

Gaming Room Application

# **CS 230 Project Software Design Template**

Version 1.2

## Table of Contents

[**CS 230 Project Software Design Template**](#_l6ti7uoag22u)1

[**Table of Contents**](#_30j0zll)2

[**Document Revision History**](#_grjogdjh5fi8)2

[**Executive Summary**](#_sbfa50wo7nsh)3

[**Design Constraints**](#_2et92p0)3

[**System Architecture View**](#_ilbxbyevv6b6)3

[**Domain Model**](#_8h2ehzxfam4o)3

[**Evaluation**](#_2o15spng8stw)3

[**Recommendations**](#_m8aleynsvzvc)5

## [Document Revision History](#_grjogdjh5fi8)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 1.0 | 07/15/22 | Duvan Diaz | Original Requirement |
| 1.1 | 08/01/2022 | Duvan Diaz | UPDATE – Server Operating System & Expanding Platforms Use |
| 1.2 | 08/15/2022 | Duvan Diaz | UPDATE – Recommendations Section Requirements. |

## [Executive Summary](#_sbfa50wo7nsh)

The Gaming Room, a project aiming to develop a web-based game that can run on multiple platforms. The name of the game is “Draw It or Lose It”, and it’s first version has only been released for Android Devices at the moment. The idea of the game consists of multiple teams of several players going four rounds at a minute, each. Pictures will be used by both teams, and they will allow the players of the opposing team to guess the picture chosen for that turn, if that team can not guess, the other team has 15 seconds to provide an answer. Whichever team guesses and scores more points, wins!

## [Design Constraints](#_2et92p0)

* One instance of the game can exist at any time.
* ~~Needs to expand to other operating platforms.~~
* Multiple players per team allow for more errors to come up – Server Style Configuration allows improved performance – less errors
* Names for the teams must be unique
* Needs at least two separate teams

## [Domain Model](#_8h2ehzxfam4o)

Teams, Player class and the Game all inherit information from Entity. The UML diagram shows this with inheritance. Each class will share common references like “name” and “id”. When looking at the diagram, GameService has a reference of Games, Games a reference of Team, and Team, a reference of Player. When looking a t the relationship within the UML, we can see aggregation between Game, Team, GameService and Games.

**"The Gaming Room UML diagram. The top of the diagram is labeled as com dot gamingroom. Test boxes are placed in two layers. The first layer has three text boxes and the second layer has four of them. In the first layer, the 'ProgramDriver' textbox points to 'SingletonTester' textbox. The 'ProgramDriver' textbox contains the text 'asterisk main round brackets.' The 'SingletonTester' textbox contains the text 'asterisk testSingleton round brackets.' The arrow between these two text boxes are labeled 'open two angle brackets uses close two angle brackets'. In the second layer, there are 'GameService', 'Game', 'Team', and 'Player' text boxes. The 'GameService' textbox has texts arranged in two layers. The first layer contains games colon List open angle bracket Game close angle bracket, nextGamesId colon long, nextPlayer Id colon long, nextTeamId colon long, and service colon GameService. The second layer contains GameService round brackets, getinstance round brackets colon GameService, addGame open parenthesis name colon String close parenthesis colon Game, getGame open parenthesis id colon long close open parenthesis colon Game, getGame open open parenthesis name colon String close open parenthesis colon Game, getGameCount round brackets colon int, getNextPlayerID round brackets colon long, and getNextTeamId round brackets colon long. The 'GameService' box is connected with the 'Game' textbox with a line labeled 'zero dot dt dot asterisk'.  The 'Game' textbox also contains text in two layers. The first layers contains the text teams colon List open angle bracket Team close angle bracket. The second layer has Game open round bracket id colon long comma name colon String close parenthesis, addTeam open parenthesis name colon String close parenthesis Team, toString round brackets colon String. The 'Game' textbox is connected with the 'Team' textbox with a line labeled 'zero dot dt dot asterisk'. The 'Team' textbox also contains text in two layers. The first layers contains the text players colon List open angle bracket Player close angle bracket. The second layer has Team open parenthesis id colon long comma name colon String close parenthesis, addPlayer open parenthesis name colon String close parenthesis colon Player, and toString round brackets colon String. The 'Team' textbox is connected with the 'Player' textbox with a line labeled 'zero dot dt dot asterisk'. It contains the text Player open parenthesis id colon long comma name colon String close parenthesis and toString round brackets colon String. The 'Game', the 'Team, and the 'Player' boxes point to the 'Entity' textbox in first layer. The 'Entity' textbox contains text in two layers. The first layer has the text id colon long and name colon String. The second layer has Entity round brackets, Entity open parenthesis id colon long comma name colon String close parenthesis, getId round brackets colon long, getName round brackets colon String, toString round brackets colon String.**

## [Evaluation](#_2o15spng8stw)

\*\*linux based server it's an open source. Thus free of cost. Any other tools such as the server side programming languages and scaling tools are also available as free.

| **Development Requirements** | **Mac** | **Linux** | **Windows** | **Mobile Devices** |
| --- | --- | --- | --- | --- |
| **Server Side** | Flexible terminal commands to configure the server, access, or make changes.  Advantages: It is upgradeable, it has various options for different web hosting requirements.  Disadvantages: It is less preferred for web hosting services. | The same goes for mac plus more cost-friendly  Characteristics Secured, most preferred.  Advantages: Security flaws are caught before they become an issue, it is the most preferred choice for web hosting services. **Linux Server:** Open Source, Cost Effective (depends if required support or additional software is needed), Secure, Free.  Disadvantages: It is more difficult to find applications to support the web hosting required needs.  Less Support | More software available compared to other OS.  Characteristics: It is dominant to the other platforms. Close platform  Advantages: High resource requirements, less loading time, high comfortability  **Windows Server:** Proprietary. Better Security, Paid Service, , More Support.  Disadvantages: easy virus susceptibility, poor tech support  Expensive | It's better if the server is immobile and can be tracked in a single place. Specifications are better in other devices.  Characteristics: More popular, high portability.  Advantages: Have a wider reach, better compatibility, cost-effective  Disadvantages: It is highly selective to various smart mobile devices Poor security |
| **Client Side** | Moderate expertise and time required. Costly like windows.  What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices? | Maximum expertise and time required. Minimum cost.  What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices?  Desktop apps are a good options due to multiple reasons. Best user experience is achieved when deployment is done in Desktop. However, program must be downloaded and installed to be used which users may consider it time consuming. | Minimum expertise and time required. Costly like Mac.  What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices? | Provides flexibility to clients or even developers to see updates at any place.  Slightly more difficult to implement than other devices.  It provides more accessibility and the most popular option. App must of course be fast and responsive. However, program must be downloaded and installed to be used which users may consider it time consuming. |
| **Development Tools** | When running languages on macs we can run swift the more popular option. While mixing in nice tools like notepad++.  Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby.  \*Development Tool/IDE -XCode  Programming Language - Swift (or Objective C) | Linux can work with visual studio, eclipse, along with notepad++ for a nice and easy-to-use tool.  Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby.  \* | Easier to use than Linux but can run the same as it. So visual studio, eclipse to name a few of the many languages.  It could be hard to develop network-oriented apps with visual basic. It is possible.  Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby.  \* Development Tool/IDE - Visual Studio  Programming Language - Visual Basic (default) | You can create countless apps using android and swift. Both languages and software can be run on all three machines.  Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby.  Development Environment - Android Studio (default)  Programming Languages - Java,Kotlin  Development Tool/IDE -XCode  Programming Language - Swift |

## Recommendations

1. **Operating Platform**: Since Windows is the most reliable and most common operating platform out of all the options, please consider having Windows as the primary operating platforms where it should be developed and tested. Many tools and software are available. Additionally, the cost and expertise needed to work on Windows is minimal, if any. Many IDEs are available as well. The common understanding of games is that whether it’s PC, consoles, mobile, they all have their own characteristics. All platforms compete to win the “rating” therefore improving customer acquisition and profits, as well as appeasing the stakeholders. The more advanced the game functionality is, the more advanced the requirements from the different platforms so that the game is accurately working, therefore, when developers implement a new game with the objective of making it the best in all aspects, they will not only be on the top games overall, they will perform at the top on the best adapting platform.
2. **Operating Systems Architectures**: Windows has multiples resources used by all Windows-based programs which are enabled to have an operating GUI (Graphical User Interface). Web services, APIs, Graphics, Multimedia, messaging, are all referred by the Windows based programs.
3. **Storage Management**: Storage sense is a featured offered by Windows 10. This feature allows to manage and inspect files and folders on the hard drive, along with manage the file sizes and how much space they occupy. Path location for programs trace logs as well as any output created can be designated for each program. Cloud storage also allows another option to store data and provide access to multiple users if needed.
4. **Memory Management**: When developing the web-based game, a database will need to be designed to store all data needed for the game to work accurately. Memory allocation allows for storage of different kind of data and files. Allowing a secure location for data and program files, including IDEs. Threads cannot access memory that is being used by another process, this protects the process in progress from being interrupted/corrupted by another processing.

\*Note: Each process on 32-bit Microsoft Windows has its own address that provides up to 4 GB of memory available. Each process on 64-bit Microsoft Windows has address that provides up to 8 GB of memory available.

1. **Distributed Systems and Networks**: Using an IDE, once the game is created, the game file can be exported into the web, iOS, Android, or any other operating system that will also allow cross-play. To prevent problems, outages, connectivity issues, the company needs to make sure servers are within a reasonable location and are fast enough to support large volumes of players and users, as well as have a contingency plan for any error or obstacle that may come up and to back the servers. Network game developers usually implement the shared database which it’s physically distributed and allows the users to interact with one another. This is required for most if not all online games, a lot of big name online games collect huge amounts of data and it is used and analyzed for all the different aspects of the game allowing the developers to provide updates or enhancements, increasing the popularity of the game.
2. **Security**: To secure user data, as well as the program files being called by the program, a third part service, would be preferable than just having the Windows built-in security protection software. Windows is already equipped with security protection it is not complete and will need the additional service to support security for the servers, data, and ultimately, the overall game experience. This third-party service would run in real time and scan and inspect for any threat as well as notice of any irregularity. This service will most likely be based subscription-based, and updates should be expected to accommodate to the ever-changing system. Data controllers are set to minimize the data collection and processing of such, using anonymization of data that may be considered personal. There is a lot of risk of data breach, loss, access, to users’ accounts. This requires competitors to provide a safe online environment where users can trust their personal data online is being protected.