

Draw it, Lose it

# **CS 230 Project Software Design Template**

Version 3.0

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## [Document Revision History](#_grjogdjh5fi8)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 3.0 | 04/13/2023 | Carolyn Klein | Addition of the UML, Requirements, platform review, architectural review, design constraints, and recommendations. |

## [Executive Summary](#_sbfa50wo7nsh)

The Gaming Room desires a web-based game that can serve multiple platforms based on their current Android game, Draw It or Lose It. This game aims to have various teams consisting of several people going four rounds of a minute each. When a picture is shown from a library of images, one team guesses till time runs out. If not answered, each opposing team member gets to answer till 15 seconds run out.

## [Design Constraints](#_2et92p0)

* The game needs one or more teams to play.
* Each team contains multiple people.
* The gameplay and the Team names must be unique and allow the users to verify if the name is being used or available.
* The game can only one instance running at any time.
* The game will run on multiple channels.

The above list is the requirements needed to outline the development logic for the functionality required to be developed. The Gaming Room wants this application to run on web-based channels such as the existing Android and other mobile devices, as well as Windows, Linux, and Apple OS. With this requirement, the development team must create a unique code base for mobile and desktop applications.

## [Domain Model](#_8h2ehzxfam4o)

## The Entity class is the superclass, and the Game, Team, and Player classes inherit directly from the superclass. The GameService has a reference to the Game class, which also has a reference to the Team class, which has a reference to the Player class. All of the classes contain a reference to another, achieved through aggregation.

## Also included are the SingletonTester and our ProgramDriver class. The ProgramDriver class is where any implementations of our application will take place. This class also uses the SingletonTester class. The SingletonTester class leverages the ProgramDriver class allows for one game to go on at a time with multiple teams (from a list) with numerous players.

**"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)

| **Development Requirements** | **Mac** | **Linux** | **Windows** | **Mobile Devices** |
| --- | --- | --- | --- | --- |
| **Server Side** | It has flexible terminal commands to configure the server, access it, or make changes, such as adding homebrew and bash.  Characteristics of this are becoming popular in web hosting as some hosting costs twenty dollars a month.  The advantage is that the OS is upgradeable and has various options for different web hosting requirements.  Disadvantages as it is less preferred for web hosting services | This is additive to the Mac OS's features and is more cost-friendly.  One of the key characteristics is that it is secure and most preferred for developers and hosting.  The advantage, along with its key characteristics, is that security breaches are caught before they become an issue. As a result, they are causing fewer issues with security concerns for clients.  The disadvantage is that it is more difficult to find applications to support the required web hosting needs and require proper dev ops skills. | It is widely available compared to other OS, and more applications are written to support this OS.  The characteristic key is dominant to the other platforms but is highly closed and does not offer ease of terminals and hosting.  The advantages are high resource requirements, less loading time, high comfortability, and broad support.  The disadvantage is that it is one of the easiest for viruses, security vulnerability, and poor tech support on security losses. | Mobile devices are widely the most popular operating platform right now. Characteristics are that it is portable and easy to use.  The advantages are it has finer compatibility, and it is more cost-effective.  The disadvantages are poor security. |
| **Client Side** | The cost is similar to Windows but relatively easy to use. Time would be minimal as well. Mac would be easy for anyone at any skill level and does not require a deep skill set. | Linux takes more time and expertise. However, the cost would be less, but moderately simple to use. | The cost is similar to Mac but not relatively as easy to use. In addition, the time required would be more significant. | This provides more flexibility to clients or developers to use anywhere at any time. In addition, it is more simplistic and the most cost-effective. |
| **Development Tools** | We can run swift, the more popular option when running languages on Mac OSs, while mixing in excellent tools like notepad++ and brackets. However, Macs can run all languages. Languages consist of but are not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, etc. | Linux can work with visual studio, eclipse, notepad++, or brackets for a friendly and easy-to-use tool, and many more languages and tools. Languages consist of but are not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, etc. | Easier to use than Linux but can run the same as it. So visual studio, eclipse, to name a few languages. And with multiple tools, notepad++ or brackets is a simple-to-use tool. Languages consist of but are not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, etc. | You can create numerous Android and Swift apps running on all three OSs. Languages consist of but are not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, etc. |

## Recommendations

1. **Operating Platform:** The Gaming Room recommended to use a windows device because it has more software, ease of expanding memory or cpu, minimum expertise and lower cost. There are also enough IDEs to work with as a starter.
2. **Operating Systems Architectures:** Windows uses most often the Graphical User Interface (GUI) while accessing system resources for rendering of applications, tools, IDEs, etc. Mostly commonly used for Graphics and Multimedia, messaging, web services, etc. and can be used for a single user account or a server.
3. **Storage Management:**Windows allows users to review and manage files on their hard drive and how much space it takes up, as well as the ability to save locations for apps, making them easier to find. However, after the last journal entry about storage management, a move to the cloud would be in the client's best interest. By moving from Windows to the cloud, the game data in a cloud-based environment to ensure easy access and seamless distribution across different platforms.
4. **Memory Management:** While creating this Game, you must create a database or library with lots of pictures. The memory allocation allows for easy picture storage outside the default picture folder. This will enable you to keep your whole project together in a more secure area on your computer and includes when you're working with your IDE and opening files from it to create the Game. Also by being in the cloud there can be autoscaling into affect to ensure the highest performance to the customer.
5. **Distributed Systems and Networks:** Because each operating system differs, I researched ways to develop the Game to run on all devices. I discovered JetBrains, which enables cross-platform game creation. It's an IDE that runs on any device and can export the game file to the web, iOS, Android, and other channels. Another IDE for development is Eclipse. It is java based and runs smoothly on Windows with various plugins to reach modules for the additional channels needed to be rendered. In addition to the IDE, there will also be a need for secured hosting, backups, restore, and failover options. Lastly, by moving to the cloud-distributed system that can manage game traffic and ensure a smooth connection between different users. The client chose an architecture that supports load balancing, auto-scaling, and fault tolerance.
6. **Security:** Windows comes with built-in security protection software. However, a secure authorization method, such as SAML, LDAP, SSO, AD, etc., is recommended to secure the user sessions. Though some systems used for hosting do have built-in malware, scanning, and optimization are required for hosting. Of course permission base thoughts of securing folders, locations and ids are required so that it does not open the client to attacks.