

JACS: A Customer-Friendly Buy and Sell Website for Computer Parts and Technologies

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Abstract. With the pervasive impact of COVID-19, online shopping has become the preferred method for retail transactions, leading physical retailers to venture into the digital space. However, purchasing computer parts and accessories on existing e-commerce platforms can be burdensome, particularly for users lacking technical knowledge. The proposed study aims to address this challenge by developing a specialized e-commerce platform tailored exclusively to the computer industry. This platform will facilitate seamless transactions, enabling users to easily search, acquire, and trade computer components in a user-friendly environment.

INTRODUCTION

We are surrounded by new technologies and computers. It still continues to revolutionize our world and daily lives. Computers are used in different areas, industries, and fields such as banks and financial, business, communication, defense and military, education, internet, medical, transportation, multimedia, robotics, simulations, etc. (Computer Hope, 2020). Computers are also used in our household for a variety of activities, including online bill payment, home entertainment, home learning, access to social media, gaming, and the internet. They provide email as a means of contact. They support offering corporate employees the option of working from home. The student population can get online instructional support with the aid of computers (tutorialspoint, n.d.).

Many people are also constantly getting computers in their homes to adapt to innovation. The number of private households using computers in 2019 was anticipated to be close to 50%. Around one-third of homes in developing nations have access to a computer, which is a lower PC penetration rate. In comparison, industrialized nations had a household personal computer ownership rate that was closer to 80%. In general, as computer usage and internet connectivity have spread around the globe, the percentage of families using a computer has consistently climbed (Alsop, 2022).

Computers are composed of two parts: hardware and software. Computer hardware is any components or devices that build your computer, while computer software is made through computer programming, it provides interactivity from the user as it uses hardware as a storage and processing tool. Both hardware and software are constantly upgrading to improve performance and functionality. This is why users need to update and upgrade their computers.

The computer industry was hit when COVID-19 arrived and the pandemic started. Many factories shut down, and since most personal computer (PC) parts are made in Asia, especially in East Asia in China, and Taiwan, the production has stopped (Benak, 2021). Because of this Companies closed down, and since there are no more people outside, the computer retailers also shut down, which makes it harder to obtain parts.

Computer Software is mostly just being updated through the internet which means it doesn't run out of supplies. The problem with computer hardware and personal computer (PC) parts is that it is hard to obtain. Aside from the effect of COVID-19, the difficulty in obtaining the parts can be because of the lack of supply or because of the overpriced components.

Personal Computer (PC) is the term used for a general-purpose computer or also known as a desktop computer. This is the tower where we click the power button to turn on our own computers. It is composed of several parts including a computer case, motherboard, power supply unit, DVD drives, hard drives, random access memory, graphics card, and other peripherals and monitor (javatpoint, n.d.).

In the PC industry, you have a choice whether to build your own with parts, or just buy pre-built computers or computer sets usually seen in shops. PC building can be seen on social media platforms as it can be satisfying to watch. Building your own PC can have its own advantages and disadvantages.

There are several advantages to PC building, first is that you have the freedom of what parts to choose. You know how to troubleshoot since you built it. It can decrease labor costs. And you can also choose whether to get brand-new parts or get second-hand components to save money. Some disadvantages include the inconvenience. You will need to find the parts you need, most of the time it is seen in computer stores, it will be inconvenient when every store doesn't have stock of the parts you need. It's easy to damage parts if not careful and it can be expensive to replace them. As it can be cheaper, it can also be expensive depending on the time you are buying. And lastly, you need to learn. Not everyone is a PC enthusiast, and everyone has their own pace when studying something as overwhelming as PC building (Glawion, 2022).

The proponents conceptualize this project to encourage people to build their own PC. It provides a platform where retailers or sellers can sell their computer parts to customers online. This is great for PC builders because they can go into a single platform to seek the parts that they want.

METHODS OF RESEARCH

The research method to be used is developmental research, as it will create a new system and service for customers. The Software Development Life Cycle (SDLC) methodology that will be used is the waterfall model.

The waterfall model used in the software website can be constructed in a sequential structure. It also has clear requirements and objectives before it was developed (Waseem, 2022). In this model, the proponents will undergo the data gathering and requirements phase, design phase, implementation phase, and verification phase. The maintenance phase will be done if there is still time remaining based on the timeline.

The researchers will gather data from the internet about the needs and suggestions from related studies for e-commerce. The information will undergo an analysis phase to eradicate incompleteness and inconsistencies related to software product development. The researchers will also analyze the specification requirement needed to create the website.

After the first phase has been verified, designing the website is the next phase. It helps in specifying software and hardware requirements, as well as the overall architecture of the system design. The proponents will create wireframe and mockup designs, flowcharts, and block diagrams to lay out and plan the flow of the system.

The implementation phase is next after the system design is fully verified. The system design will be taken, and it is developed in small programs known as units to be tested and implemented in phases that undergo development.

The testing or the verification phase will come after to find out if there is any flows or error in the design or code.

The maintenance is the phase after the deployment if there is still time. The website can be monitored using the admin side. The proponents will monitor users and their transactions. The information included on the website can still be updated as it goes along.

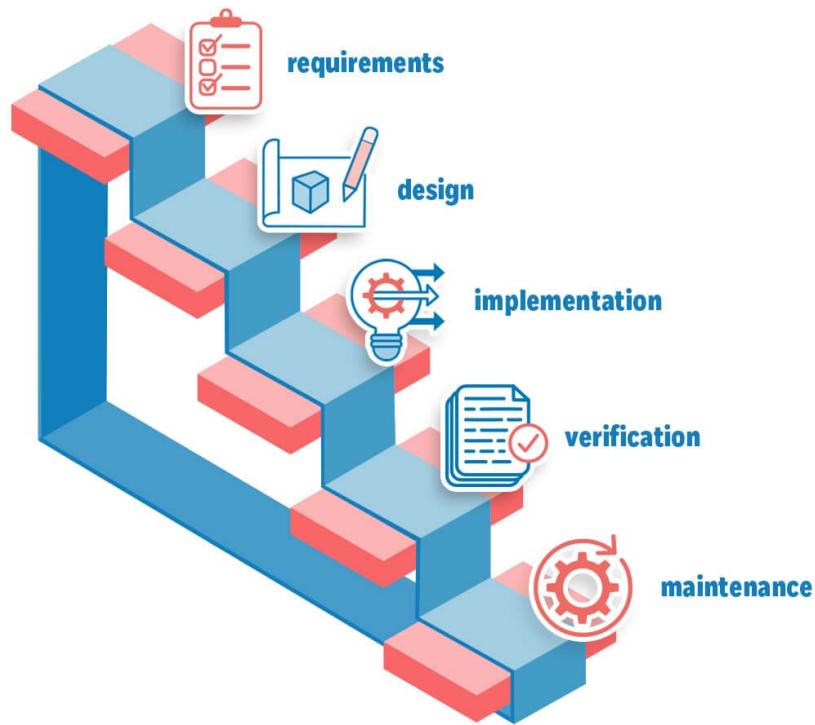


FIGURE 1. WATERFALL MODEL (WASEEM, 2022)

DATA GATHERING

The proponents took a number of steps to gather information to ensure the success of the project. the steps were the following:

Online Document analysis. It is essential to study documents online and do research related to the product in order to develop the website itself because the proponents' knowledge of websites is limited. The document analysis was done before the construction and design of the website since the proponents would utilize various functionalities in the e-commerce of the website. Additionally, this data-collection step will include looking up related papers, websites, and relevant scripts to run the website properly. They will be using this method in order to get reliable information for the website, especially in the tutorial part.

Online Lecture Discussions. The proponents will be using web development languages that are outside of their skill sets, which is why they will be enrolling in online courses as well as watching youtube playlists discussing the lessons or systems similar to the subsystem in this project.

Questionnaire and Online Forms. This serves as the primary data gathering information where the responses will answer the question related to the website. This will know what the user likes or dislikes the most on our website. The proper function of every area such as buy and sell and account management. The target sample can also point out bugs that are currently existing in the system at the time of testing.

FUNCTIONAL BLOCK DIAGRAM

In order for the website to function successfully, the proponents of the research laid out their plan for how the process will happen on the website. The block diagram consists of three categories: User, Website, and Database. In the user category, these are the people who will use the website. They create their account to access the website as a normal user or a seller user. All of the accounts, the orders of the user, the products of the seller, and the transaction of the users will go stored in the database. Next is the website that will be accessed by the users. The website itself is the project of the research to be developed. Users will go to the homepage to see the overview of the site. All of the displayed products on the website came from the database along with their reviews.

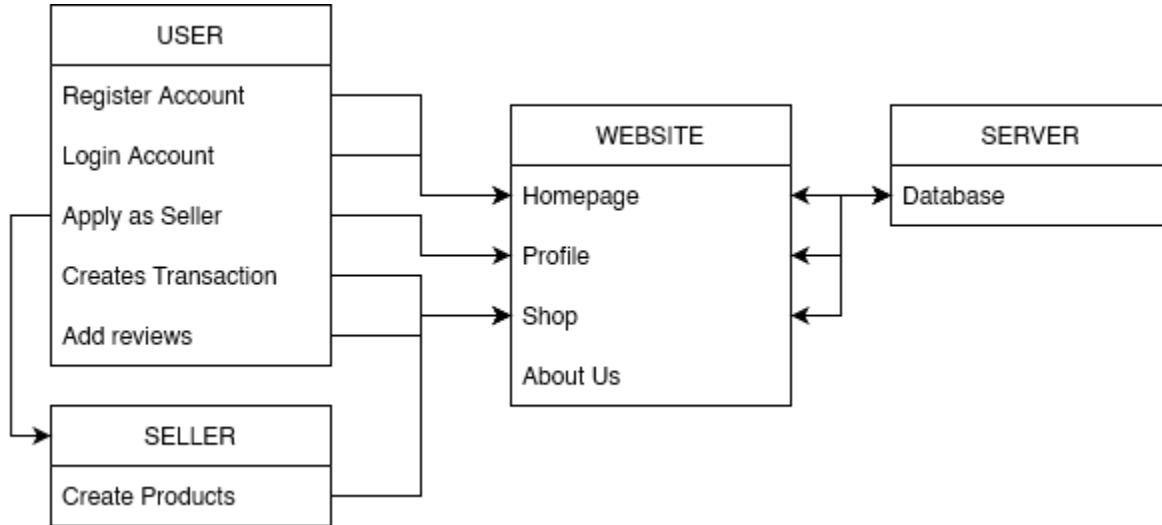


FIGURE 2. FUNCTIONAL BLOCK DIAGRAM: CUSTOMER-FRIENDLY BUY AND SELL WEBSITE FOR COMPUTER PARTS AND TECHNOLOGIES WITH ONLINE TUTORIAL, PC BUILDING, TECHNOLOGY REPAIR, AND CONSULTATION

SOFTWARE APPLICATION

JACS website is considered a stand-alone website. It uses the MERN (Mongo, Express, React, and NodeJS) stack in the development of the site. ReactJS, Tailwind Css, and SCSS framework are used at the frontend of the website. Express and NodeJS are used for the deployed serverless backend that is used to fetch and call APIs to the frontend. For the database to store data, it uses MongoDB and Firebase.

All of the pages in JACS include the navigation bar and footer. These pages are also responsive. The navigation bar includes the home, shop, and about our links, as well as the profile and cart icons to easily access it. JACS includes the following pages to cater to the basic functionality of a buy-and-sell website:

1. Homepage

This page displays all of the features that are available on the website for users to know what the website is. It also displays the most bought items and the latest products available.



FIGURE 1. JACS HOME PAGE

2. Shop

This page is the shopping system of the website. Here, users can view and buy products that they want. There is a search bar where users can search for the component they want to buy. It also has a filter feature to only view the specific type of component and brand. Here only one category per is filtered at a time.

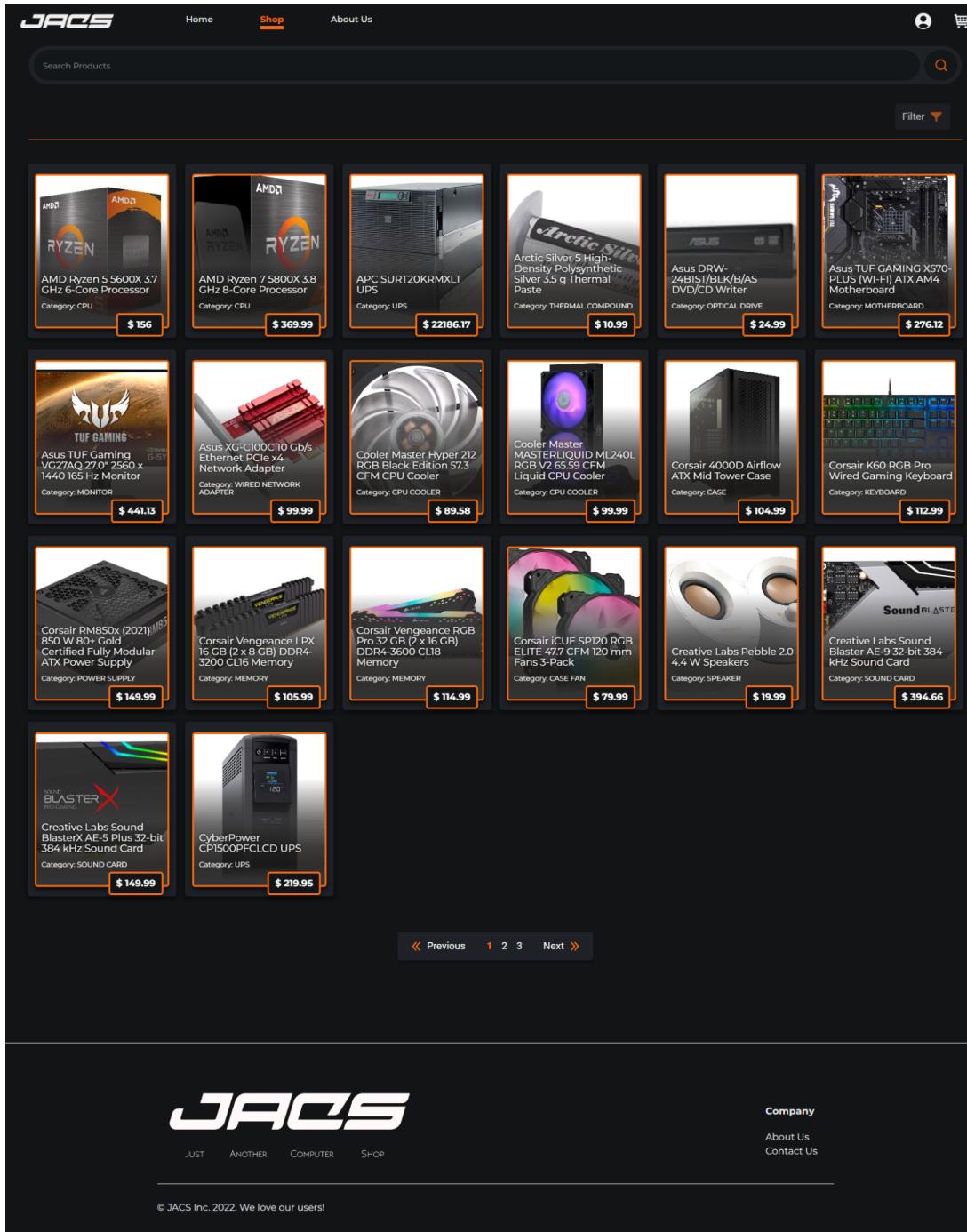


FIGURE 2. JACS SHOP PAGE

3. Profile Page

This is the user's admin page, it displays the information of the user. They can either be a seller or a default user. Their access varies depending on the type of user they choose to be. They also see at most eight of their items in the cart, they can also add or subtract items and even remove them. This page also provides another set of navigation which includes a My Shop (if the user is a seller), Cart, My Orders, and Settings link.



FIGURE 3. JACS PROFILE PAGE

4. My Shop Page

This is the seller's list of products page. This is where all of the sellers uploaded items listed that will be posted on the shop. The seller can edit the display picture and also has the control of whether to add or delete multiple products using the buttons provided.

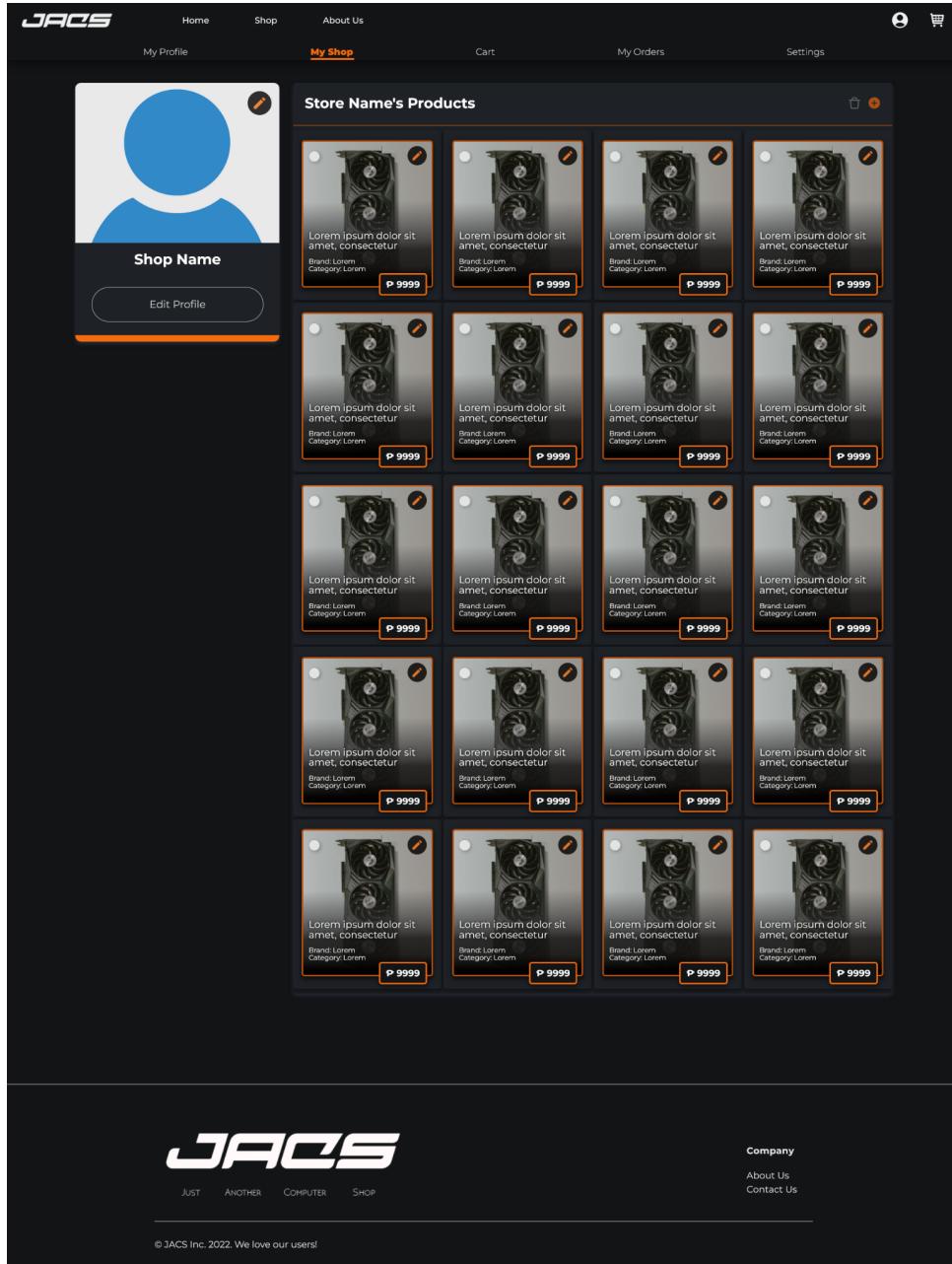


FIGURE 4. JACS MY SHOP PAGE

5. Cart Page

It is where users can view and manage the items they have added to their virtual shopping cart before proceeding to the checkout process. The cart page typically includes the following elements: Product Information, Quantity Adjustment, Subtotal, Cart Total, Remove Items, Proceed to Checkout, and Cart Total.

Location

Add Shipping Address

Order Summary

Subtotal (0 items)	₱ 0.00
Shipping Fee	₱ 0.00
Subtotal	₱ 0.00

PROCEED TO CHECKOUT

PCX

• RYZEN 5

• RYZEN 5

• RYZEN 5

• RYZEN 5

Silicon Valley

• RYZEN 5

• RYZEN 5

• RYZEN 5

• RYZEN 5

JACS

JUST ANOTHER COMPUTER SHOP

Company

About Us

Contact Us

© JACS Inc. 2022. We love our users!

FIGURE 5. JACS CART PAGE

6. My Orders Page

My Orders page enhances the post-purchase experience for customers, offering them easy access to their order history, order details, and relevant actions. It promotes transparency, convenience, and self-service by empowering users to track their orders, manage returns, and access essential information related to their previous purchases. It is a section within an e-commerce website that provides users with a comprehensive view of their past orders and related information. It allows customers to track their order history, view order details, and perform actions related to their orders.

Order ID	Delivery Location	Product	Price	Quantity
1	PCX	Ryzen 5 5600G	P 1.00	qty: 1
2	PCX	Ryzen 5 5600G	P 1.00	qty: 1
3	PCX	Ryzen 5 5600G	P 1.00	qty: 1
4	PCX	Ryzen 5 5600G	P 1.00	qty: 1
5	Silicon Valley	Ryzen 5 5600G	P 1.00	qty: 1
6	Silicon Valley	Ryzen 5 5600G	P 1.00	qty: 1
7	Silicon Valley	Ryzen 5 5600G	P 1.00	qty: 1
8	Silicon Valley	Ryzen 5 5600G	P 1.00	qty: 1

JACS
JUST ANOTHER COMPUTER SHOP

Company
About Us
Contact Us

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FIGURE 6. JACS MY ORDERS PAGE

7. Settings Page

In this page the users can customize and manage various account and preference settings. It provides users with control over their account information, communication preferences, and other configuration options. The specific features and options available on a settings page may vary depending on the website. It serves as a centralized location for users to manage their account-related preferences, personal information, and configuration options. It provides a convenient and user-friendly way for customers to customize their experience and ensure that their account settings align with their preferences and requirements.

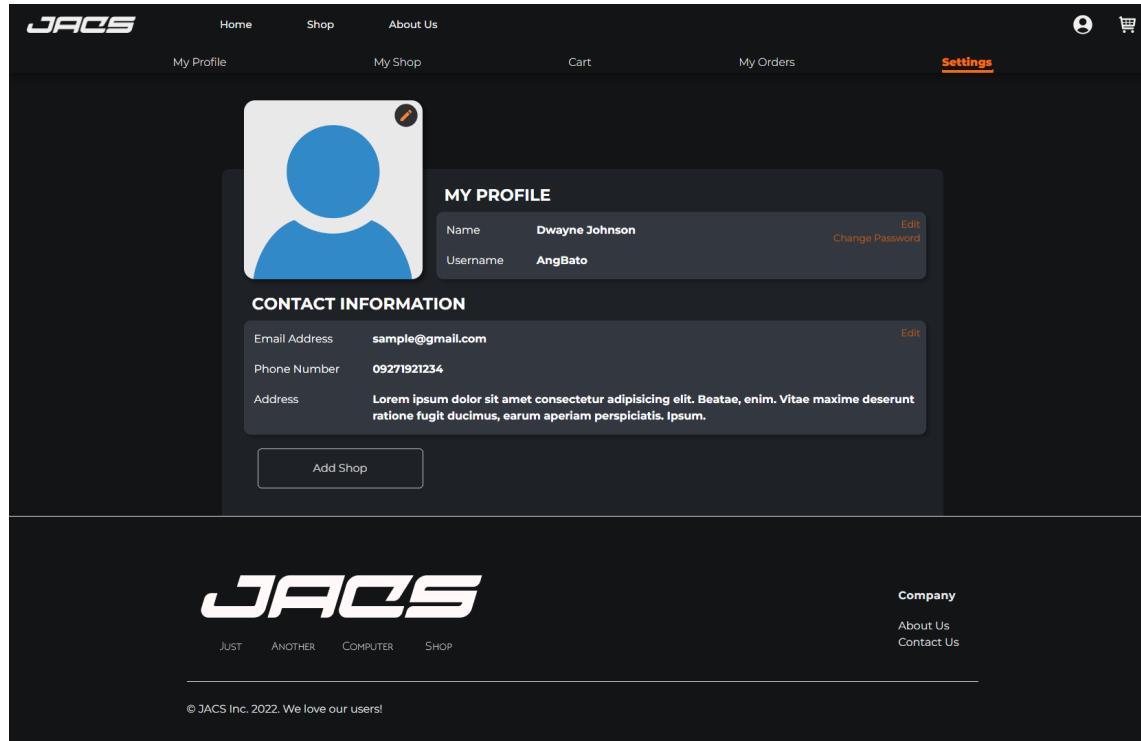


FIGURE 7. JACS SETTINGS PAGE

8. Product Page

The product page provides detailed information about a specific product or service being offered for sale. It serves as a dedicated landing page for a particular item, allowing users to gather essential details, make purchasing decisions, and proceed with the buying process. The product page plays a pivotal role in showcasing individual items and providing users with all the necessary information to evaluate and make purchase decisions. By presenting appealing visuals, comprehensive descriptions, pricing details, and user feedback, the product page aims to create an engaging and informative experience that encourages users to convert into buyers.

JACS

Home Shop About Us

AMD Ryzen 5 5600X 3.7 GHz 6-Core Processor
Brand: AMD

\$ 156

[ADD TO CART](#) [BUY NOW](#)

	Delivery Time	04/20/2069
	Mode of Shipping	Walk-in Delivery
	Discount	Buy in installments Buy by bank transfer for legal entities.

Description

This is a AMD Ryzen 5 5600X 3.7 GHz 6-Core Processor

Ratings

4.7/5

★★★★★ 2 reviews
★★★★★ 1 review
★★★★★ 0 review
★★★★★ 0 review
★★★★★ 0 review

Reviews (3)

Sort by Filter by

Test Seller Sat, 25 Feb 2023 13:11:05 GMT
Hello again! Gonna drop a 4 stars review. Teehee!

Test User Thu, 08 Jun 2023 08:05:38 GMT
Trying again

Test Seller Thu, 08 Jun 2023 19:06:07 GMT
good product again

[+ Add a Review](#)

[Previous](#) **1** [Next](#)

JACS

JUST ANOTHER COMPUTER SHOP

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Company

[About Us](#) [Contact Us](#)

FIGURE 8. JACS PRODUCT PAGE

9. About Us and Contact Us Page

This page is where the users can see most of the information about the website. The About Us page tells the user a little about the creator, the website, and its goals.

The screenshot shows the JACS website with a dark theme. At the top, there is a navigation bar with links for Home, Shop, and About Us (which is underlined). On the right side of the navigation bar are icons for user account and shopping cart. Below the navigation bar, the word "About Us" is centered in orange text. The main content area features the JACS logo in large white letters, followed by the tagline "JUST ANOTHER COMPUTER SHOP" in smaller white text. A paragraph of text describes the website's mission to provide a safe and easy platform for PC part sellers. Below this, a large orange header bar contains the "Contact Us" title. The contact section is divided into two parts: "Contacts" on the left and "Send us a Message" on the right. The "Contacts" section lists three owner/contact points: "Owner/Founder" (Keanu Dwight C. Solomon, solomonkeanusk@gmail.com), "Co-Owner" (John Rexpearl P. Tumlos, johnrex47@gmail.com), and "Co-Owner" (Phillip Angelo R. Jaculo, pjaculo22892@gmail.com). The "Send us a Message" section includes input fields for Name, E-mail Address, and a large message area, with a "Send Message" button at the bottom. At the bottom of the page, the JACS logo and tagline are repeated, along with a copyright notice: "© JACS Inc. 2022. We love our users!"

FIGURE 9. ABOUT US AND CONTACT US PAGE

10. User Registration Page

This registration page is where users can create a new account to access various features and functionalities provided by the website. It allows individuals to establish a personal profile within the e-commerce platform, enabling them to make purchases, track orders, save preferences, and engage in personalized experiences. After completing the first form, the site will then ask you more about your information for verification.

The figure consists of two vertically stacked screenshots of a web application's user registration interface. Both screenshots have a dark background with faint, semi-transparent icons of a computer monitor, keyboard, mouse, and smartphone scattered across it. The top screenshot shows a modal window titled 'Sign up to JACS.' with sub-instruction 'Have an account already? Login Here'. It contains three input fields: 'Username', 'Password', and 'Confirm Password'. Below these is a checkbox labeled 'I agree to the [Terms of Service](#) and [Privacy Policy](#)'. At the bottom is a large orange 'Register' button. The bottom screenshot shows another modal window titled 'User Information' with the instruction 'Please fill out necessary information'. It contains four input fields: 'First Name' and 'Last Name' in separate boxes, 'Contact Number' in a single box, and 'Email' in another single box. At the bottom is an orange 'Save' button. Both screenshots show the JACS logo at the top left and a navigation bar with 'Home', 'Shop', and 'About Us' at the top right, along with a user icon and a shopping cart icon. The footer of both screenshots includes the text '© JACS Inc. 2022. We love our users!'.

FIGURE 10 & 11. JACS USER REGISTRATION PAGE

11. Store Registration Page

This page is where sellers or merchants can create an account to set up their online store and sell their products or services on the platform. It is designed to facilitate the registration process for individuals or businesses interested in becoming sellers on the e-commerce website. Creating a shop will ask you what type of seller you are and will ask for documents. After that, another form will appear and this one is for verification.

The image consists of two vertically stacked screenshots of the JACS Store Registration Page. Both screenshots have a dark background with light-colored UI elements. The top screenshot is titled 'CREATE NEW SHOP' and 'Shop Documents'. It includes fields for 'Type of Store' (radio buttons for 'Micro or Individual Sellers' and 'Corporate Seller'), 'Valid Government ID', and 'Proof of Bank Account', each with a 'Attach File Here' button. An orange 'Submit Documents' button is at the bottom. A note at the bottom states: 'JACS.com will review your request, you will receive a response in your email when the request is accepted or rejected within 1-2 weeks.' The bottom screenshot is also titled 'CREATE NEW SHOP' and 'Shop Profile (Registration 2 of 2)'. It includes fields for 'Store Name', 'Contact Number', and 'Email', each with a corresponding input box. An orange 'Proceed to Profile' button is at the bottom. Both screenshots show the JACS logo and navigation links for Home, Shop, About Us, and Company at the top and bottom.

FIGURE 12 & 13. JACS STORE REGISTRATION PAGE

CONCLUSION

To summarize the entire study, the JACS website offers a buy and sell system, forum, build your own PC, and online assistance platform. Buying online becomes popular because of today's COVID-19. It helps to mitigate the risk of getting the virus because of going outside. This aims to help users understand the world of PC building. This is an all-in-one personal computer stop shop.

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