

Draw It or Lose It

# **CS 230 Project Software Design Template**

Version 1.2

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## [Document Revision History](#_grjogdjh5fi8)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 1.0 | 3/17/23 | Andrew Fenwick | Make web based game compatible with different platforms |
| 1.1 | 4/2/23 | Andrew Fenwick | Revised and updated initial draft |
| 1.2 | 4/16/23 | Andrew Fenwick | Analyzed required characteristics & completed final draft |

## [Executive Summary](#_sbfa50wo7nsh)

Draw It or Lose It, is currently only available to users if they have an Android device. The goal of this project is to make the same game compatible with several popular platforms, instead of just one.

## Requirements

## [Design Constraints](#_2et92p0)

The Gaming Room is a company that provides exciting games that users will play with their friends and family. Although making Draw It or Lose It accessible to different platforms may take work, it should still have the same expected flow and processing abilities as it does on Android.

## [System Architecture View](#_ilbxbyevv6b6)

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

## [Domain Model](#_8h2ehzxfam4o)

The program drive will be using the classes that we created for the game. The driver will also be using the singleton tester. The purpose of a singleton tester is restricting the creation of a real instance of a class to one object. The GameService class will consolidate gathering information from the game, team and player. The game class will inherit from GameService. Team will inherit from Game. Player will inherit from Team. Game, Team and Player classes are all falling into position with a direct connection to an Entity. The Entity will establish a mapping between an object to a table in the database. It holds information about the system.

**"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)

Using your experience to evaluate the characteristics, advantages, and weaknesses of each operating platform (Linux, Mac, and Windows) as well as mobile devices, consider the requirements outlined below and articulate your findings for each. As you complete the table, keep in mind your client’s requirements and look at the situation holistically, as it all has to work together.

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

| **Development Requirements** | **Mac** | **Linux** | **Windows** | **Mobile Devices** |
| --- | --- | --- | --- | --- |
| **Server Side** | Fewer virus attacks with macOS, similar GUI as what is in iPhone and tablets, the default apps don’t slow down performance. Windows cannot read macOS file system though.  A 3.5GHz 8-core Intel Xeon W processor, Turbo Boost up to 4.0GHz starts at $6,499.00. | Linux is an open source OS and there is not anti-virus software needed. Old computers can still run Linux with their low specifications. Some linux servers can cost around $1,449 to include an optimized rack with a tower server. | All versions of Windows share similarities, easier to shift from one to another. Most hardware can be automatically detected for plug and play. Most software is paid though. Datacenter Server can cost $6,155 but is ideal for highly virtualized datacenters and cloud environments. | Distributed computed is a benefit. Dropbox, google drive and Microsoft one driver can be utilized. Availability issues can affect performance. Wi-Fi is needed for operation. The pricing for a server designed for mobile devices is all over the place. It depends on how many users you would like to have. 250 devuces can cost $6585 for an On-Premise server. |
| **Client Side** | Good customer support, NTFS and FAT are both supported on macOS. Fewer games and software options are available for macOS than some other platforms. Less hardware is supported .  Apple Developer Program costs $100 per year. The Unix-based OS, various gestures and cross platform development make is a great option. | Downloading or printing large files is easy with Linux. The command prompt is advanced. Cheaper than macOS. Linux is difficult to learn compared to macOS and Windows. Linux kernel is a software development program that is only improving. Countless new releases that are consistently stable. | 95% of tech users are operating with windows. Windows has a large audience so developers prefer it. Rebooting is an issue when the system is slow. Technical support is not great. Release of Windows 10, the Windows Subsystem for Linux and raise of containerization technologies like Docker make this a strong candidate. | Mobile is versatile and can be accessed in mobile locations. They are simple to convey and recently have has high processing and RAM. Many devices are expensive and require forms of insurance. Many different programming languages can be used for mobile device development include Java, Swift, C# and HTML5. |
| **Development Tools** | Hardware and software both made by Apple so performance is improved and communication is efficient. Mac PC are very expensive compared to other options. A 10 client license cost $499 and the unlimited client is $999. | Different repositories and packages can be downloaded.  Many hardware drivers are not available for Linux. Games made for Windows may not work. Self-Support Subscription cost $349 for one year. | Most virus attacks occur with windows compared to others. Windows 10 is made for both touch screen and desktop. The 2022 Essentials Server costs $501. This can help a small business with 25 users and 50 devices. No CAL is required. | Battery performance is an issue. Transmission rates are much slower compared to other options. Bluetooth is a perk that lets mobile utilize other accessories with ease. 2022 Maximizing Mobile Value study by Oxford Economics found that each device cost between $3.25 and $9 per month. |

## Recommendations

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

1. **Operating Platform**: Microsoft-Windows would be the best option for an operating platform. It is widely used, not too expensive and easy to repair or upgrade by employees. MacOS is easy to use but expensive and a hassle to fix. Linux is a cheap option but can be difficult to learn. Microsoft-Windows is the smartest choice for The Gaming Room to stay ahead of the competition while saving as much money as possible.
2. **Operating Systems Architectures**: Microsoft-Windows has hardware connecting with a hardware abstraction layer. The kernel mode has fill access to external devices and system memory. Then the executive interface deals with a variety of other features and aspects. Draw It or Lose It is a complex program that will need complex features to operate properly. This hardware will ensure that the required flow is present.
3. **Storage Management**: Disk Management is a system utility that allows the user to complete storage tasks when using Windows. This can include initializing a new drive or setting up a new drive. Windows leads the way with allowing users to upgrade and make inexpensive changes later with ease. Draw It or Lose It will need to be upgraded by adding several features and content as time continues. Windows is the best software available to keep up with where the evolution of the game.
4. **Memory Management**: The management of memory takes control of the system and keeps RAM using steady while coordinating the computer memory. This will help keep information in Draw It or Lose It, whether that be players, team names or answers given. The physical memory of the OS is managed by Windows kernel-mode memory manger. There are several critical tasks that the manager can perform. The deallocation and allocation of memory dynamically and virtually. Also, support is provides for copy-on-write, shared memory and memory-mapped files. Draw It or Lose It will need to have fast, multitasking functionality. A top tier RAM is needed to ensure that.
5. **Distributed Systems and Networks**: To make Draw It or Lose It compatible with several platforms, various requirements are needed. There is unique syntax with each platform. Determining proper screen size can adjustments are a must. Modern engines have made this process much easier compared to past attempts.
6. **Security**: Various firewalls and encryption is needed. The users data needs to be private and hackers need to be kept away. This may include input validation, passwords, sanitizing data and having a unique architecture that cannot be compromised. Windows has recently been enhancing their security measures with frequent updates along with anti-ransomware procedures. Although MacOS may have better features in regards to security, the affordability and amelioratory properties of Windows makes it the best choice for Draw It or Lose It.