

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 | 08/13/2023 | Matthew Smith | First prototype highlighting how The Gaming Room can offer their game, Draw It or Lose It, in a web-based format and serve multiple platforms Software design |

## [Executive Summary](#_sbfa50wo7nsh)

The client The Gaming Room has developed an app for android only called Draw It or Lose It. The client needs assistance in the development of the game on other platforms. The game will have only one instance in memory at a time. It will have the ability to recall different instances of the game. The game will consist of multiple teams each with multiple players. Each player and team must have a unique identifier. In order to do this, an iterator pattern will be needed to check for existing instances with the same name.

## [Design Constraints](#_2et92p0)

* Game name must be unique
* Allow for one or more unique team names
* Needs to work on multiple operating platforms.
* Different development kits for apple and android.
* Only one instance of game in memory at a time
* Image library with stock images

## [Domain Model](#_8h2ehzxfam4o)

The ProgramDriver class runs the program with the main method. It uses the SingletonTester class to test if test if there is an instance of GameService.

Game Service must only have once instance running at a time

The Entity class is the parent class to the Game, Team, and Player classes. It holds the attributes for the child classes.

The game class shows how it relates to the other child classes and how it differs. Games can have teams. The team’s class can have players from left to right shown on the UML.

**"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** | Can be used as server. Needs licensing.  Proprietary software will be needed | Good server with no need for licensing. Good for web hosting.  Open-source OS | Many windows-based servers are easy to use. Licensing will be needed  Proprietary software needed  Most popular OS makes it target for cyber attacks | Not recommended. Low on power.  Can host web-based apps |
| **Client Side** | Requires mac book to develop for mac.  Built on top of Unix.  Good for developers. Good security. High cost. | Comes built in with compilers. Open source. High cost. | Most widely used in development. Compatible with most development tools. Requires you to download software for development. Need experienced developers | Needs app development expertise. Layouts and UI different for mobile devices. |
| **Development Tools** | Variety of IDEs available including visual studio. | Comes with built in compilers and languages pre-installed. | Great IDEs are available like visual studio code and its ability to download any others needed. Most IDE and development tools available on windows | Recommend development on mac or windows pc then converting to android or iPhone-based app. |

## Recommendations

1. **Operating Platform**: I recommend a Windows based operating platform as it is user-friendly and has many development tools available for purchase or for free download. The cost of upgrading to MacOS is too great as Windows is not as expensive. It receives regular updates and is compatible with most development software and easy to deploy.
2. **Operating Systems Architectures**: uses driver and microkernel. In kernel mode the code has complete access to the underlying hardware. Can execute any CPU instruction and reference any memory address. Uses a layered approach for housing core components.
3. **Storage Management**: Cloud-based servers will reduce the necessary files to be stored on users’ devices. This can be costly but is typically not as costly as purchasing and maintaining storage. With cloud-based storage, The Gaming Room could purchase only what is needed to store game data and will not need to be managed or maintained by TGR. The Gaming Room can purchase licenses for cloud-based servers that come with built in security measures provided by the cloud storage company used.
4. **Memory Management**: recalls instances from server and only uses one instance of the game in memory at a time. Allowing for memory to be as low as possible. Windows uses swapping methods by taking out and taking in processes in random access memory. The application could use file compression and memory pools to reduce the user’s memory allocation.
5. **Distributed Systems and Networks**: Using a mostly cloud-based platform would allow for the clients to have access to virtual machines that would help with the response time and ability to communicate to other platforms.
6. **Security**: comes with windows defender for application control. Prevents malicious code or unwanted code from running. The Microsoft defender application guard from untrusted files. There are security services for cloud-based hosting offered by windows offered at a monthly cost. With cloud-based storage, a large part of security can be done by the cloud-based storage company for an additional monthly cost.