Analysis of PG/Flat Rental Website Developed Using PHP/Xampp with Existing PG/Flat Business/Rental Websites

Abstract: This research paper is like a guide on how to build a website to help people find flats or apartments to rent in big cities. The paper talks about different tools and methods for website creation. It focuses on a tool called Xampp, which helps you set up a website on your own computer. The paper explains the concept of a website’s life cycle, which basically means the different stages a website goes through from planning to launch and updates. It also talks about frameworks, which are like pre-made building blocks that can help you develop websites faster. The website this paper discusses is specifically designed to help people find apartments or flats to rent in big cities. The paper dives into a specific technology called PHP, which is like a special coding language used to build websites. It also explains how Xampp helps with using PHP for this website.

Keywords: Xampp, PHP, Development, Rental.

I. INTRODUCTION

The mentioned rise of rental PGs (paying guest houses) and flats, which shows there’s a growing need for places to live in cities. You explained that people come to big cities for better opportunities, careers, and the lifestyle they desire. This naturally leads to the need for finding a place to live, which is where your project comes in.

Lays out the structure and content of your website. Think of it like the skeleton of your website, defining elements like headings, paragraphs, images, and lists. Controls the visual presentation of your website. It’s like the clothing for your website’s skeleton (HTML), defining styles like fonts, colors, layout, and responsiveness. Using CSS effectively is key to creating an attractive and user-friendly website. HTML and CSS are the foundation for website design, controlling structure and presentation.

A test server isn’t used just for viewing the layout. It's a simulated environment that mimics a real web server where your website can run and be tested thoroughly. Many websites rely on server-side scripting languages like PHP to process user input, interact with databases, or generate dynamic content. A test server allows you to run this server-side code and see how the entire website behaves, not just the static layout. This helps catch errors and ensure everything works smoothly before deploying the website live.

The housing sector is constantly adapting, and new strategies are needed for efficient rental property management. This highlights the importance of a user-friendly rental property management system. It mentions a user entering values and submitting them to a server to access information on rental property maintenance. The server tracks the number of rental properties. Emphasize that the system should be easy to use for both property managers and potentially tenants. A good rental property management system can automate tasks, track maintenance requests, manage finances, and streamline communication between landlords and tenants. This can save property managers significant time and effort.

![CHART 1](chart.png)

**CHART 1: WHY DO PEOPLE MIGRATE TO DELHI?**

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrants (in lakhs)</td>
<td>23.6</td>
</tr>
<tr>
<td>Moved with family</td>
<td>19.8</td>
</tr>
<tr>
<td>Work/employment/business</td>
<td>12.2</td>
</tr>
<tr>
<td>Marriage</td>
<td>1.0</td>
</tr>
<tr>
<td>Others</td>
<td>6.8</td>
</tr>
</tbody>
</table>

Fig 1. People migrate to Delhi

1 MCA Scholar, Department of Computer Science & Engineering, Lingaya’s Vidyapeeth, Faridabad, Haryana, India.
2 Associate Professor, Department of Computer Science & Engineering, Lingaya’s Vidyapeeth, Faridabad, Haryana, India.

manisha.vashisht@gmail.com

* Corresponding Author Email: raypriti0000@gmail.com

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Cities often provide a higher standard of living, with better infrastructure, sanitation, and access to utilities. Cities can offer a more diverse and stimulating social environment, with opportunities to meet new people and experience different cultures. People migrate to cities for a better shot at economic opportunities, but the availability of amenities, services, and a potentially better quality of life also plays a significant role. (fig 1 and 2)

Big cities like New Delhi, Mumbai, Bangalore, and Pune often offer better job prospects, higher salaries, and a wider range of career options compared to rural areas or smaller Metro areas tend to have better educational institutions, attracting students and families seeking higher education opportunities. Cities offer a wider range of amenities and services like healthcare, entertainment, transportation, and cultural attractions. People might be drawn to cities for a better quality of life with improved infrastructure, sanitation, and access to utilities.

The Hindustan Times [1]. Take the case of Delhi, where nearly 40% of the population is made up of migrants from other Indian states, with 23.6 lakhs moving with their families, 19.8 lakhs moved for work/employment/business, 12.2 lakhs moved for marriage, 1.0 lakhs moved for education, and 6.8 lakhs moved for other reasons.

According to the Online Home Rental Services Market [2] The current trends in online home rental services, such as user demands for ease of use, digital payments, and remote viewing. Rental websites are increasingly incorporating these features to remain competitive. Identify leading companies in the online home rental services market, like Airbnb, Zillow, 99acres, and MagicBricks. Study their business models, user experiences, and technological approaches. Compare the features of your PHP/XAMPP-based rental website with industry standards. Typical features include: Property listings with images and detailed descriptions Search and filter functionality for location, price, and amenities User registration and profile management Online booking and payment processing Reviews and ratings system for properties and landlords Does the site offer additional features like virtual property tours, AI-based recommendations, or property management tools for landlords. Assess the PHP/XAMPP stack in comparison to technologies used by established rental websites. Consider the scalability and maintainability of the platform. Given the sensitivity of user data and financial transactions, examine the security practices of the website. Compare with industry standards for data protection, encryption, secure authentication, and payment gateways.

According to M. Tayloret al. [3], Compare the scope of functionalities provided by your PHP/XAMPP-based website with leading platforms like Airbnb, Zillow, or local rental sites. Focus on key elements such as property listings, search functionality, user accounts, and booking processes. Examine the design and UX aspects. Is your website user-friendly and visually appealing. Ensure your website employs robust security measures. Consider data protection, user authentication, and secure payment processing. Analyze the architecture of your PHP/XAMPP setup. How does it compare with scalable solutions used by larger platforms? Ensure the database design follows best practices for data management and security. Explore how your website promotes its services and reaches potential users. Compare these efforts with those of established rental platforms.

Rust, R. T. and Kannan, P.K., 2003 [4], Assess the PHP/XAMPP setup, focusing on code organization, modularity, and adherence to best practices (e.g., MVC patterns). Review the database structure, ensuring it is normalized and designed for efficient querying and scalability. Examine security measures, such as data encryption, secure login mechanisms, SQL injection prevention, and protection against other common vulnerabilities.
Determine if the website provides essential features such as user registration, property listings, search functionality, booking and reservation systems, and payment processing. Consider additional functionalities like reviews, ratings, communication between users and landlords, and support for multimedia content (images, videos).

III. RESEARCH METHODOLOGY
The objective could be to evaluate the features, technical implementation, user experience, and business model of a PG/Flat rental website developed with PHP/XAMPP, and compare it with existing industry-standard rental websites. Collect direct data from the PG/Flat rental website, such as website structure, features, user interface design, backend implementation, security practices, and database architecture. Conduct interviews or surveys with stakeholders, including developers, users, landlords, and administrators, to understand their experiences and opinions. Research existing PG/Flat rental websites, focusing on their features, user experience, business models, and technological implementations. Gather information from public sources, such as the websites themselves, published reports, and academic literature. Examine industry reports or white papers on online rental businesses to understand broader market trends.

Compare the PHP/XAMPP-based rental website with existing business/rental websites across several key dimensions: Evaluate the structure of the PHP codebase, database design, security practices, and overall performance. Compare this with best practices used by leading rental websites. List the features available on your rental website and compare them with those of established platforms. Identify unique features or gaps. Assess the user interface, ease of use, and overall user satisfaction. Compare with industry leaders to determine if your website provides a competitive experience. Examine how the website attracts users and retains them. Compare marketing strategies with other rental websites to identify best practices.[7]

The following illustration (fig 3) is a representation of the Iterative model –

![Iterative Model](image)

**3.1 Phases Of Iterative Model**
The iterative life cycle model comprises repeating the below-mentioned four stages as a sequence [9]. These are:

3.1.1 **Requirements Gathering and Analysis:**
Engage with stakeholders (developers, landlords, tenants, administrators) to understand their needs, expectations, and pain points. Examine successful PG/Flat business and rental websites to identify common features, user experiences, and business models. Create a list of functional and non-functional requirements for the PG/Flat rental website based on stakeholder input and industry benchmarks.

3.1.2 **Design and Planning:**
Plan the structure of the PHP/XAMPP-based website, considering scalability, modularity, and maintainability. Design the database schema, ensuring it aligns with requirements and allows for future scalability. Incorporate security best practices. Develop wireframes and prototypes for key website components, focusing on usability and responsiveness. Break down the project into manageable iterations, each with specific goals and deliverables.

3.1.3 **Development and Implementation:**
Implement the core features identified in the design phase. This could include property listings, user registration, search functionality, and booking systems. Integrate security measures such as secure authentication, encryption, and SQL injection prevention. Use continuous integration practices to ensure code quality. Test each feature as it's developed to catch defects early. At the end of each iteration, collect feedback from stakeholders to guide the next cycle.

3.1.4 **Testing and Quality Assurance:**
Test the website's functionalities to ensure they meet requirements. This includes unit testing, integration testing, and system testing. Conduct usability tests with real users to assess the user experience and identify areas for
improvement. Perform security audits to identify vulnerabilities and ensure compliance with best practices. Test the website after changes to ensure existing functionalities are not adversely affected.

3.1.5 Deployment and Evaluation:
Deploy the website to a production or staging environment for further testing and user feedback. Gather feedback from users and stakeholders to evaluate the success of the iteration. Analyze data to identify trends and issues. Compare the website’s performance, features, and user satisfaction with existing PG/Flat rental websites to understand its competitive position.

3.1.6 Refinement and Continuous Improvement:
Review the outcomes of the iteration and plan the next cycle. Incorporate feedback and insights gained during testing and evaluation. Make necessary adjustments based on feedback and analysis. This could involve adding new features, improving the user interface, or enhancing security. Establish metrics to monitor the website's performance and user engagement. Use these metrics to guide future iterations.

3.2 Technical Tools
To conduct a comprehensive analysis of a PG/Flat rental website developed using PHP/XAMPP in comparison with existing PG/Flat business/rental websites, we need a set of technical tools.[8] These tools help analyze the website's structure, performance, security, and user experience, providing insights into areas that require improvement or optimization. Here's an overview of essential technical tools to use in your analysis:

3.2.1 Development Tools:
PHP Development Environment: PHPStorm, Visual Studio Code, or Sublime Text are popular integrated development environments (IDEs) for PHP development. These IDEs offer features like code completion, debugging, and version control integration.
XAMPP: As the local development environment, XAMPP provides Apache, MySQL/MariaDB, and PHP, allowing you to set up and run the website locally for testing and analysis.

3.2.2 Version Control:
Git: Use Git for version control to track changes, collaborate with other developers, and maintain a history of codebase modifications. GitHub or GitLab can be used for remote repository hosting and collaboration.
Branching and Merging Tools: These tools help manage multiple development branches and facilitate code review.

3.2.3 Database Management:
MySQL/MariaDB Tools: phpMyAdmin or MySQL Workbench are useful for managing and analyzing the website's database structure, querying data, and performing database backups.
Database Design Tools: Like Lucidchart or ER/Studio help design and visualize the database schema, allowing you to check for normalization and optimize database performance.

3.2.4 Testing and Debugging:
PHP Debuggers: Xdebug allows you to debug PHP code, set breakpoints, and inspect variables during execution, which is crucial for identifying bugs and errors.
Automated Testing Frameworks: PHPUnit for unit testing and Selenium for automated functional testing can be used to ensure code quality and website functionality.
Load Testing Tools: JMeter or ApacheBench (ab) can simulate user traffic to test the website's scalability and performance under stress.

3.2.5 Security Analysis:
Security Scanners: Tools like OWASP ZAP or Burp Suite can identify common security vulnerabilities, such as SQL injection, cross-site scripting (XSS), and cross-site request forgery (CSRF).
SSL/TLS Tools: SSL Labs provides insights into the security of SSL/TLS configurations, ensuring secure data transmission.

3.3 Rental Housing
Analyzing a PG/Flat rental website developed using PHP/XAMPP in the context of existing PG/Flat business/rental websites requires a comprehensive approach that evaluates multiple dimensions: technical architecture, user experience, security, business model, and market competitiveness. Here's a structured analysis tailored to rental housing, focusing on how a PHP/XAMPP-based website compares with established rental platforms [10].

3.3.1 Rent
Rent is the payment made by tenants to landlords in exchange for living in a PG or flat. When analyzing a rental website, consider how it handles rent-related processes.
3.3.2 Social Security
Social security in the context of PG/Flat rental websites refers to the measures taken to ensure tenant safety and foster a sense of community. Analyze whether the website promotes properties with security features like CCTV cameras, access control systems, or on-site security personnel.

3.3.3 Ready-made facilities
Ready-made facilities refer to pre-installed amenities and services in PGs/flats, providing convenience for tenants. Assess if the website allows landlords to list the amenities provided in their properties, such as furniture, appliances, Wi-Fi, or cleaning services. Determine if the website highlights additional services like meal plans, laundry services, or transportation facilities.

3.4 Comparisons with OYO Rooms Website Traffic Load

In the recent period, there have been a total of 4.3 million visits to the OYO Rooms website. This means that over the past few months, 4.3 million times people have visited the site. This might include repeat visits by the same users or unique visits by different users. On average, users spend about 5 minutes on the website per visit. This indicates how long users typically engage with the site's content during a single visit. A longer average time generally indicates that users find the site useful or interesting. The system is being designed with the capacity to support 1 billion users. This is a projection for future growth and outlines the system's scalability requirement.

When a user interacts with the site, data is transferred between the user's device and the server. On average, the response from the server (like loading a webpage or downloading a file) is about 1 MB in size. With the plan to support 1 billion users, if each user were to make one request per hour, you'd be handling about 1 TB (terabyte) of data every hour. This leads to a total of 24 TB to 30 TB of data per day, depending on how much activity occurs on the website. Since the system deals with large volumes of data, it's designed to clear or "wipe" 1 TB of data at regular intervals to manage storage. This data wiping interval helps maintain system performance by removing outdated or unnecessary data (fig 4).

3.5 Audience Demography

When we talk about audience demographics, we're discussing the different groups of people who use a particular service or website, like OYO Rooms [6]. These groups are often divided based on certain characteristics, such as gender, age, location, etc. From the information you provided, there's a figure (Fig. 5) that shows the gender distribution among people who visit the OYO Rooms website. This figure indicates that a majority of the traffic comes from male users. However, female users also make up a significant portion, with 38.68% of the traffic. So, while most visitors to the OYO site are men, nearly 39% are women. This tells us that women represent a sizable chunk of the traffic, and any marketing or customer service efforts should consider both genders, not just the male majority. (fig 5)
OYO Rooms is a platform where people book rooms for various purposes, such as travel or pilgrimage. The gender distribution data shows that most of the website's visitors are male, but a significant portion (38.68%) is female. Given that many people book rooms while traveling with their families, focusing customer service solely on male visitors would not be effective. This is because families often include women, and both genders play a role in booking decisions sending requests to a server, scalability becomes crucial to keep the website running smoothly. It can be done in two main ways:

### 3.6 Vertical Scalability

This involves adding more power to existing servers, like increasing their memory or processing capacity. Horizontal Scalability: This means adding more servers to share the workload. Instead of relying on one server, you have many, distributing the traffic among them. Load balancing is the process of distributing incoming requests across multiple servers to ensure no single server is overloaded. One common method for load balancing is “round-robin,” where requests are sent to servers in a rotating order, ensuring even distribution. When you visit a website, it often sends a request to the server to fetch data. An HTTP head request is a way to check if data has changed without downloading everything. This can save time and bandwidth, making the website quicker. A DBMS (Database Management System) view is a way to organize data in a database to make it easier and faster to retrieve. By using views, you can simplify complex data queries, which speeds up the website.

To sum it up, to create a fast and user-friendly website that can handle a lot of users, you need to ensure the system can scale as needed, use load balancing to spread the workload, and optimize networking and database operations. Techniques like HTTP head requests and DBMS views can help improve performance and make the website quicker for user. (fig 6)
Fig. 7. Traffic and Engagement of Booking.com

Considering the booking.com traffic statistics in Fig. 7. The biggest peak of traffic during the previous three months was 490 million. (fig 7)

Fig. 8. Age Distribution on Booking.com

According to the Age Distribution graph in Fig. 8, the age group of 25-34 is also the most active here (fig 8)

IV. RESULTS

Backend traffic refers to the data and processing that happens on servers when users interact with a website. If the code that runs the website isn't efficient, this traffic can overwhelm the system, causing slowdowns or crashes. This is why it's important to optimize the code to handle heavy traffic. Scalability means that a system can grow or shrink based on demand.

V. CONCLUSION

The goal of the study is to create a website where people can find and rent Paying Guest (PG) accommodations and apartments. This website is built on a local server, which is like a test environment where developers can create and test the website before making it live to everyone. XAMPP is a tool that allows you to run a web server on your computer. This is useful for developers because they can build and test websites without needing an internet connection or an external server. It's like a sandbox where you can experiment without affecting a live website.

The website is being built using PHP (a programming language for web development), HTML (the structure of the website), and CSS (the design and style). These are common tools used to create interactive and visually appealing websites. In XAMPP, there's a folder called "htdocs" where you put your website files. If you put your code in this folder, it becomes accessible via your local web server. You can open these files in a code editor like Visual Studio Code (VS Code) to edit and view changes in real-time. Once the website files are in the htdocs folder, you can access the website on your computer's "localhost," which is like a private address that points to your local server. You can see how the website looks and behaves without needing to publish it on the internet.

One benefit of developing on a local server is security. Since the website is not publicly accessible, it's safer, and only someone with access to the htdocs folder can see or modify it. Another advantage is flexibility. Developers can quickly make changes to the code and see the results instantly on the local server, making it easier to test and refine the website. The website includes user-friendly interfaces, which make it easy for people to navigate and use the site. It also has position tracking technology, allowing users to view property locations on a map. This feature helps users visualize where the property is located, making it easier to choose a rental based on location.
VI. FUTURE SCOPE

You will make the system for users to write and read reviews about PGs (Paying Guest accommodations) better. This will help people understand the quality of a PG before booking. You plan to add a feature that allows users to chat directly with the property owner or management at any time. This will make it easier for users to ask questions and get quick answers about the property. The look and feel of the website will be improved to make it more attractive and easier to use. This will include changes to the design, layout, and other visual elements. Each user will have a section where they can view their past bookings or interactions with the website. Users can also create a list of their favorite PGs based on their preferences and future plans. The search and sorting features will be updated to make it faster and more accurate to find PGs and other information on the website. This will help users quickly find what they're looking for. You will add tools that allow users to like and comment on blog posts and PG listings. This will enable users to engage with the content and see which PGs are the most popular based on likes and comments. For the admin section, you will add a feature that allows the main admin to see which posts were added by other admins. Partial admins will only be able to view the PGs that they personally added, not the entire list. This adds a level of control and organization to the admin panel.

Overall, these planned updates aim to improve user engagement, streamline communication, enhance the user interface, and offer better data management and control in the admin section.

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