

Draw It or Lose It

# **CS 230 Project Software Design Template**

Version 1.0

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## [Document Revision History](#_grjogdjh5fi8)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 1.0 | 10/05/2023 | Jessica Bains | Proof read for any grammer errors. Removed all the brackets. |

## [Executive Summary](#_sbfa50wo7nsh)

The Gaming Room wants to develop a web-based game that can work on multiple platforms. That’s based on their current game called “Draw It or Lose It” and is currently only available on android. In the game there are four rounds of play that last a minute each. A picture is pulled from a library of images, one team guesses till the time runs out. If not answered each opposing team member gets to answer till 15 seconds runs out.

## [Design Constraints](#_2et92p0)

* The game must run on multiple platforms
* Teams names must be unique and users should be able to check if the name is available
* Each team has multiple players
* Only one instance of the game can exist
* Needs one or more teams involved

These are all the software requirements that the client has requested for the game application. This app only works on Android and the game room wants us to develop a web based game for multiple platforms. To do this we will need to write a code that can work on machines like windows, linux, mac, etc.

## [Domain Model](#_8h2ehzxfam4o)

Game, team and player have a relationship with Entity. They are inherited from Entity. They also have common attribute for id and name. In the diagram, the GameService has reference of game, game to team, and team to player. Game service can have multiple games, each game can have one or more team involved, and each team has multiple 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.**

| **Development Requirements** | **Mac** | **Linux** | **Windows** | **Mobile Devices** |
| --- | --- | --- | --- | --- |
| **Server Side** | Flexible terminal commands to configure the server, access or to make changes. It also has easier accessibility and server configuration. Its proprietary software so it cost compared to linux which is free.  It is popular in web hosting  Advantages: It is upgradeable and has various options for different web hosting requirements  Disadvantages: It is less popular for web hosting services | Flexible terminal commands to configure the server, access or to make changes. Its open source so it’s free.  It is secured and preferred.  Advantages: Security problems can be detected before they become an issue, it is preferred more web hosting services  Disadvantages: It is more difficult to find applications to support the web hosting required needs. | More software available compared to other OS  It is dominant to the other platforms.  Its proprietary software so it cost compared to linux which is free  Advantages Higher resource requirements, less loading time, high comfortability  Disadvantages: easy virus susceptibility and poor tech support | It's better if the server is immobile. Specifications are better in Mac, Linux and Windows.  More popular and its portability.  Advantages Have a wider reach, has better compatibility and is cost-effective  Disadvantages: It is highly selective to various smart mobile devices. Poor security |
| **Client Side** | Cost is higher for users. Moderate expertise and time required for Mac. Takes some time for users to navigate OS. | Linux data is required to use this OS.  Minimum cost. Maximum expertise and time required. | Cost is higher than Linux. Minimum expertise and time required for Windows. Window setup is not hard for users to do. | Clients or developers can use or see updates at any place. It is more difficult to execute than other devices. |
| **Development Tools** | We can run swift which is a popular option. Mac can run all languages. Languages consist of HTML /CSS / JavaScript , etc. These can be PHP, Java, Python and Ruby. | Linux can work with eclipse and visual studio and has easy to use tools. Languages consist of HTML/ CSS/ JavaScript, etc. These can be Python, Ruby, PHP, and Java. | It can work with eclipse and visual studio and has multiple tools. Languages consist of HTML/ CSS/ JavaScript, etc. These can be Java, Ruby, PHP and Python. | Limitless number of apps can be created for mobile devices using android or swift. This can also work on Windows, Mac or Linux. Languages consist of HTML/ CSS/ JavaScript, etc. These can be Java, PHP, Python, and Ruby. |

## Recommendations

1.    **Operating Platform**:

I would recommend The Gaming Room, Windows to expand Draw It or Lose It to other computing environments. Windows has great security features and provides regular updates in case of any vulnerabilities. It is easier to use and has great software compatibility. It is also highly scalable so it can easily adapt to any new changes as it grows. It also has the largest user base and is a popular operating platform for game development.

2.    **Operating Systems Architectures**:

Windows consists of two components user mode and kernel mode. In kernel mode, the processes have direct and unrestricted access to the hardware. It is the most trusted function of the operating system and is low-level. Any CPU instruction can be executed and has access to every memory address. Crashes in this mode are terrible. In user mode, the processes have no access to the hardware or the reference memory. It has to turn to the underlying API if it wants to access the hardware or memory. It also has drivers which are programs that provide a layer of abstraction that is responsible for the communication between the operating system and the hardware. Windows has a great graphic driver. It also has reduced lag and it is easier for users to navigate and start the application without going through difficult setups and configuration processes.

3.    **Storage Management**:

Storage can be managed in Windows using Storage Sense, and Disk Cleanup. Storage Sense helps manage space better and keep the drive clean by automatically removing items that are no longer needed like unnecessary temporary files and items in recycle bin. Disk cleanup is a utility that helps free up space from your hard drive by removing unnecessary files like temporary files, system files, and files in the recycle bin, and allows you to safely delete them without causing any harm to the system.

**4. Memory Management:**

Memory management through RAM helps the users to perform tasks smoothly and ensure resource utilization. It makes sure that the memory space is properly managed and allocated. Windows uses many techniques for faster and more efficient memory loading like paging, memory mapping, and virtual memory.

5.    **Distributed Systems and Networks**:

In Cross-platform game development, you can develop a single game for multiple platforms and it would be a great software to ensure the game reaches a large volume of players. Developing one codebase is easier to maintain and change. The company servers should also have strong servers for larger player volumes to manage game traffic and ensure smooth connectivity so issues like outages and connectivity can be prevented.

**6. Security**:

Security allows users to feel safe and confident about the protection of their personal information shared. Windows has an inbuilt security software system, virtualization-based security (VBS), and hypervisor-protected code integrity(HVCI) to protect user credentials and essential system functions. Having a secure login system is a great way to add protection by requiring users to authenticate themselves before accessing their accounts. We can do this by creating a strong and unique username and password that can prevent unauthorized access. The stronger, longer, and unique the password is, the harder it is to guess. Two-factor authentication can be used for extra security measures. Asking users to reset passwords and verifying accounts through a personal email or phone number can also help prevent unauthorized access. It is also important to do regular updates and keep up to date with the latest security practices. We can do penetration testing, compliance audits, and vulnerability scanning so that our game meets industry standards and regulatory requirements.