level.

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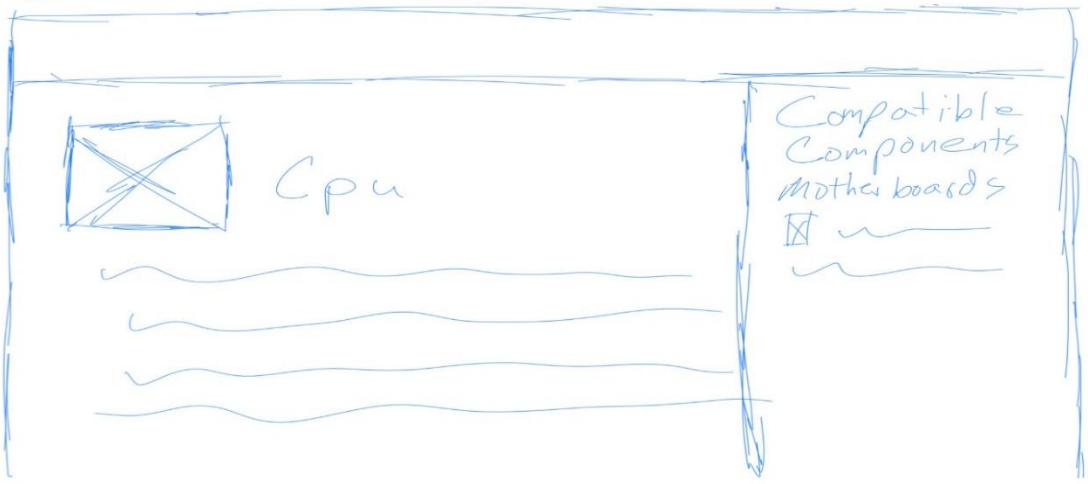

3. **Integration of Community Features:**
The platform will smoothly integrate community-driven features like user reviews, forums, and a build gallery. This integration aims to foster interaction and engagement among users.

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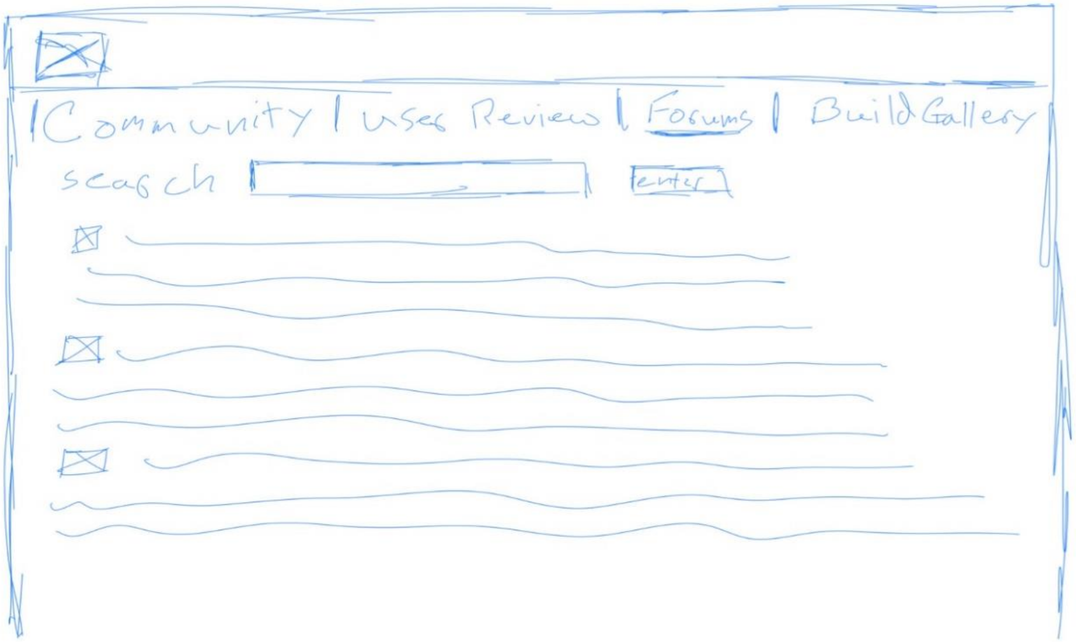
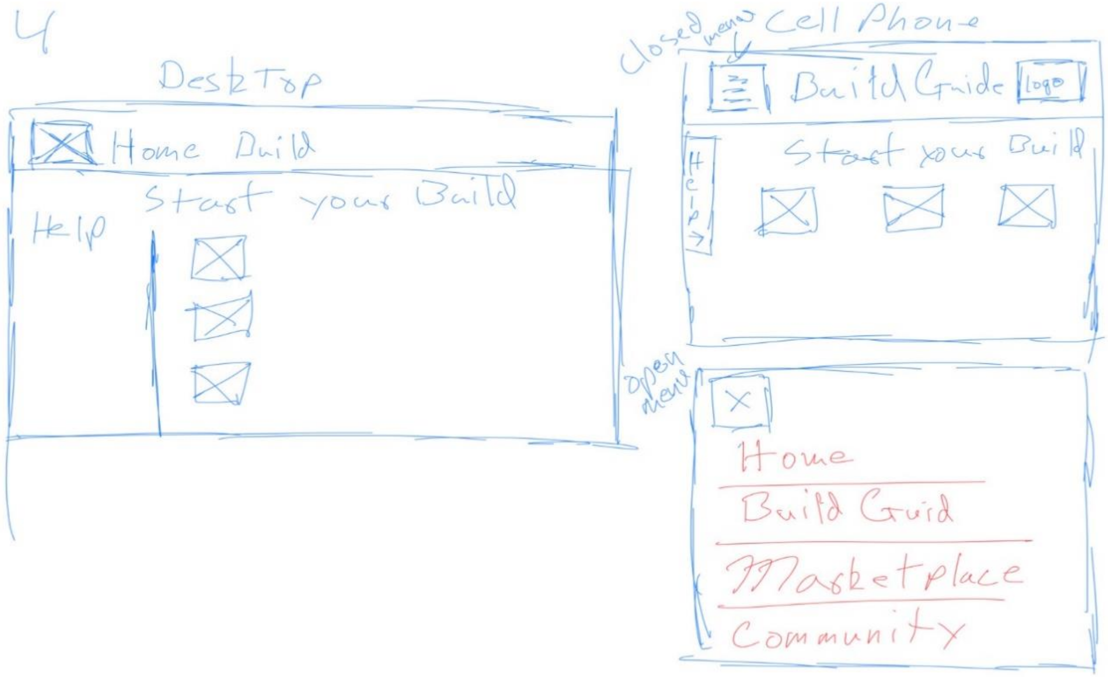


4. **Responsive Design:**
   The user interface will be fully responsive providing an accessible experience across various devices such as desktops and mobile phones.



5. **Personalization:**
   Users will have the option to personalize their experience by receiving build suggestions and saving preferences. This way they can enjoy a tailored experience and have the option to take a break and come back later to finish building their custom PC.

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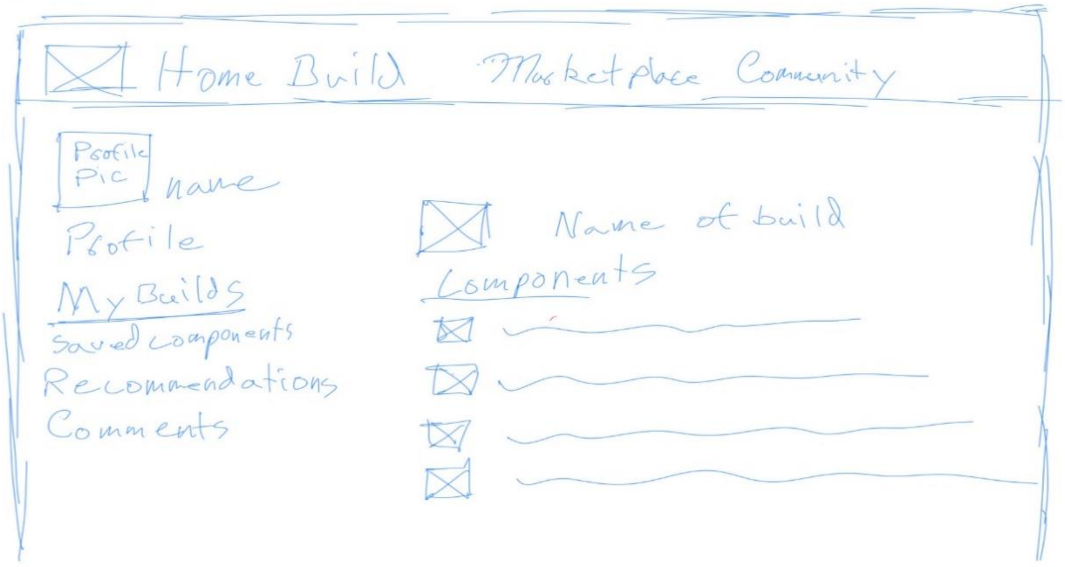
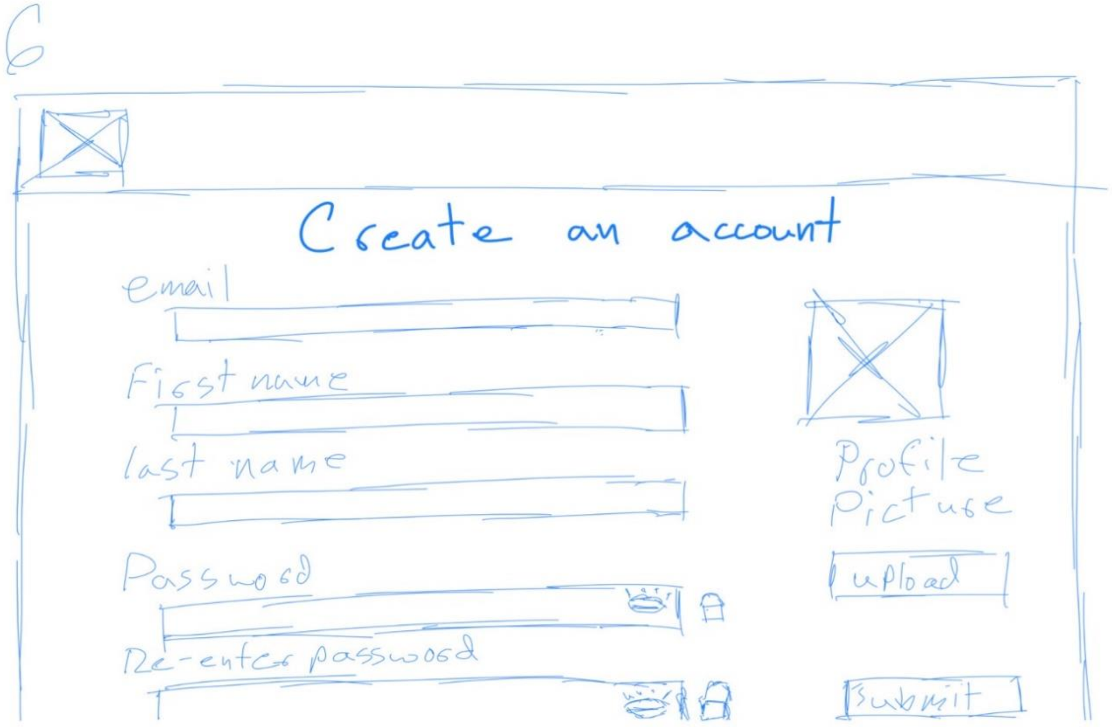


6. **Security Features:**
   The user interface will incorporate user-friendly security measures for account creation, login processes, and transactions. These measures aim to always ensure the protection of user data, which is of utmost importance given we are aiming to be a trustworthy and accurate platform for All people and skill levels,

and trust is at the forefront of that.



Plan of Work:

As we begin working on our Custom PC Builder our top priority is to establish a foundation with a sophisticated and scalable database. This database plays a crucial role in supporting important functionalities like the compatibility checker and the marketplace ensuring that users have a seamless and reliable experience from start to finish.

- **Database Development:**
  Currently, we are in the process of designing an initial database schema that is comprehensive and flexible enough to meet future needs. transparently. We are exploring PostgreSQL, Excel, Python/Django, and Node.js as solutions for managing the database, taking advantage of their robust features for handling data effectively and ensuring scalability. Our decision regarding which technology to use will depend on how they can support complex data relationships and meet our performance requirements.

- **Backend Exploration:**
  In parallel with database development, we are also exploring technologies such as Python and Node.js to determine which option is most suitable for our platform's backend architecture. Factors like ease of integration with our chosen database, scalability, and the ability to handle real-time data processing for the

compatibility checker will influence this decision.

- **Frontend Development and Wireframing:**
  Beginning this week we are starting the phase of coding the frontend interface and creating wireframes for our platform. This stage is critical for shaping the user interface and making sure that our platform is easy to use, responsive, and user-friendly. During the wireframing process, our focus will be on creating designs that improve usability and ensure that all elements, including the part selector and community features, are accessible and engaging for users. When it comes to frontend development, we'll prioritize design so that our platform provides a consistent experience across both desktop and mobile devices in a minimalistic and intuitive design.

- **Upcoming Phases:**
  Moving forward once we've established our database and initial frontend designs; we'll jump into detailed UI/UX development. We will aim to create an interactive user experience, that is simplistic and intuitive for all skill levels. Additionally, we'll start integrating backend and frontend components to ensure communication and functionality throughout the platform.

This plan encompasses our explorations in technology as well as our decisions so far. This comes with the awareness and understanding that the situation is fluid and will adjust as needed in order to accomplish the goals of the project.

Functional Requirements Specification

Stakeholders:

- **Users/Customers**
- **Development Team**
- **Vendors/Suppliers**
- **Investors/Sponsors**
- **Support Staff**

Actors and Goals:

Primary Actors:

- **Customer**: Can create accounts, look for products, assemble PC parts, access their information, log in/out, and purchase items.
- **Seller**: Lists PC components for sale on the platform.

Secondary Actors:

- **System**: Manages product information, user accounts, and stores data.
- **Order Employee**: Handles shipping and delivery of purchased items.
- **Admin**: Manages user accounts, employee records, and can add or remove items and sellers.

Use Cases:

Customer (Total: 11)

- **Create Account**: Sign up to save builds and preferences. (2)
- **Browse Components**: Explore an extensive catalog of PC parts. (2)
- **Assemble PC**: Use drag-and-drop to select and arrange components with real-time feedback. (4)
- **Purchase Components**: Complete transactions within the platform. (3)

Seller (Total: 4)

- **List Products**: Add components to the marketplace. (2)
- **Manage Listings**: Update or remove listed items. (2)

Admin (Total: 7)

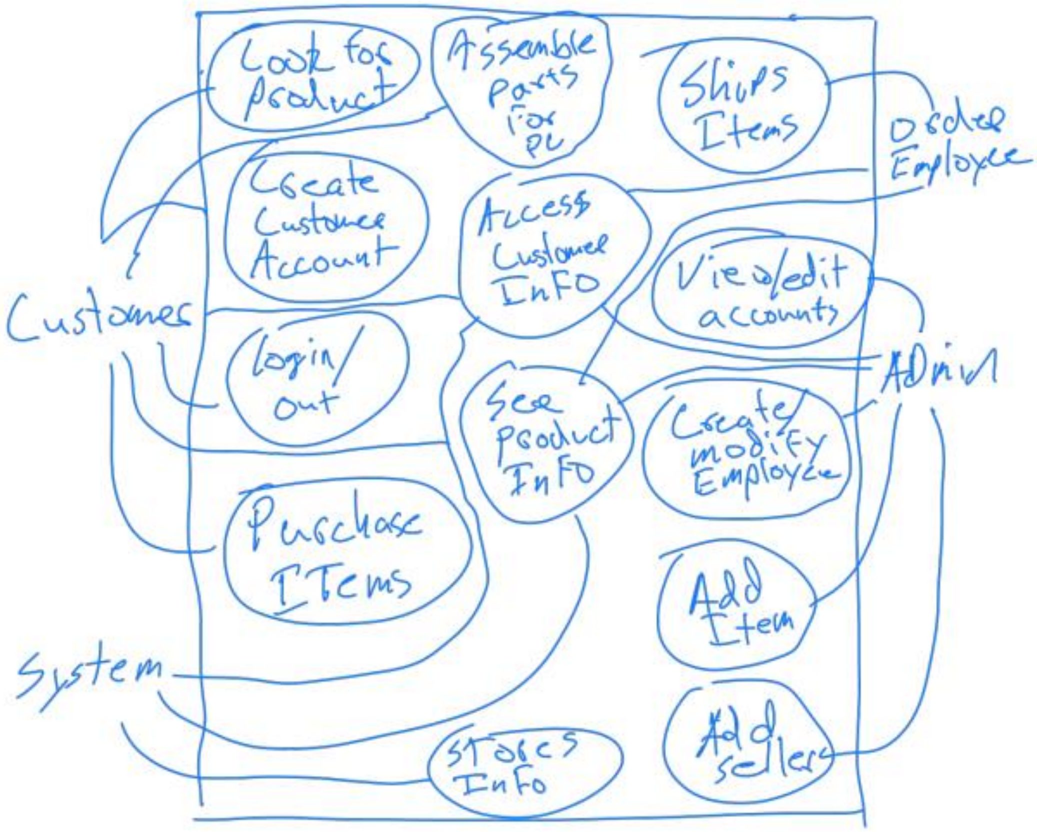
- **Manage Accounts**: View and edit user and employee accounts. (2)
- **Add/Remove Items**: Update the components catalog. (3)

- **Add/Remove Sellers**: Manage sellers on the platform. (2)

Order Employee (Total: 4)

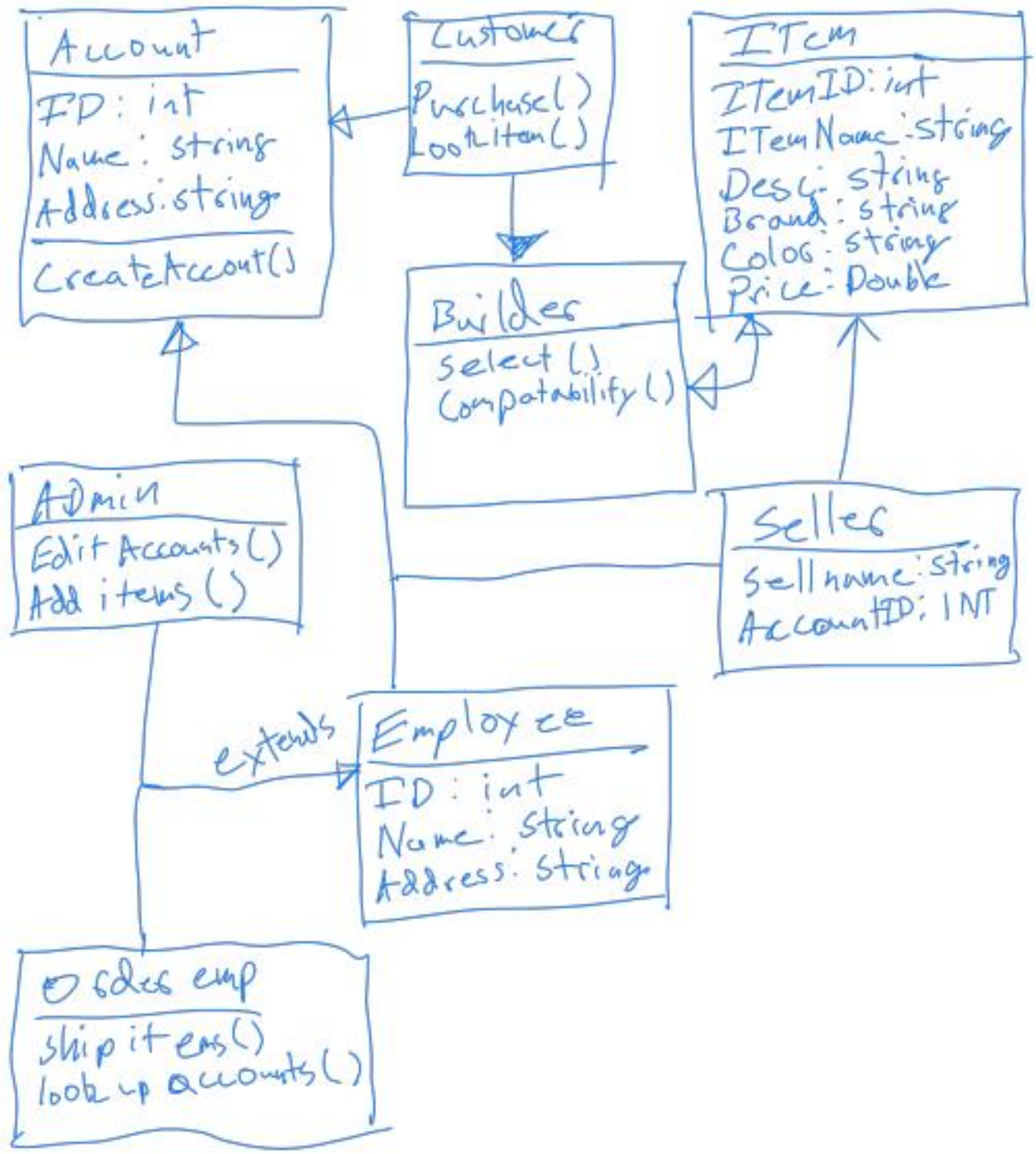
- **Ship Items**: Process and manage shipping of purchased components. (2)
- **Update Delivery Status**: Inform customers about their order status. (2)

Use Case Diagram:



Our Use Case Diagram represents the exchanges between the different actors and the PC Builder System itself. We have 2 Primary actors that are Customers and Sellers. Customers can perform tasks like creating accounts, browsing components, assembling PCs, and purchasing items. Sellers, can list and manage their product offerings. Secondary actors encompass the System itself, managing essential data and operations, Order Employees, responsible for shipping and order updates, and Admins, overseeing account and inventory management. The Arrows indicate the actions available to each actor, reflecting their goals and the system's capabilities for the PC Builder System.

Class Diagram:



Our class diagram above visualizes the structure of our PC Builder System. It focuses on how different entities interact with one another to provide a seamless system that is simple yet effective. The 'Account' class connects to both 'Customer' and 'Seller' profiles, encapsulating basic user information. 'Customers' can explore and assemble PC components that link to the 'Builder' class, which interacts with 'Items' to ensure compatibility and selection efficiency. 'Sellers' contribute by adding 'Items' to the marketplace. Finally, we have 'Employees', with specific roles like 'Order Employees' who manage logistics while 'Admins' oversee platform integrity and user engagement.

Activity Diagram:

PC Build Selection:

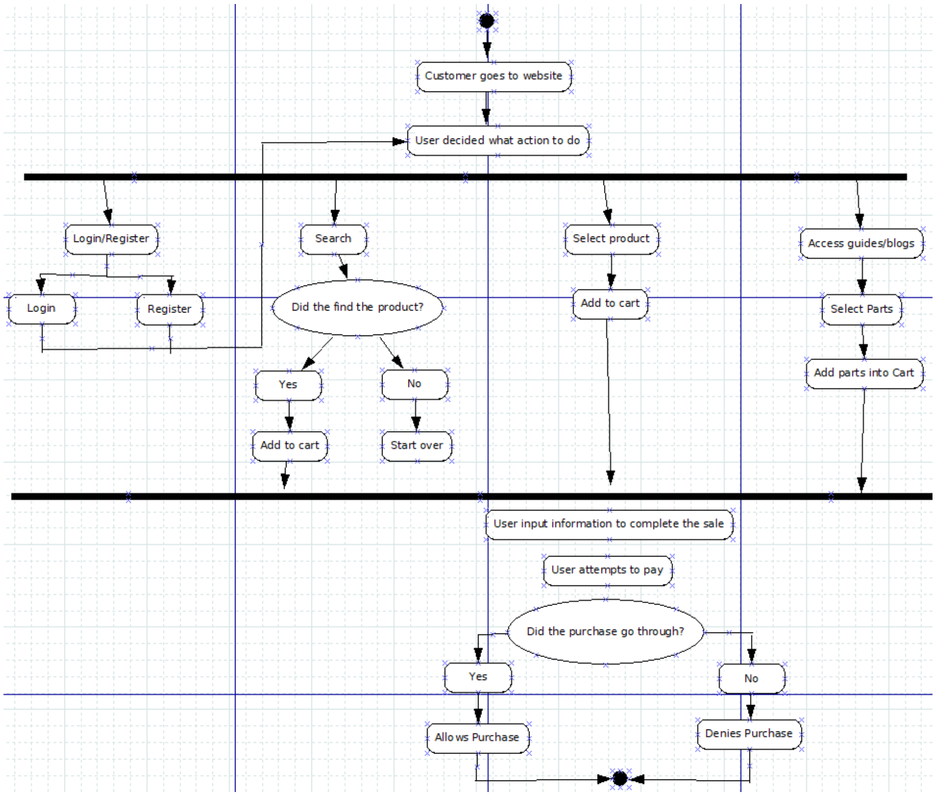
- **Initial State:** Customer decides to build a PC.
- **Final State 1:** Parts are successfully added to the customer's cart, or the customer modifies the selection.

Actions:
1: Customer inputs desired games
2: System recommends parts
3: Customer reviews and accepts parts
4: Parts are added to the cart

Search and Add Parts:

- **Initial State:** Customer needs additional parts.
- **Final State 1:** Parts are added to the customer's cart, or the customer searches again.

Actions:
1: Customers search for parts and selects parts from the results
2: Adds parts to the cart.



System Sequence Diagrams

PC Build Selection

- **Actor:** Customer
- **Objects:** PC Builder System, Cart

1. The customer inputs the games the computer will be used for.
2. The PC builder system returns the appropriate build recommendations.
3. The customer inputs whether the parts given are acceptable.
4. The PC builder system adds the parts to the cart.
5. The system provides confirmation to the customer that parts are added to the cart.

Search and Add Parts to the Cart

- **Actor:** Customer
- **Objects:** Site, Search Function, Cart

1. The customer inputs a search query for parts.
2. The site's search function returns the relevant parts.
3. The customer selects the desired parts from the search results.
4. The customer adds the selected part to their cart.
5. The site confirms the addition of the parts to the cart.

Account Registration

- **Actor:** Customer
- **Objects:** System, Database

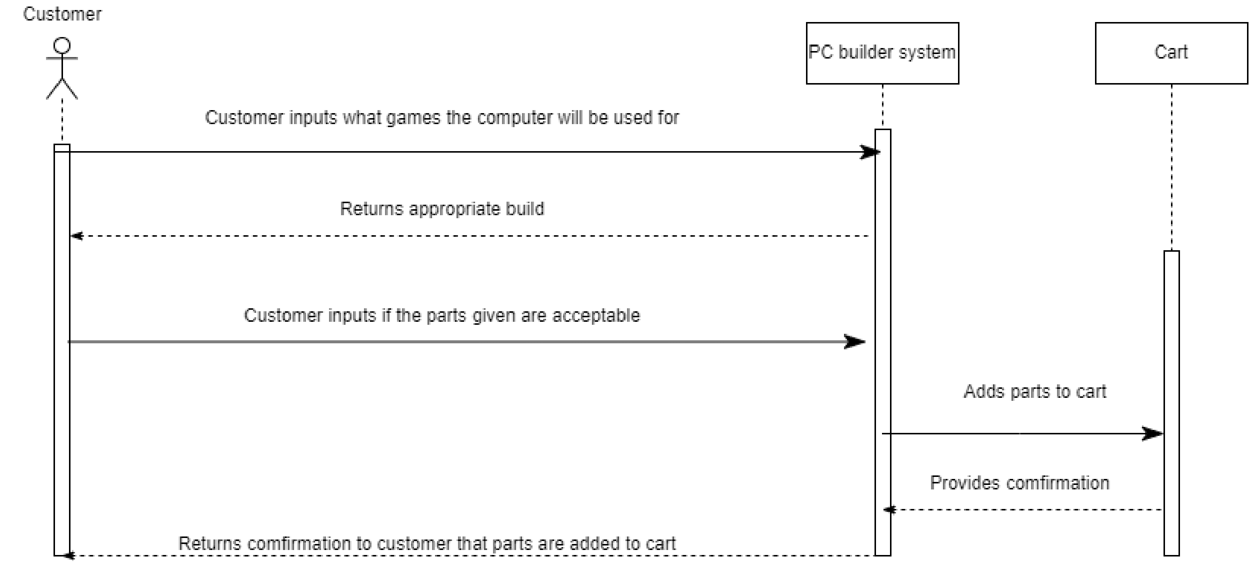
1. The customer provides registration information to the system.
2. The system checks with the database to ensure the user can be created.
3. The database determines account creation feasibility and informs the system.
4. The system returns confirmation or denial of account creation to the customer.

User Login

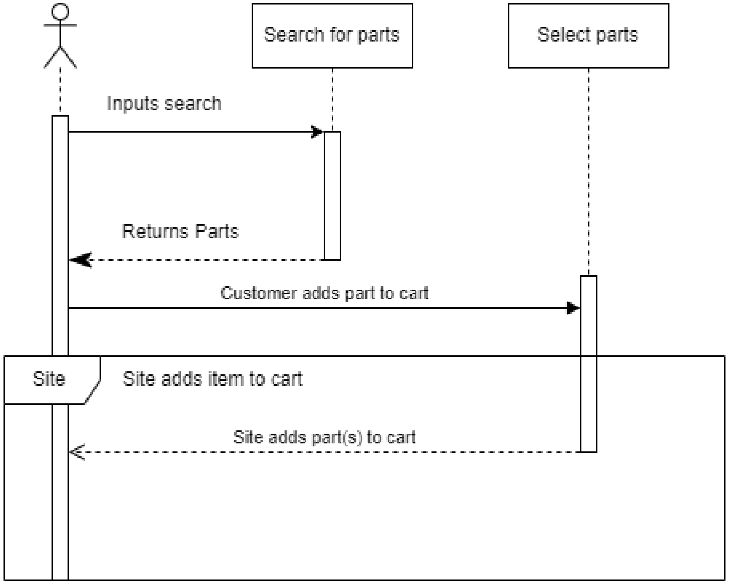
- **Actor:** Customer
- **Objects:** System, Database

1. The customer provides login information.
2. The system checks the login information against the database.
3. The database returns a confirmation or denial of the login attempt.
4. The system relays the result back to the customer.

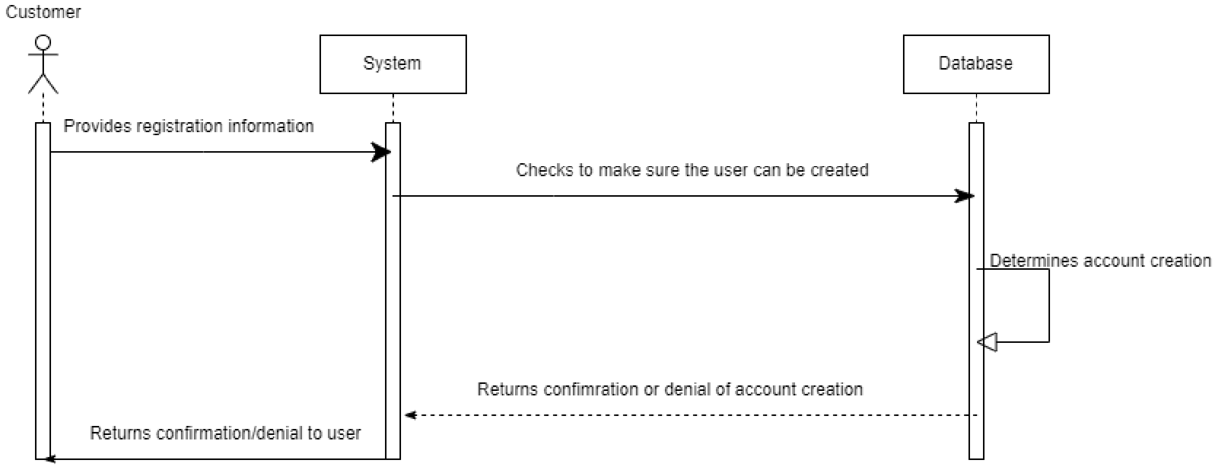
PC Builder:


Customer
PC builder system
Cart
Customer inputs what games the computer will be used for
Returns appropriate build
Customer inputs if the parts given are acceptable
Adds parts to cart
Provides comfirmation
Returns comfirmation to customer that parts are added to cart

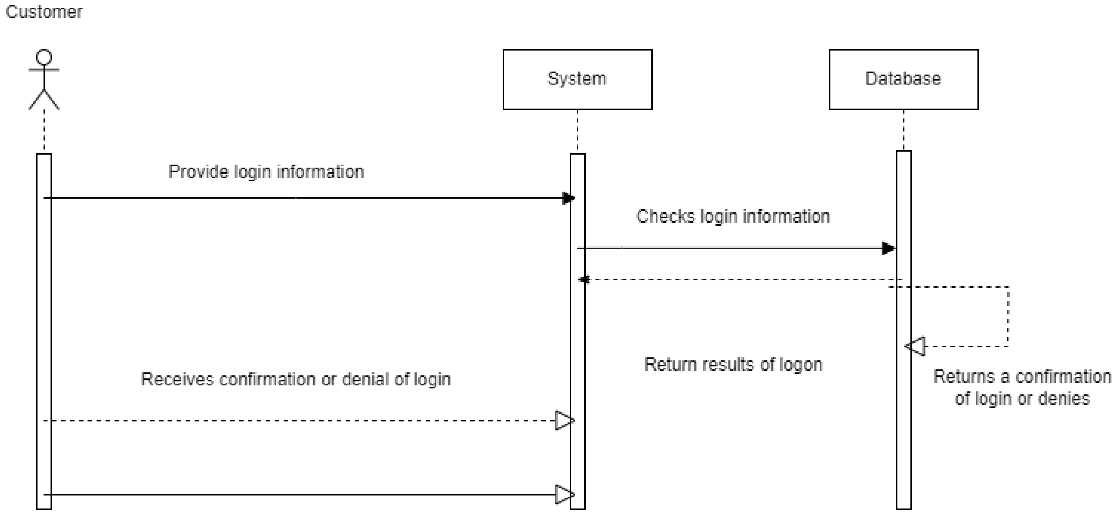
Search and Add to Parts:



Register:


Customer
System
Database
Provides registration information
Checks to make sure the user can be created
Determines account creation
Returns confimration or denial of account creation
Returns confirmation/denial to user

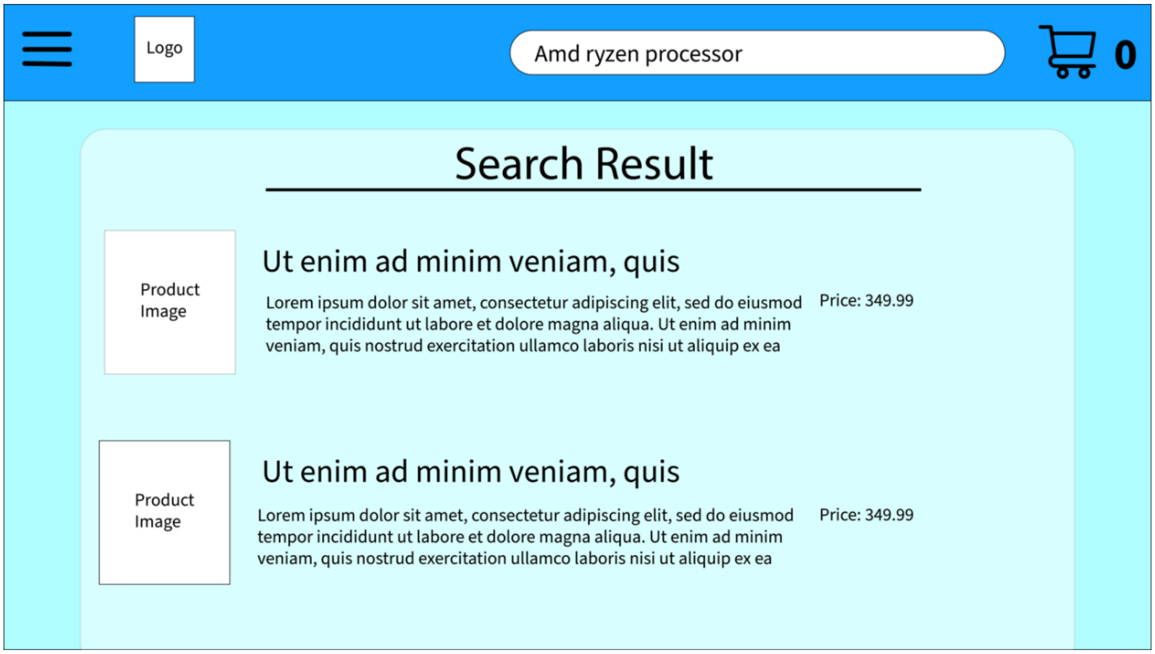
Login:



User Interface Specifications

Use Case 1: Search Functionality

The user can use the search bar at the top of the page to find specific parts that they need. The amount of effort required is dependent on the user and the part they are looking for. I would say a minimum of 4 keystrokes and 1 mouse click is required.



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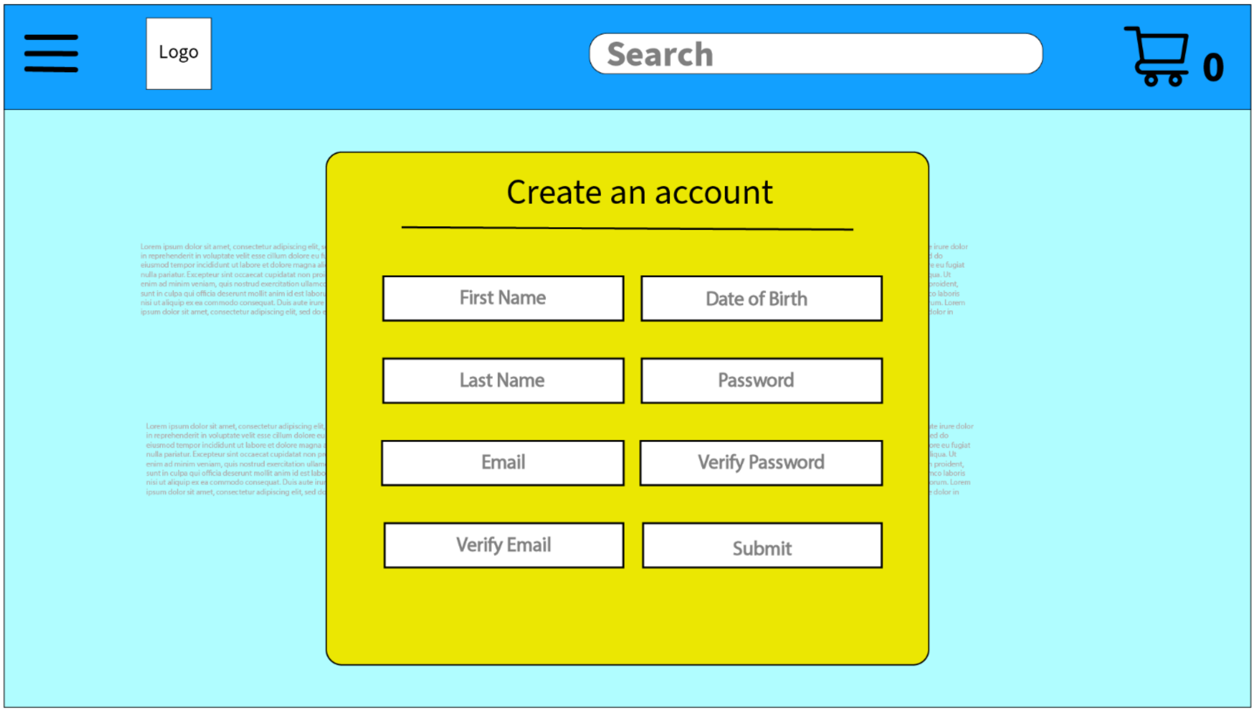
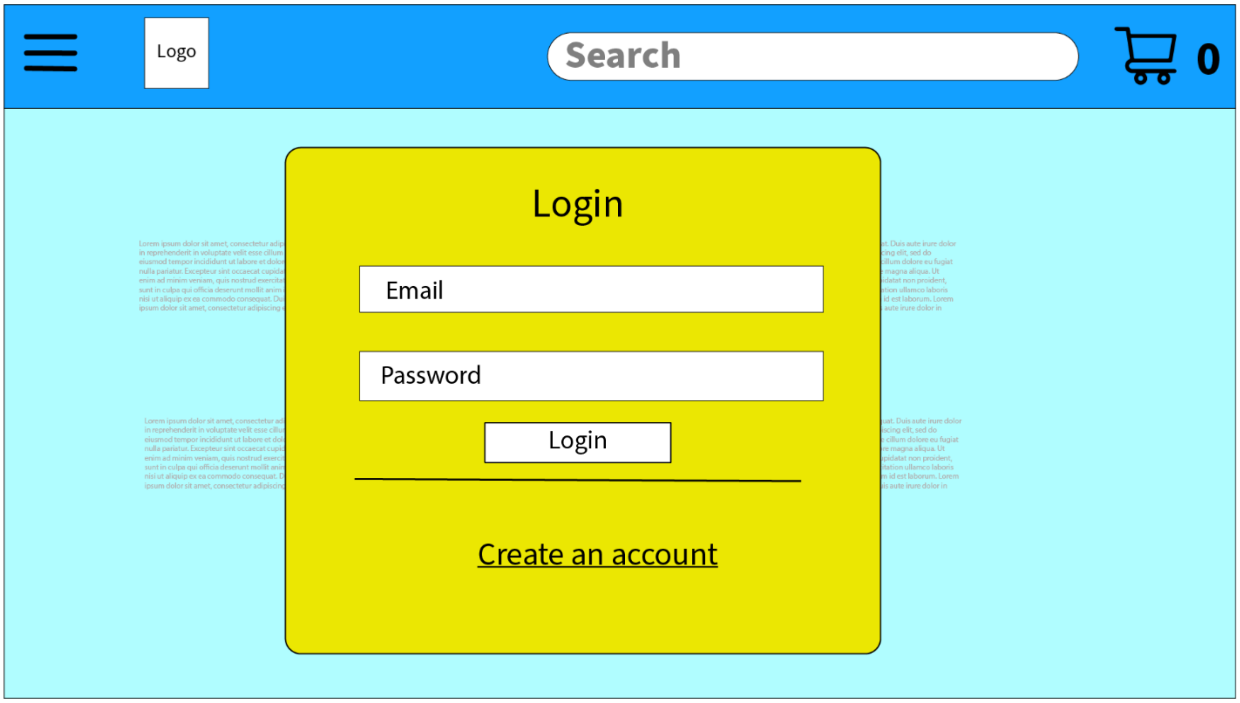
Use Case 2: Account Creation & Login

The user will be able to create an account to be able to purchase items that they need/want for their P.C. or create an account. The user would first click “Create an account”. That would lead them to the next page. That is when they input the information that is needed to create an account. The amount of user effort on this also varies depending on what the user types and/or does. If they are just using the login then they must type their email and password and then a single click on login. A minimum of 100 keystrokes and a minimum of 8 mouse clicks would be needed.



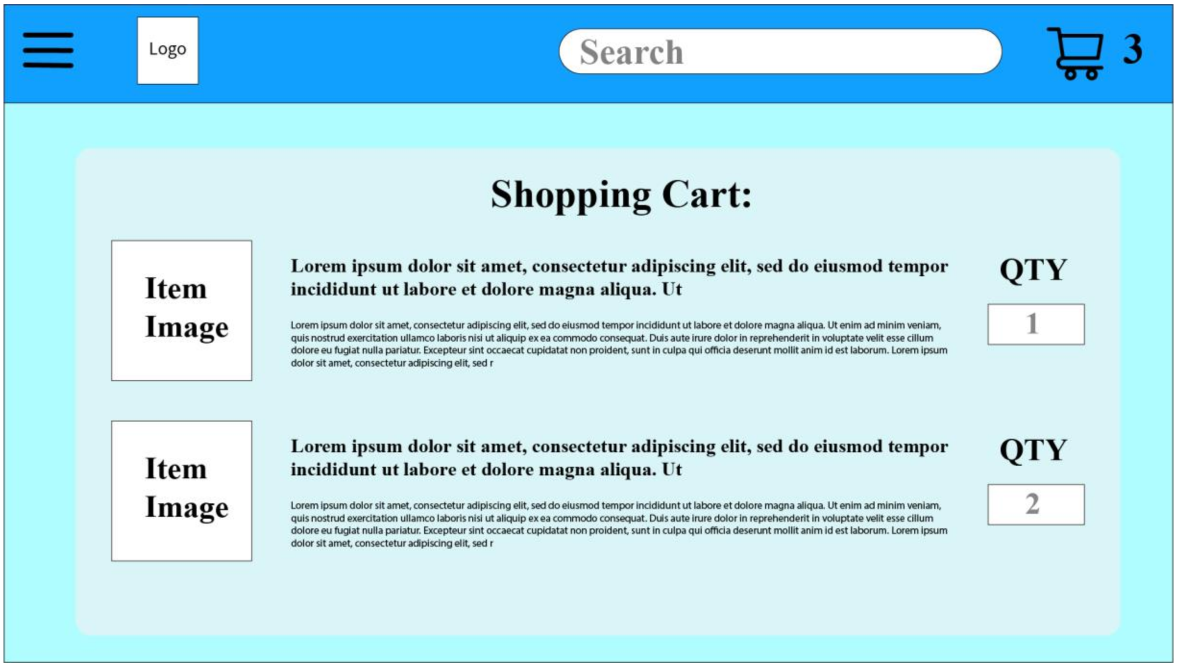
Use Case 3: Account Sign-In

The user will be able to able to sign into their account by inputting their login information and then the user would click login to finish the process. This case would require a minimum of 25 keystrokes and a minimum of 3 clicks.



Use Case 4: Shopping Cart Interaction

Users will be able to use the shopping cart to be able to see what parts they have in their cart for purchase. This one depends on what you want to do But It requires a minimum of 2 mouse clicks and up depending on what the user needs to do. They may also use 2 keystrokes or many depending on if they need to change quantities.



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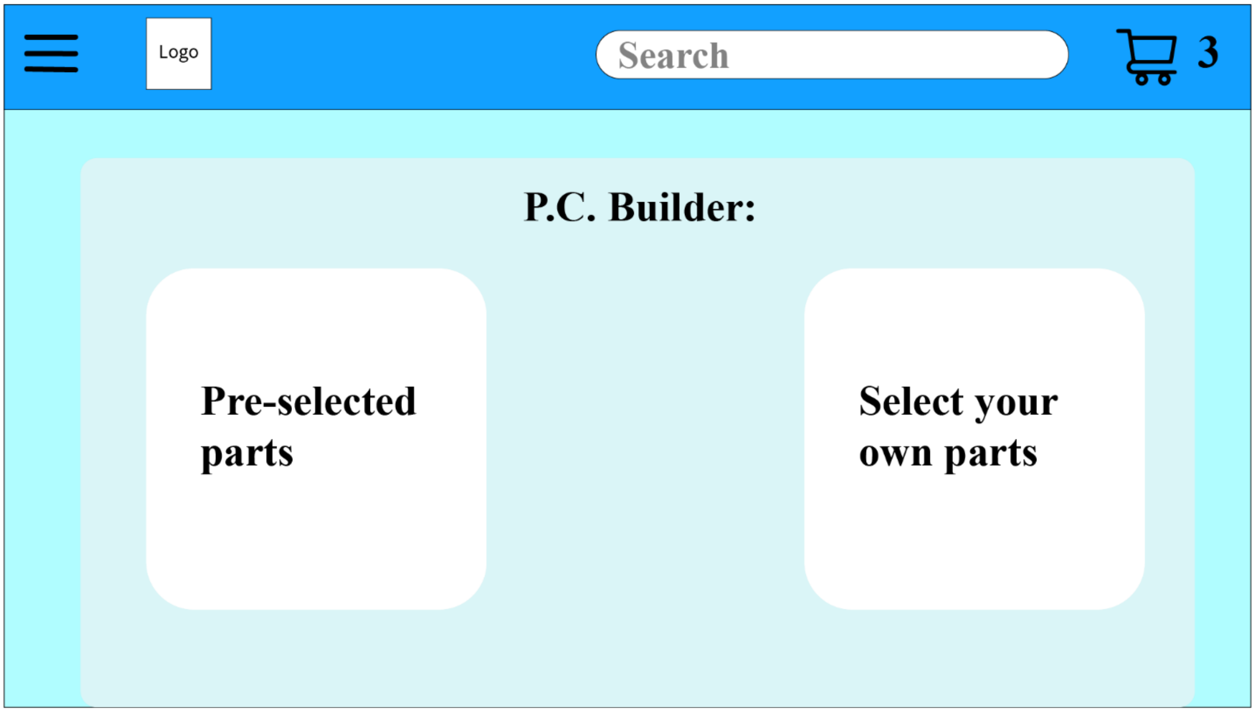
Use Case 5: PC Configuration & Parts Selection

This use case involves multiple choice. The first would be if the user wants a prebuilt PC with the parts already chosen or to be able to build their own. Next they would get to choose the type of pc they want. If they decide to choose to build their own they will then proceed to select the parts and the website would be able to limit their choice of parts based on the parts previously selected. The first step requires 1 mouse click.



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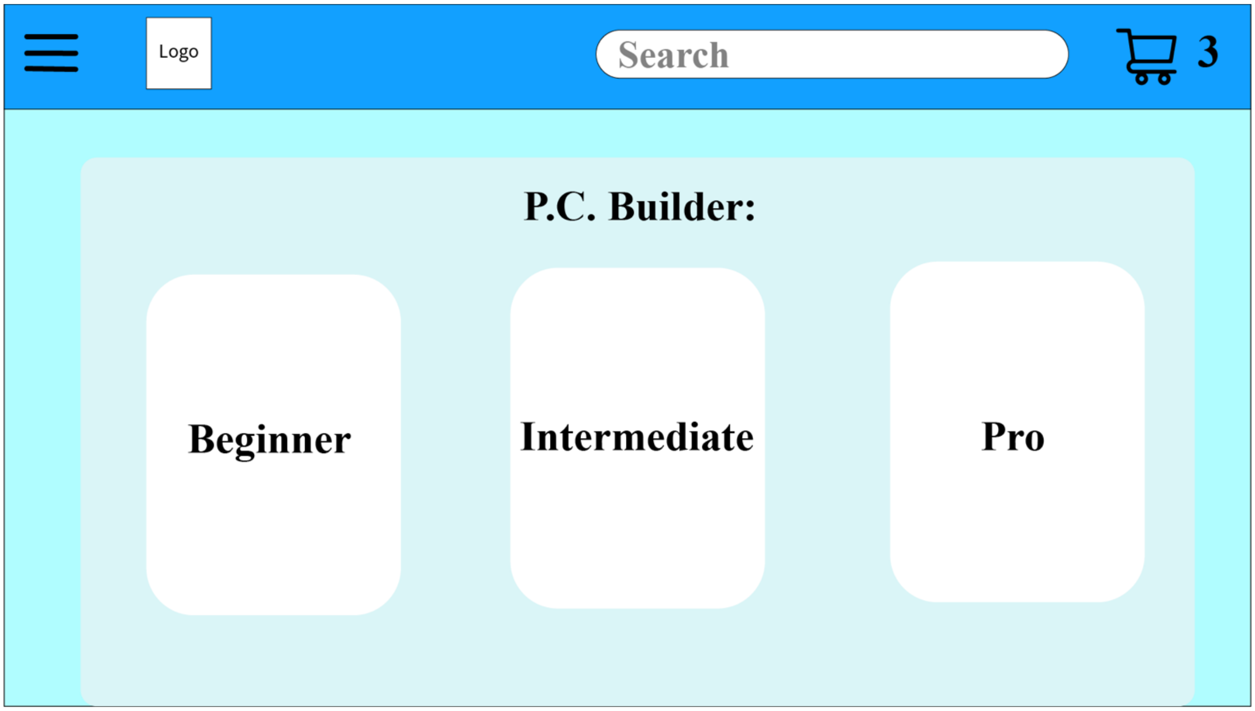
If they choose preselected they would see the following screen. This step would require a minimum of 1 mouse click.



It would then deposit the parts into their cart where they can choose to get rid of parts or add parts to purchase.

Then if the user decides to build their own, they will see the following screen. The user would be able to select the parts that they want and what is compatible with each other. This one requires multiple clicks, a minimum of 7 mouse clicks and up depending on what the user needs. It could also require keyboard strokes depending on if the user requires more than one of an objects.

User Effort Estimation

Use Case 1: Search Functionality

- Minimum Keystrokes: 4
- Clicks: 1
- Context: Users searching for specific Parts via the search bar

Use Case 2: Account Creation & Login

- Minimum Keystrokes (Creation): 100
- Clicks (Creation): 8
- Minimum Keystrokes (Login): 25
- Clicks (Login): 1
- Context: Users creating a new account or logging into an existing account.

Use Case 3: Account Sign-In

- Minimum Keystrokes: 25
- Clicks: 3
- Context: Users signing into their account to access personalized features or history.

Use Case 4: Shopping Cart Interaction

- Minimum Keystrokes: 0 to many (varies)
- Clicks: 2 (varies)
- Context: Users managing their shopping cart including adding or removing items or adjusting quantities.

Use Case 5: PC Configuration & Parts Selection

- Initial Choice (Prebuilt or Custom Build) Clicks: 1
- Prebuilt Selection Clicks: Minimum 1
- Custom Build Selection Clicks: Minimum 7 (additional clicks and keystrokes as needed)
- Context: Users choosing between a prebuilt PC or custom building their PC including parts selection and customization.

Module 12 UI Design and Implementation, Design of Tests:

Implemented vs Initial Screen Mock-ups

I. **Search Functionality** (Use Case 1)
   a. The implemented browse page streamlined the search process. Instead of the minimum of 4 keystrokes and 1 mouse click as estimated, the clear visual layout with component categories enables faster access, reducing the number of keystrokes needed when searching for specific parts.

II. **Account Creation & Login** (Use Case 2)
   a. The initial estimation involved up to 100 keystrokes and 8 mouse clicks for account creation. The final implementation has simplified this process.

III. **Account Sign-In** (Use Case 3)
   a. The implemented sign-in process aligns closely with the initial specification of a minimum of 25 keystrokes and 3 clicks.

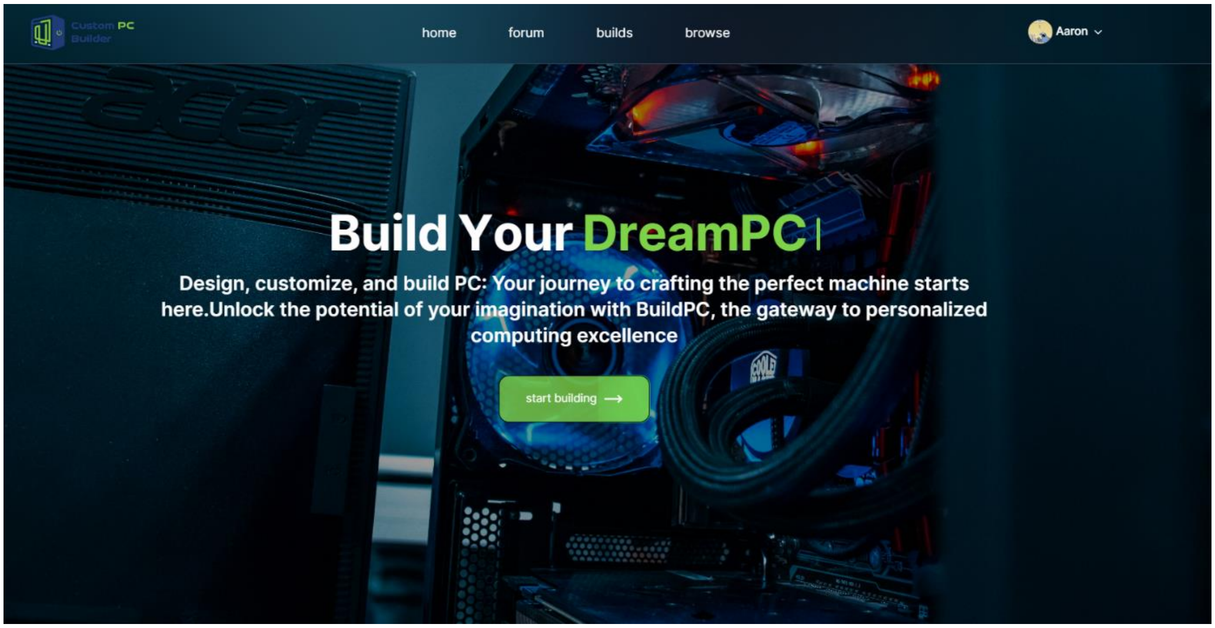
IV. **Shopping Cart Interaction** (Use Case 4)
   a. The shopping cart functionality, as seen in the screenshots, adheres to the initial design, requiring at least 2 clicks for interaction. The visual representation in the screenshots shows an intuitive interface, reducing the effort needed for quantity adjustments.

V. **PC Configuration & Parts Selection** (Use Case 5)
   a. The process of selecting a prebuilt PC or custom building is well-implemented, with visual cues that will reduce the estimated 7 mouse

clicks and additional keystrokes. The screenshots show a clear, streamlined path for part selection, which may decrease user effort.

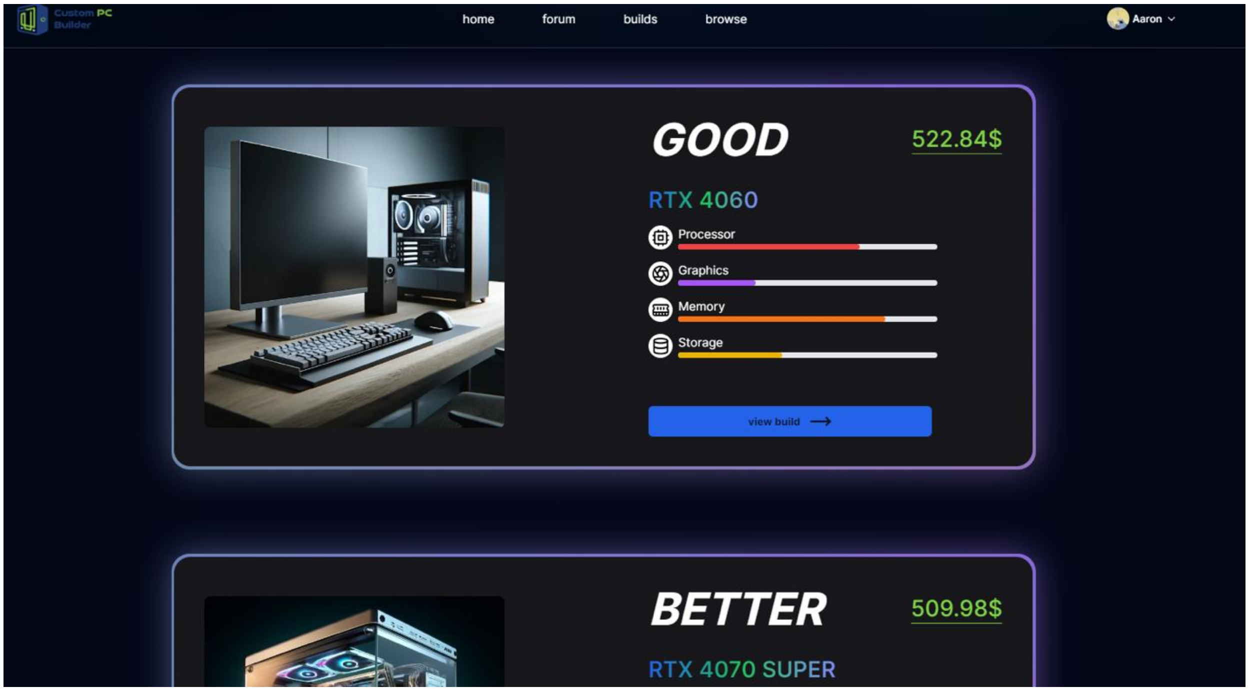
UI Changes and Impact on User Effort

- The transition from wireframe to the implemented UI prioritizes visual simplicity, which can lead to a reduction in user effort.
- For PC configuration and parts selection, the simple selection of options presented streamline the decision-making process, reducing the cognitive load and physical effort for the user.
- The layout of the 'Builds' and 'Forum' sections is designed for simple ease of use, which will contribute to an overall reduction in user effort compared to the initial wireframes.



Build Your DreamPC

Design, customize, and build PC: Your journey to crafting the perfect machine starts here.Unlock the potential of your imagination with BuildPC, the gateway to personalized computing excellence



GOOD

522.84$

RTX 4060

Processor

Graphics

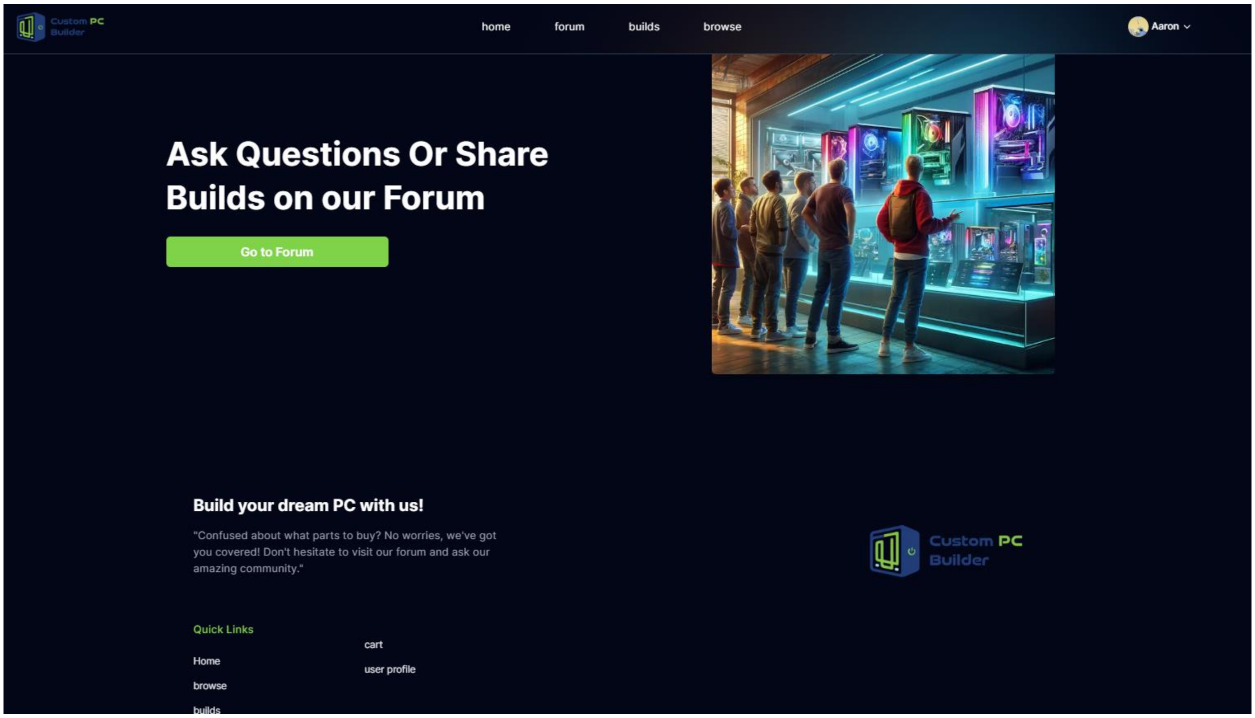
Memory

Storage

BETTER

509.98$

RTX 4070 SUPER



Ask Questions Or Share Builds on our Forum

Build your dream PC with us!

"Confused about what parts to buy? No worries, we've got you covered! Don't hesitate to visit our forum and ask our amazing community."

Quick Links

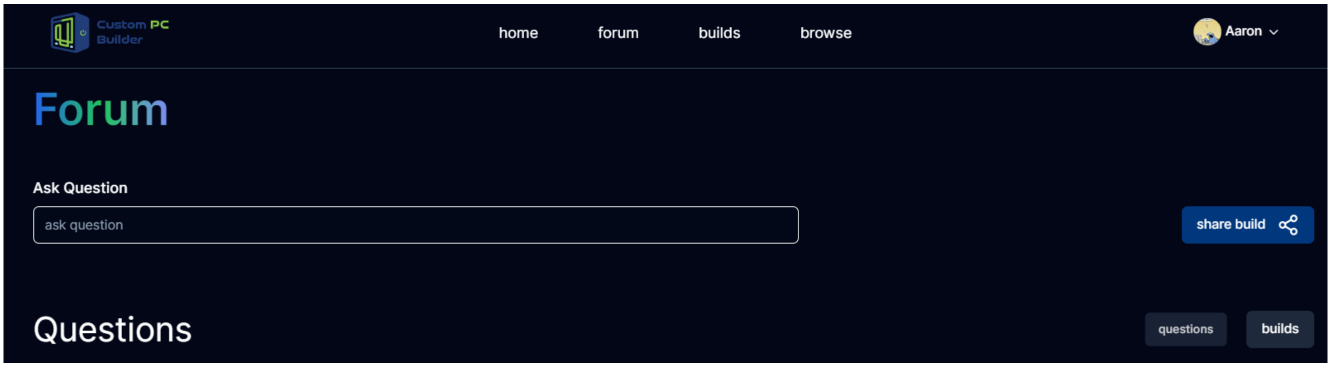
Home

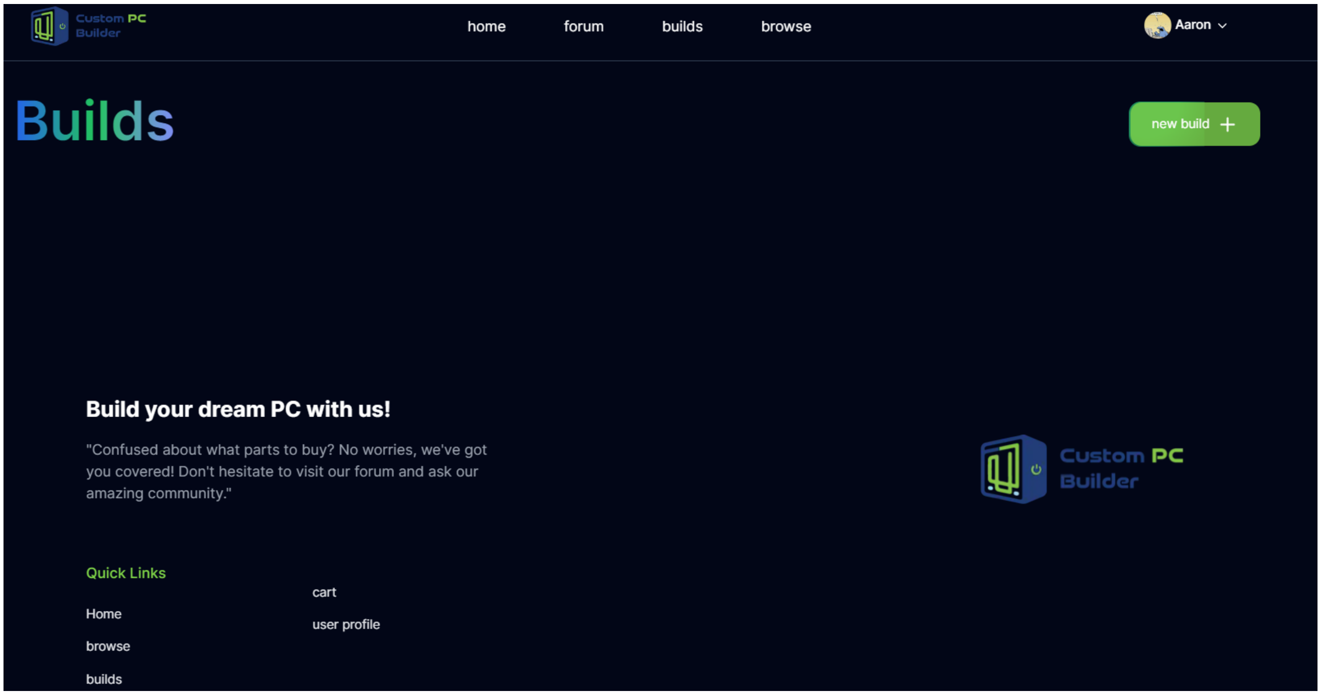
browse

builds

cart

user profile





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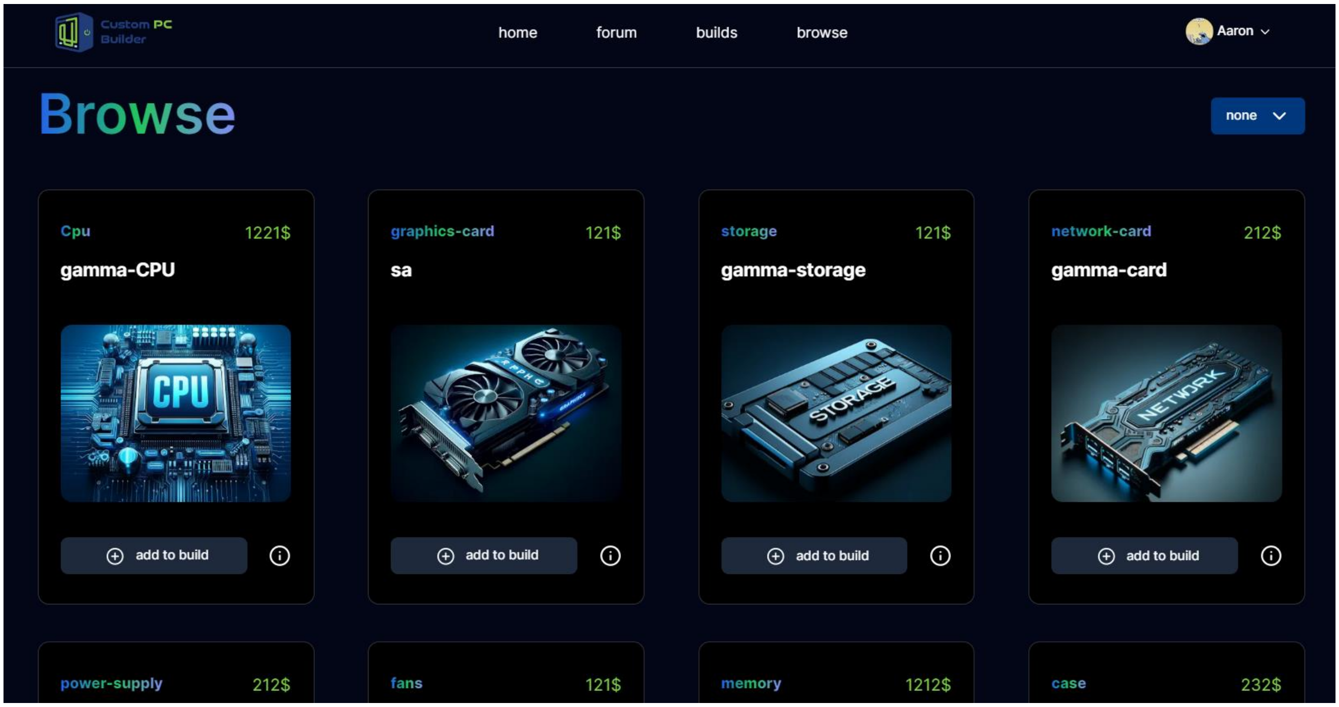


Browse

Cpu 1221$ gamma-CPU

graphics-card 121$ sa

storage 121$ gamma-storage

network-card 212$ gamma-card

power-supply 212$

fans 121$

memory 1212$

case 232$

Test Cases for Unit Testing

1. Component Selection and Compatibility Check

- **Test Case**: Verify that selecting a component updates the build configuration correctly.
- **Test Case**: Check that incompatible components are flagged and cannot be added to the build.

2. User Account Creation and Login

- **Test Case**: Confirm that users can create an account with valid credentials.
- **Test Case**: Confirm that users cannot log in with invalid credentials.

3. Forum Interaction

- **Test Case**: Test posting a question to the forum and check for successful submission.
- **Test Case**: Validate the retrieval and display of forum posts.

4. Shopping Cart Functionality

- **Test Case**: Test adding items to the cart and verify the cart reflects the correct items and prices.
- **Test Case**: Test updating item quantities and removal of items from the cart.

Test Coverage

The unit tests for our custom pc builder website will cover functional aspects of the system, including data manipulation, user interaction, and business logic. Each component's functionality, such as adding to a build or cart operations, will be tested in isolation in order to make sure of correctness. The goal of this is to achieve high code coverage, ideally testing all execution paths within each unit.

Integration Testing Strategy:

Horizontal Integration Testing

- **Plan**: We will begin by integrating and testing related modules, like user authentication and profile management. Then next we will continue integrating modules that interact with one another, like component selection and compatibility checking.

Top-Down Integration Testing

- **Plan**: We will start by testing the main user interaction points like the homepage and navigation. Gradually integrate and test dependent modules like the build creation process, forum interactions, and checkout process.

Testing Algorithms and Non-Functional Requirements

Performance Testing

- **Plan**: Test the responsiveness of the build creation and component selection process under load.

Security Testing

- **Plan**: Perform penetration tests to ensure user data is handled securely, especially during account creation and login.

Usability Testing

- **Plan**: Conduct user experience tests with sample users (teammate) to verify that the site is intuitive and that the workflow for building a PC is seamless.

User Interface Requirements Testing

Plan: Use UI testing software, and multiple different devices to ensure all elements render correctly on different devices and resolutions. Test that all interactive elements like buttons and links work as intended.

Traceability Matrix

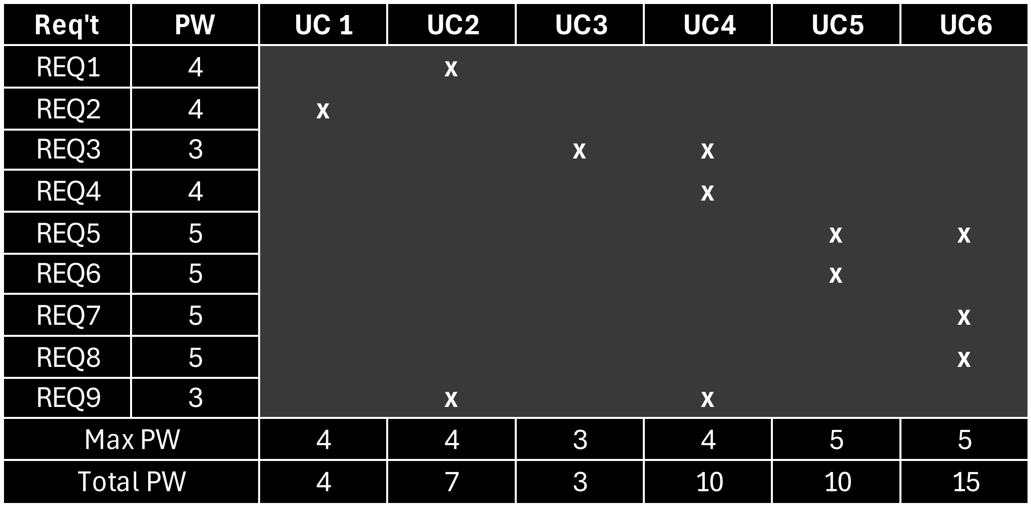
System Requirements:

No.	Priority Weight (1-5: 1: lowest, 5: highest)	Description
Req1	4	Users must be able to create an account.
Req2	4	Users need to be able to login to account
Req3	3	Users need to be able to search for parts of the PC
Req4	4	Users need to be able to add items to cart
Req5	5	The system should be able to report back any incompatibilities
Req6	5	The user should be able to select from a prebuilt PC
Req7	5	The user should be able select parts from a list
Req8	5	The system should be to help users choose the parts needed to build the PC
Req9	3	Users need to be able to purchase items in the cart

Use Cases:

No.	Description
UC1	Login: login into website click the login in button and then providing the credentials to log in.
UC2	Create account by going through the process located after clicking the button near the login screen
UC3	Search for items by using the search bar at the top of the page
UC3	Add items to cart using the add button
UC4	Modify cart by using the remove or inventory number
UC5	Select prebuild by first selecting the prebuilt button and then choosing which model you want
UC6	Using the compatibility detection to select parts that are compatible with each other

Traceability Matrix:



Req't	PW	UC 1	UC2	UC3	UC4	UC5	UC6
REQ1	4		x				
REQ2	4	x					
REQ3	3			x	x		
REQ4	4				x		
REQ5	5					x	x
REQ6	5					x	
REQ7	5						x
REQ8	5						x
REQ9	3		x		x		
Max PW		4	4	3	4	5	5
Total PW		4	7	3	10	10	15

System Architecture and System Design

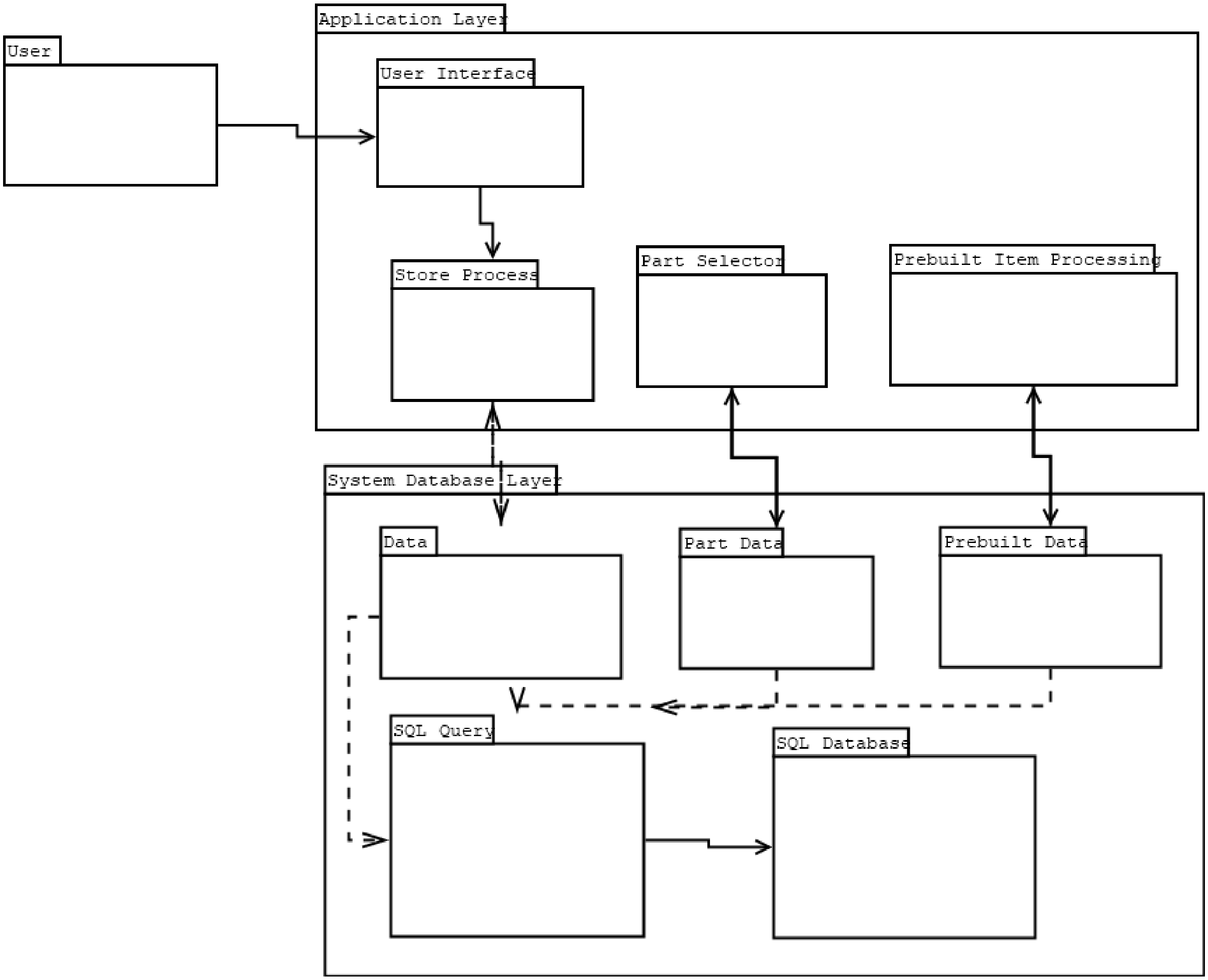
Architectural Styles

The PC Builder utilizes a **client-server architecture**, facilitating interaction between the user (client) and the system (server). This architecture is there to make sure that the client can make requests to the server, which then processes these requests and returns the desired outcomes or information, such as the component choices or also something like the system configurations.

Identifying Subsystems

The system's functionality is divided into several key subsystems, illustrated in the UML package diagram below. Central to the user experience is the interface developed with HTML and CSS, presenting users with various options: browsing the component database, logging in or creating an account, selecting a prebuilt system, or customizing a PC build. Subsystems include:

- **User Authentication**: Manages account creation and login processes.
- **Component Database Access**: Allows for searching and retrieving PC components.
- **Build Customization**: Facilitates the selection of parts based on user preferences and compatibility checks.
- **Order Processing**: Handles the addition of components to the shopping cart and manages purchases.



Persistent Data Storage

In order to make sure that we have sustained longevity of data beyond just single sessions, we have decided to go with a relational database to store persistent objects, including user accounts, PC parts, categories, custom builds, and compatibility data among all the parts. Doing this type of strategic approach guarantees that users can return to their custom builds, modify them, or proceed with purchases at any time.

Global Control Flow

- **Execution Orders**: The PC Builder operates on an event-driven model. User actions, such as selecting components for a build, trigger system responses—fetching compatible parts from the database, for instance. The flexibility of this allows for a truly personalized and dynamic building process, which really is catering to the unique preferences of each user.

- **Time Dependency**: The system is not time-dependent, enabling users to interact with the build process at their own pace. Users can save, modify, or delete their builds, with the system ensuring only compatible components are included through real-time checks.

Hardware Requirements

In order to support the comprehensive features of the PC Builder, specific hardware requirements are outlined for the server hosting the application and the client devices accessing the system:

- **Server**:
  - **Memory**: 8 GB RAM minimum.
  - **Storage**: 256 GB SSD minimum, to efficiently handle the database and application processes.
- **Client Device**:
  - **Display**: Minimum resolution of 1080p, ensuring a clear and engaging user interface.
  - **Device Compatibility**: Accessible via both PC and mobile devices, broadening user accessibility.
  - **Internet Connection**: Required for accessing the server and utilizing the PC Builder's functionalities.

PROJECT PLAN

PROJECT OVERVIEW

- Develop a user-friendly PC builder website similar to buildredux.com.
- Allow users to customize their PC builds, review components, and order parts.

MARKET ANALYSIS

- Analyze the market demand for custom PC building services.
- Identify target demographics, including enthusiasts, gamers, and professionals.
- Evaluate competitors like buildredux.com, PCPartPicker, and CyberPowerPC.
- Gather feedback from potential users to refine features and functionalities.

PLANNING PHASE

- Define project scope, objectives, and deliverables.
- Create a detailed timeline with milestones and deadlines.
- Allocate resources including development team, budget, and technology stack.
- Establish key performance indicators (KPIs) for measuring project success..

DEVELOPMENT

- Design user interface and experience based on buildredux.com.
- Develop backend infrastructure for product catalog, user accounts, and order processing.
- Implement frontend features for component selection, build customization, and checkout process.
- Integrate payment gateway (e.g., Stripe) for secure transactions.
- Conduct rigorous testing to ensure functionality, compatibility, and security

MARKETING STRATEGY

- Develop a marketing plan to promote the PC Builder Website.
- Utilize social media platforms, search engine optimization (SEO), and email marketing to reach target audience.
- Collaborate with influencers and tech communities for brand awareness.
- Offer promotional deals and discounts to attract early adopters.
- Monitor marketing performance and adjust strategies based on analytics.

LAUNCH

- Conduct beta testing with a select group of users to gather feedback and identify bugs.
- Address any issues and make necessary improvements based on feedback.

- Plan an official launch event to generate buzz and attract users to the website.
- Ensure scalability and reliability of the website infrastructure to handle increased traffic.

POST-LAUNCH SUPPORT

- Provide ongoing customer support and technical assistance.
- Continuously update and improve the website based on user feedback and market trends.
- Monitor website performance, security, and uptime to maintain a seamless user experience.
- Engage with the community through forums, blogs, and social media to foster brand loyalty and advocacy.

EVALUATION

- Evaluate project success based on predefined KPIs such as website traffic, user engagement, and revenue generation.
- Analyze user feedback and market trends to identify areas for improvement.
- Adjust strategies and priorities for future iterations and expansions of the PC Builder Website.

BUSINESS MODEL CANVAS

Value Propositions:

- Intuitive PC building
- Automated scheduling

Channels:

- Website
- Tech communities

Customer Segments:

- Gamer
- Enthusiasts

Cost Structure:

- Development
- Component procurement

Key Partners:

- Component suppliers

- Marketing collaborators

Key Activities:

- Website development
- Catalog curation

Key Resources:

- Marketing team
- Development team

Customer Relationships:

- Regular updates
- Customer support

Revenue Streams:

- Component sales
- Premium feature

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