Lab 1: *PartyUp!*

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I. Introduction

Many modern video games emphasize teamwork and cooperative gameplay, typically through online matchmaking. Many games, however, lack built-in features to help players find suitable teammates; they often rely on random matchmaking or "friend code" systems that require players to find friends to play with elsewhere. This issue can create a significant challenge for players who might struggle to find reliable partners for cooperative experiences. For example, *Marvel Rivals* is a competitive multiplayer video game that involves two teams of six players, each player choosing a hero or villain to fulfill a role on their team. While *Marvel Rivals* has a matchmaking system that considers player skill level, many players still take issue with their pairing, such as some players not filling roles required to succeed. Another issue that players might face with randomized matchmaking is the potential to have their teammates being toxic or not taking the game seriously, hindering the rest of the team and ruining the match and overall experience. While social media apps and gaming forums exist that can be used to find compatible teammates, they rely on others to be active on the forums around the same time, which is not always a reliable alternative to native matchmaking.

PartyUp! is a website that will combat this issue with finding compatible teammates. It is a dedicated platform designed to help players connect with others through a structured filtering and search system. Users can create or join parties based on their own preferences, in a way that is easy and efficient to use. The goal of *PartyUp!* is to provide a solution to an underlying problem with online matchmaking found in video games to make them more enjoyable for everyone.

II. *PartyUp!* Description

PartyUp! is a browser-based web application designed to help players find compatible teammates for online multiplayer games. Many popular titles emphasize teamwork but fail to provide players with a reliable method for finding others who match their skill level, communication style, or gameplay goals. As a result, players often rely on random matchmaking, which can lead to unbalanced teams, uncooperative or toxic teammates, and overall negative experiences.

While some games include built-in "looking for group" features, they are often limited, disorganized, or primarily used by inexperienced players. *PartyUp!* addresses these shortcomings by offering a dedicated, structured, and easy-to-use platform where users can create or join parties based on specific preferences such as game, platform, region, language, rank, and role.

The platform is designed to be accessible from any device with an internet connection, desktop, laptop, tablet, or smartphone—through modern browsers such as Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari. Developed using PHP, MySQL, and a React-based frontend, *PartyUp!* provides a responsive, cross-platform experience without requiring any downloads or installations.

Unlike community forums or social media platforms like Reddit and Discord, which rely on posts and delayed responses, *PartyUp!* enables real-time party discovery and formation. The goal of the system is to give players greater control over who they play with, fostering an inclusive and enjoyable environment for both casual and competitive gamers. By making it easy

to locate teammates who share similar goals and playstyles, *PartyUp!* enhances the quality of cooperative gameplay and creates a more positive gaming experience.

A. Key Features and Capabilities

PartyUp! includes a comprehensive set of features designed to improve both matchmaking and community interaction:

- Smart Filtering and Search System: Players can search for or host parties using detailed filters, including game, platform, rank, region, language, and role. These criteria help ensure compatibility and balance within teams.
- Cross-Platform Accessibility: The platform functions seamlessly on any device with a web browser, allowing players on PC, console, or mobile devices to connect in one central hub.
- Party Creation and Hosting: Users can create parties with customized titles, descriptions, schedules, and requirements (such as voice chat or specific roles), offering more flexibility than traditional matchmaking.
- Player Profiles and Preferences: Each user can set preferences like favorite games, preferred playstyle, and communication language to make future matches faster and more accurate.
- Community Interaction: A built-in Community Hub allows players to post guides, share experiences, and interact with others through discussions, helping foster a more connected gaming community.

- Matchmaking by Language and Rank: Theis filter feature ensures players can find teammates who not only play at a similar skill level but can also communicate effectively.
- Integrated Moderation and Safety Tools: To maintain a positive environment, users can report toxic behavior or block disruptive players, ensuring a safe and welcoming experience.

Together, these capabilities distinguish *PartyUp!* from other solutions. Instead of depending on random matchmaking or waiting for replies on message boards, players can use a centralized, dynamic, and structured system that emphasizes communication, skill balance, and reliability. This combination of accessibility, precision, and community engagement is what makes *PartyUp!* stand out as the next evolution in player matchmaking.

B. Major Components

As a browser-based application, PartyUp! requires no specialized hardware. Users can access the platform from any device with an internet connection, desktop, laptop, tablet, or mobile—through modern browsers such as Google Chrome, Microsoft Edge, or Mozilla Firefox.

Development takes place on Windows-based systems using Visual Studio Code and Eclipse IDE. The production environment is hosted on a LAMP stack or equivalent cloud-based setup, combining Linux, Apache, MySQL, and PHP for reliability and scalability.

The application consists of three primary components:

- Frontend: Built with React and Vite, the interface provides responsive navigation and real-time interaction for browsing, filtering, and creating parties.

- Backend: Powered by Node.js and PHP, the backend manages authentication, matchmaking, and data communication between users and the database.
- Database: Implemented in MySQL, it securely stores user profiles, party listings, and community content with efficient query handling.

Together, these components support PartyUp!'s core functions: user account management, party creation and discovery, filtering by game criteria, and community engagement. The modular architecture ensures the system remains accessible, maintainable, and adaptable as the platform evolves.

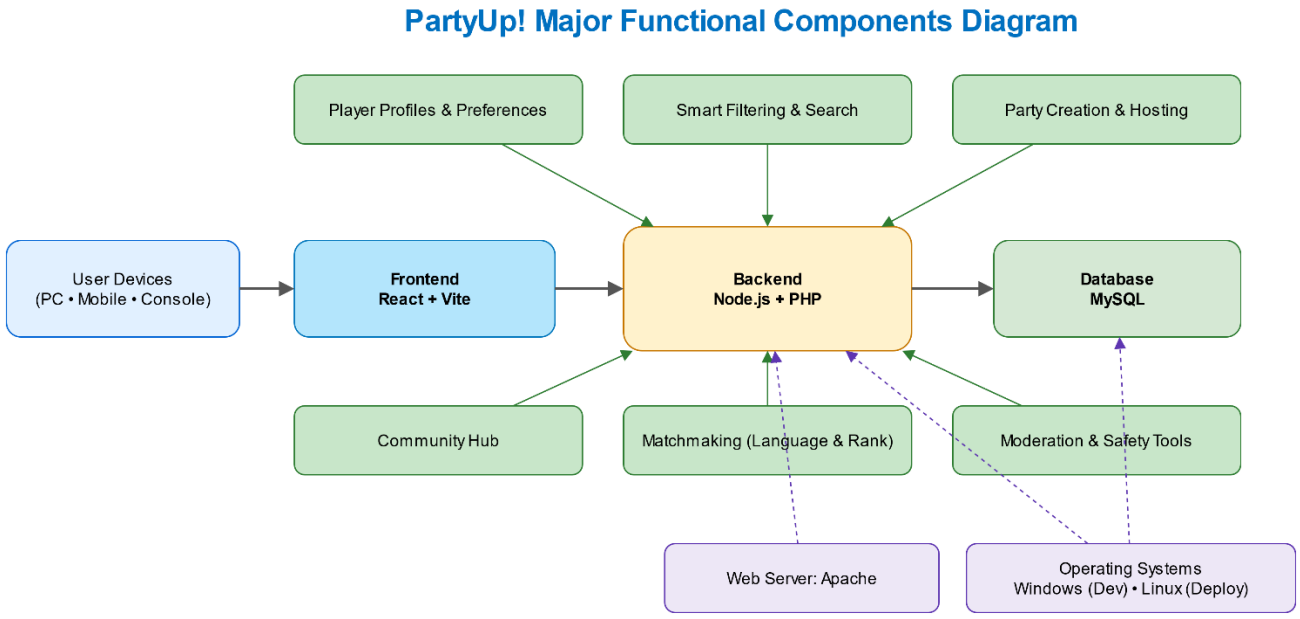

Figure 1: Major Functional Components Diagram

III. Use Case and End User

A. Case Study 1: Alex

Alex is a 20-year-old college student who enjoys playing team-based games like *Marvel Rivals* and *Rainbow Six Siege* in the evenings. When using in-game matchmaking, Alex often ends up with unbalanced teams, uncooperative teammates, or toxic players, which ruins the experience. He doesn't always have friends online to play with, so finding a reliable group can be frustrating.

With *PartyUp!*, Alex can log in and quickly search for or create a party that fits his needs. By filtering for players on the same platform, in the same region, and who are interested in specific roles, he can ensure that his team is balanced and aligned with his goals. Instead of relying on luck in random matchmaking or waiting for replies on social media forums, Alex can instantly connect with players who are ready to play and share his playstyle.

PartyUp! gives users like Alex a safe, efficient, and enjoyable way to meet teammates, accomplish in-game objectives, and get the most out of their gaming time.

B. Case Study 2: Mia

Mia is a 25-year-old software engineer living in Spain who enjoys playing Overwatch 2 and Valorant with friends from different countries. Because her friends often play on different servers and speak various languages, finding compatible teammates who can communicate effectively has been difficult. When she uses in-game matchmaking, she is frequently paired with players who speak a language she does not understand or whose ranks are far above or below her own, leading to uneven and frustrating matches.

With *PartyUp!*, Mia can apply filters to search for players who speak English or Spanish, play in the EU region, and are within her Gold-to-Platinum skill range. The platform's language and rank

matching features ensure that everyone on the team can communicate and compete at a similar level. She can also browse community posts to find regular teammates interested in her favorite game modes.

Unlike other platforms such as Reddit or Discord, which require waiting for responses or scrolling through long message threads, *PartyUp!* provides Mia with an organized, real-time list of available parties that meet her preferences. By joining a group whose members share both her language and skill level, Mia experiences smoother communication, fairer gameplay, and a stronger sense of teamwork.

IV. Glossary

Matchmaking: The process of pairing players together in multiplayer games, usually based on factors such as skill level, role, or region.

Party: A group of players who team up before entering matchmaking to play together in a multiplayer game.

Platform: The hardware or system used to play games such as PlayStation, Xbox, PC, or Nintendo Switch.

Region: A geographic area that determines the server location a player connects to, often used to reduce latency and match players in similar time zones.

Rank: A skill-based level or tier assigned to players in competitive games, used to match players of similar ability.

Role: A player's position or function within a team, such as tank, support, or damage dealer.

Language Matching: A feature that allows players to find teammates who speak the same language, improving communication and coordination.

Community Hub: An in-platform space where users can post guides, share experiences, and interact with other players outside of matchmaking.

Filtering System: A search feature that allows users to narrow down potential teammates by specific criteria such as game, rank, platform, role, or region.

Cross-Platform: The ability for players using different gaming systems (for example, PC and console) to play together through the same platform or service.

Toxic: A term used to describe players who exhibit negative or hostile behavior that disrupts the gaming experience.