<The Gaming Room>

CS 230 Project Soware Design Template

Version 1.0

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Document Revision History

Version	Date	Author	Comments
1.0	<04/24/2022>	<Ashley Figueroa>	The following changes were made to this revision: Execuve Summary, Design Constraints, Domain Model explanaon, Evaluaon, and Recommendaons.

Instrucons

Fill in all bracketed informaon on page one (the cover page), in the Document Revision History table, and below each header. Under each header, remove the bracketed prompt and write your own paragraph response covering the indicated informaon.

Execuve Summary

The Gaming Room wants to develop a web-based game that can run on mulple plaorms. The game name is called “Draw It or Lose It” and is currently available only on androids. The purpose of this game is to have mulple teams consisng of several people that will play for a total of 4 rounds each minute. When a picture is pulled from a library of images, one team will guess unl me runs out. If not answered each opposing team gets to answer for a total of 15 seconds. The client is requesng more than one team to be involved, each team be allowed to have mulple people. Each game and Team name must be unique but allow the users to check whether the name is used or free. Lastly, only one instance of the game can exist at any me.

Design Constraints

Design constraints are constraints imposed on the design soluon and anything that can impede, slow or prevent from achieving this goal. Some design constraints I have idenfied from the Gaming Room request is:

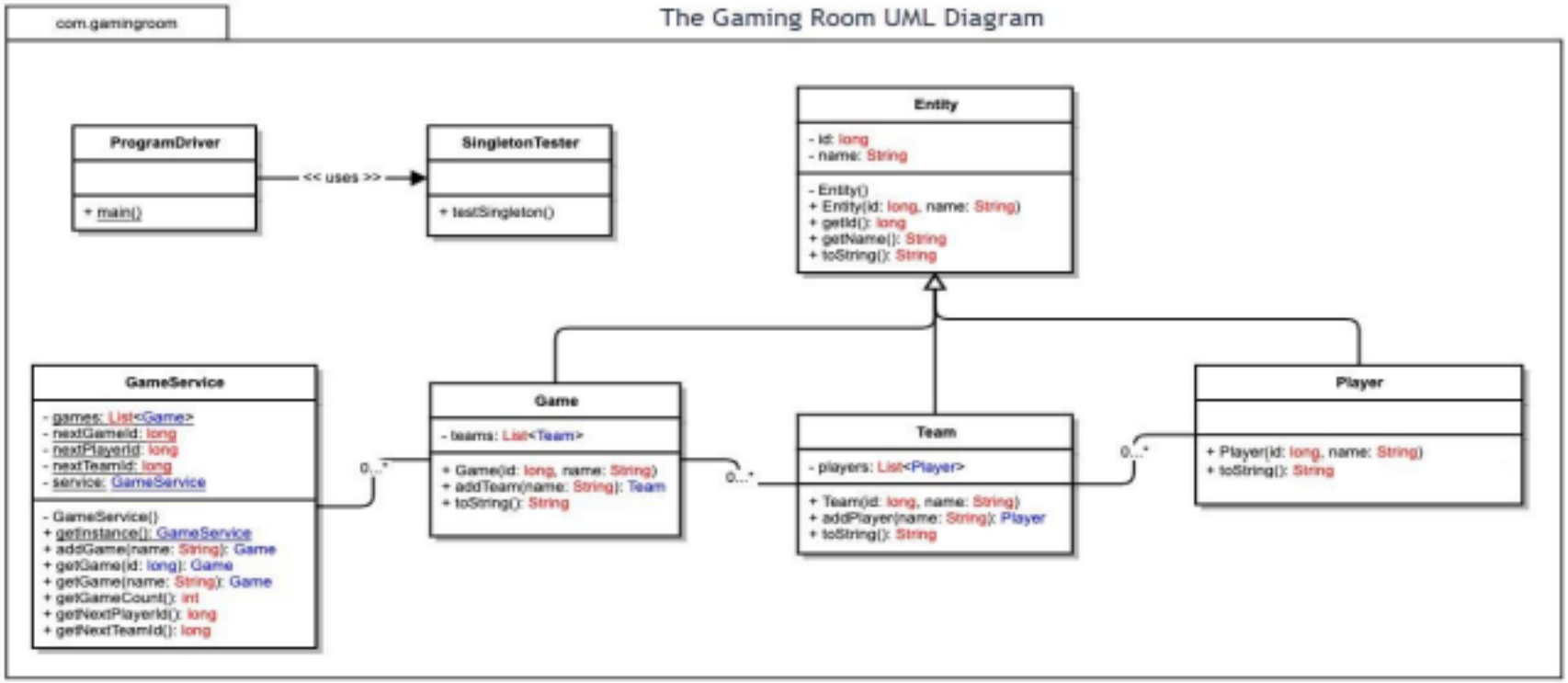
1. Clients requested “a web-based game to run on mulple plaorms' ' - this requires a cross-plaorm soware tool in order to create a common code for the game and decide which game engines, soware development kit and other tools needed to release it. 2. Since the game is only available currently on a mobile app for androids a design constraint is moving the game features and funconality over to PC and consoles while maintaining the same funcons from the original game.
3. Cross Play has some restricons based on the business cooperaon and their support of cross-plaorm play.

System Architecture View

Please note: There is nothing required here for these projects, but this secon serves as a reminder that describing the system and subsystem architecture present in the applicaon, including physical components or ers, may be required for other projects. A logical topology of the communicaon and storage aspects is also necessary to understand the overall architecture and should be provided.

Domain Model

The Gaming Room UML Diagram is directly mapped with object-oriented languages that visually represent the gaming system along with its main actors, roles, acons, and classes to beer understand, alter, maintain or document informaon about the system. To explain, the enty class creates a relaonship between the Game, Team, and Player class. This is one of the pillars in OOP called Inheritance which is a mechanism that allows one class to inherit the features of another class. This means that the Game, Team, and Player class all inherit or get informaon from the Enty, making it a Superclass aka parent class. The UML Diagram directly reflects this inheritance with the use of arrows and visible presentaon. Another OOP pillar used is polymorphism in the GameService class by having a method overloading, when mulple funcons with the same name but different parameters. The GameService class also incorporates encapsulaon and the use of a singleton instance. The GameService class binds all the data code needed for the other classes and the mulplicity shared amongst them is zero to any meaning that these are the instances associated with another instance in each of the classes.



Evaluaon

Using your experience to evaluate the characteriscs, advantages, and weaknesses of each operang plaorm (Linux, Mac, and Windows) as well as mobile devices, consider the requirements outlined below and arculate your findings for each. As you complete the table, keep in mind your client's requirements and look at the situaon holiscally, as it all has to work together.

In each cell, remove the bracketed prompt and write your paragraph response covering the indicated informaon.

Development Requirements	**Mac**	**Linux**	**Windows**	**Mobile Devices**

Server Side	For MacOS, this operating system includes their own software and utilities. ● macOS and IOS devices are popular devices used by most of the population. **Advantages:** ● macOS server offers a major advantage if you use mac clients in your network. ● macOS is most compable with other mac and iOS devices. ● Comes with its own built in web server	Linux is Unix-based and Unix was originally designed to provide an environment that's powerful, stable and reliable yet easy to use. Linux systems are widely known for their stability and reliability, many Linux servers on the Internet have been running for years without failure or even being restarted. If Gaming Room plans to host web based games on a Linux server, it does require a few things: 1. A compact and affordable SBC (single board computer) like the Raspberry Pi. 2. Your PC 3. A dedicated Linux game server **Characteriscs:** You can lease a server that can be set up with game server software.	Windows Server is a series of enterprise-level class server operang systems designed to share services with mulple users and provide extensive administrave control of data storage, applicaons, and corporate networks. For gaming, Windows powers over 1.4 billion PCs, making it by far the most popular desktop operang system. Which means most gaming desktops are WIndows based PCs. **Characteriscs:**	The mobile web server allows mobile devices to have personal web applicaons. **Characteriscs:** ● A portable desktop, web applicaon, and personal web-based access. **Advantages:** ● High portability ● Popularity and preferred method of use for daily personal use and fun. **Disadvantages:** ● Poor Security ● Storage Limitaon ● Selective based on which mobile device

	Disadvantages: ● Integrang a macOS server into a larger environment is difficult. ● Mac servers cost more because they're less in Demand. **In summary, Pros for Mac are:** **Speed** **High continuity level** **Consistency** ***Cons-*** **Malware threats** **High cost**	**Advantages:** ● Leasing a server saves me with maintenance, and avoids the cost of a dedicated IP address. **Disadvantages:** ● However, you will be limited to hosting games supported by your chosen Linux game server soware. **In summary, Pros for Linux:** **Reliability** **Efficient** **Robustness** ***Cons-*** **Improvements are low**	Since the Gaming Room game is already on android, integraon to Windows is going to be easy. **Advantages:** ● The biggest PC advantage is cost. Because there are so many PC makers, it is possible to find a wide range of devices at different price points. ● Has more soware created for them with its own developmental tools.	**In summary, Pros for Mobile Devices:** **Portability** **Easy to use** ***Cons-*** **Bugs and errors** **High risk factors.**

			Disadvantages: ● Being the most widely used PC it does have poor security and virus Suscepbility. **In summary, Pros for Windows:** **Easy to use** **Cost efficient** ***Cons-*** **Higher threats** **Performance issues**	
Client-Side	Game access would be through the Mac Browser: Safari.	Linux browser to access the game would be FireFox.	Windows browser to access the game is Google Chrome.	Mobile devices depending on whether an app is created where it can be downloaded by either iOS devices or android. Either way app is already created for mobile devices on android.

Development Tools	The developmental technical requirement would be a development team familiar with MacOS operating systems. Objective-C and Swift is the language most commonly used in Mac OS Programming.	The developmental technical requirements would mean an experse in Linux and the use of the Linux version, Ubuntu, which makes an excellent game server. Linux has great support for most programming languages. Whether you need to write in C, C++, CSS, Java, JavaScript, HTML, PHP, Perl, Python, Ruby, or Vala, Linux supports them all. While you may come across some issues at times, in most cases you should have a smooth ride.	More people overall use Windows which means a high potenal pool of clientele. So for most game developers, all the program languages and relevant developmental tools are windows based.	Swiftic. Swiftic is one of the best mobile app development frameworks available in the iOS platform. Java is the official language for Android App Development and consequently, it is the most used language as well.

Recommendations

Analyze the characteriscs of and techniques specific to various systems architectures and make a recommendaon to The Gaming Room. Specifically, address the following:

1. **Operang Platform**: My recommendation for The Gaming Room is to start on Windows operating platform. Using Windows provides users with ease of use and access to a variety of software packages for a fulfilling experience. Windows operating platform also offers software engineering abilities for developers. You also won't run into a shortage of IDEs to work with and is the most widely and popular gaming platform with a huge gaming pool.

2. **Operating Systems Architectures**: Windows specifically Windows 10 has maximized the system resources for games to help them run more efficiently. Windows provides services used by all Windows-based applicaons that enable applications to show a Graphical User Interface (GUI) while accessing system resources and much more. Windows has many software packages available, offering a wide variety of programming options to developers. Command Prompt power shell utilization offers quick and easy server configuration settings. Windows OS also provides developers the options to work with an array of different programming languages.

3. **Storage Management**: Windows 10 comes with a nice feature called storage sense. Windows OS allows simple configuration settings and allow for convenient memory management. Windows os offers cloud server storage abilities providing developers with plenty of storage space needs.

4. **Memory Management**: When creating this game you will need to create a database or library with lots of pictures. The memory allocation allows for easy storage of pictures outside of the default picture folder. Memory management options offered with Windows includes physical and virtual address space allowing up to four gigabytes of memory as well as means for running applications smoothly.

5. **Distributed Systems and Networks**: Common issues like queuing repercussions as well as routing and congestion problems may occur, however, these systems offer easy communication and coordination between one another. Still, some common problems in relation to using distributed system include independent failed components, absence of global clock, simultaneous computations of components which can results in lagging computing performance and connection problems among individual users.
To prevent other problems like outages or connecvity, the company will need to make sure its servers are strong enough to support large player volumes along with backup power for power outages.

6. **Security**: Windows comes with built-in security protection software. But it is recommended to use another source of security protection in order to secure user data and information. But since we are discussing security measures for the operang soware platform being used for the creation then Windows operating platforms provide clients with user account control settings that help to secure data going into and out of the

system; It also ensures that authorized operating platform modifications are not made without acceptance from administrative user(s). Windows offers built-in anti-spyware solutions that keeps crooked or unwanted software from getting into the system. VPN service capabilities help to protect the client information and history from being used for malicious activities; RDP stream cipher that calls encryption protocols for smaller amounts of information, i.e. passwords, credit card numbers, social security numbers, etc. Alternatively, Windows offers Microsoft DirectAccess for remote positions and work sites. This feature makes use of authentication and auto-encrypted ESP when users connect to business networks.