

<The Gaming Room>

# **CS 230 Project Software Design Template**

Version 1.0

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## [Document Revision History](#_grjogdjh5fi8)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 1.0 | 07/17/22 | Jonathan Wallick | Describing the specifications and constraints of The Gaming Room project as well as explaining the UML diagram and how the program works. |

**Instructions**

Fill in all bracketed information on page one (the cover page), in the Document Revision History table, and below each header. Under each header, remove the bracketed prompt and write your own paragraph response covering the indicated information.

## [Executive Summary](#_sbfa50wo7nsh)

The Gaming Room is developing a game called “Draw it or Lose It” and is currently available on android The Gaming Room staff do not know how to set up the environment for the game. The company will need my help in streamlining the development of the web-version of the gaming app.

## [Design Constraints](#_2et92p0)

The Game needs one or more teams involved with multiple people on each team. The game must be able to run on multiple platforms such as android, apple, as well as on PC. The Game and team names need to be unique to that the users are able to tell if their team name is in use or free to use. Unique identifiers for each instance of the game must be created so that only one instance of the game can be used at a time.

## [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 entity class creates a relationship with the Team, Game, and Player classes. By creating this relationship, each class inherits information from the entity class. By inheriting data from the Entity class, this makes the Entity class a super class. We can also see that the GameService class has reference to the Games class, Games has a reference to the Team class and the Team class a reference to the player class.

**"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** | Mac is very upgradeable and has flexible terminal commands to make changes to the server but is not as preferred for web hosting servers. | Linux is Open Source and Secure while also being free but offers less support than windows. | Windows is much more secure and has more support than Linux but also requires you to pay in order to use it. | Mobile devices are much more popular and portable than the other platforms. While mobile devices can be cheaper and more compatible with users, the security is worse than the other platforms. |
| **Client Side** | Mac client side requires moderate expertise while also using a moderate amount of time. Mac also has a cost higher like windows. | Linux requires a large amount of expertise and time to use but at a much smaller cost to Mac and Windows. | Windows is very easy to use with low expertise, and time required. The drawback is the higher cost similar to using Mac. | Mobile devices allow for flexibility for developers, but also requires higher expertise to implement that the other platforms. |
| **Development Tools** | Specifically, on Mac I have used Xcode before as a software development tool, as well as the Swift and HTML/Java for programming languages. | Linux mainly uses Eclipse as its most popular software development tool, with C being the default language many use along with Java and python among others. | Visual Studio is the main development tool on Windows but can also run eclipse like Linux. Languages like Python, Java, JavaScript and HTML. | Android is popular for a development tool and similar to other platforms runs languages such as java, python, HTML among many other languages. |

## 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**: After considering all options, I believe that Windows would be the best operating platform for the Draw it or Lose it game expansion. Windows has a large userbase for game development as well as easy access on PCs for development and setup of the game.
2. **Operating Systems Architectures**: The Windows platform uses two separate modes for its operating system, Kernel mode and User Mode. Kernel mode is used for things such as input/output, memory and hardware management. User mode deals more with what users interact with on screen. The Windows platform is also useful for being able to support customization and multiprocessing within the system.
3. **Storage Management**: Microsoft Azure is highly recommended for storage management in windows. Microsoft Azure can be used to leverage cloud storage in the Azure cloud. Azure cloud allows for the storage to be scaled up or down based on the userbase for the game. Microsoft Azure allows for 1.6 GBs of storage for each user for Draw it or Lose it to be used. The cloud storage system used on Microsoft azure is very efficient and cost effective.
4. **Memory Management**: The windows operating platform’s latest version, Windows 10, allows fast memory loading and efficient wait times. In order for these load times to be possible, windows 10 uses disc paging to extend the use of the RAM. Windows 10 is able to use every address space in the virtual memory in order for this application to run.
5. **Distributed Systems and Networks**: Microsoft Azure is extremely useful when dealing with distribution systems and network. Microsoft Azure lets the user focus on the game application itself by offsetting the network load. Microsoft Azure offers cloud-based alerts by email, which is important when using large scale number of games with a maximum of 4 players of game.
6. **Security**: Users will log in with their device using the Microsoft Azure app service where the user information and personal data is secure. Microsoft Azure is able to store the user’s information in a VPN for added security. Microsoft Azure also has the option to remove user data to protect data in the event of a security breach.