

Draw It or Lose It

# **CS 230 Project Software Design Template**

Version 1.0

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## [Document Revision History](#_heading=h.lnxbz9)

| Version | Date | Author | Comments |
| --- | --- | --- | --- |
| 1.0 | 03/11/23 | Austin Siegel | Creation of the Entity class links Game, Team, and Player classes in order to share properties. Iterator patterns are introduced to complete the addGame() and getGame() methods. addTeam() and addPlayer methods are given iterators as well. |

**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](#_heading=h.35nkun2)

The gaming room wants to develop a web-based game that can run on multiple platforms. The game is called “Draw It or Lose It” and is currently available on Android’s operating platform. In Draw It or Lose It, multiple teams consisting of a group of people will complete with one another. In each round, an image is pulled from a library of images and is slowly drawn over the course of thirty seconds. If a team does not buzz in to supply an answer, the opposing team has fifteen seconds to supply one and steal the points.

## Requirements

* A game will have the ability to have one or more teams involved.
* Each team will have multiple players assigned to it.
* Game and team names must be unique to allow users to check whether a name is in use when choosing a team name.
* Only one instance of the game can exist in-member at any given time. This can be accomplished by creating unique identifiers for each instance of a game, team, or player.

## [Design Constraints](#_heading=h.1ksv4uv)

* Needs one or more teams involved.
* Each team consists of multiple people.
* Game and team names must be unique to allow users to check whether the name is in use or free.
* Only one instance of the game can exist at any given time.
* The game must be able to run on multiple platforms.

These are the requirements necessary to follow while creating the code for this game. These are only the general aspects of the game, so we will need to look closer into the development of the project to see anything more specific. The Gaming Room requires that the game run on all platforms, which means we need to take the code that function on Android’s platform and modify it in a way that can run on the other platforms without causing bugs or game crashes. To achieve this, the code must be able to inherit from other programming languages, since different platforms use different coding languages to support multiple applications.

## [System Architecture View](#_heading=h.44sinio)

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](#_heading=h.2jxsxqh)

Entity creates a relationship between Game, Team, and Player class. This means they all inherit or get information from Entity. With UML we can show this with inheritance. So, each class will share common references like “name” and “id”. Making Entity a superclass. When we look at their relationship, we see Team and Player is a “has a” type. While Game has a Team and GameService has Games. When we use UML, we call it aggregation. When a user “has a” I mean it's an instance of one class and has a reference to an instance to another class. When we look at this diagram, we see GameService has a reference of Games, Games a reference of Team, and Team a reference of Player.

**"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](#_heading=h.z337ya)

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** | It has Flexible terminal commands to configure the server, access, or make changes when needed.  Characteristics: It is very popular in web hosting  Advantages: It is upgradeable, has various options for different web hosting requirements  Disadvantages: It is less preferred for web hosting services | The same goes for mac plus more cost-friendly  Characteristics: Secured, most preferred.  Advantages: Security flaws are caught before they become an issue, it is the most preferred choice for 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.  Characteristics: It is dominant to the other platforms. Close platform  Advantages: High resource requirements, less loading time, high comfortability  Disadvantages:easy virus susceptibility, poor tech support | It's better if the server is immobile and can be tracked in a single place. Specifications are better in other devices.  Characteristics: It is more popular and has high portability.  Advantages: They have a wider reach, better compatibility, and are cost-effective  Disadvantages:It is highly selective to various smart mobile devices. They may be subject to poor security |
| **Client Side** | Moderate expertise and time required. Cost similar to windows. What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices? | Maximum expertise and time required. Minimum cost. What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices? | Minimum expertise and time required. Cost similar to mac. What is required of the application development process to ensure the application is compatible with all web browser platforms and mobile devices? | |  | | --- | | Provides flexibility to clients or even developers to see updates at any place. Slightly more difficult to  implement than  other devices. | |  | |
| **Development Tools** | When running languages on macs we can run swift, the more popular option. While mixing in nice tools like notepad++. Though Macs can run all languages. Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby. | Linux can work with visual studio, eclipse, along with notepad++ for a nice and easy-to-use tool. Along with many more languages and tools. Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby. | Easier to use than Linux but can run the same as it. So visual studio, eclipse to name a few of the many languages. And with multiple tools notepad++ is a simple to use tool. Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby. | You can create countless apps using android and swift. Both languages and software can be run on all three machines. Languages consist of but not limited to HTML/CSS/JavaScript while supporting libraries to support the frontend and general-purpose languages. These can be Java, Python, PHP, and Ruby. |

## 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:** I would recommend The Gaming Room starts on Windows devices as it has more software available along with minimum expertise and cost to get projects going. You also won’t run into a shortage of IDE’s to work with. Based on this, Windows has the simplest platform for a gaming application like this that can be modulated later to meet other OS needs.
2. **Operating Systems Architectures:** Windows provides services used by all Windows-based applications that enable applications to show a Graphical User Interface (GUI) while accessing system resources and much more. These applications also refer to Graphics and Multimedia, messaging, and web services. These services can be used using a user account or a server specifically.
3. **Storage Management:** Windows 10 comes with a nice feature called storage sense. This allows you to scrutinize and manage files on your hard drive, along with how much space it takes up. Other features include being able to choose to save locations for apps making them easier to find. And just like other dives, you can also use the cloud to save data. The built-in storage system allows for easy file creation and placement for large projects, so they won’t get lost or carelessly deleted.
4. **Memory Management:** While creating this game you will need to create a database or library with lots of pictures. The memory allocation allows for easy storage of pictures outside of the default picture folder. This allows you to keep your whole project together in a more secure area on your computer. This includes when you’re working with your IDE and opening files from it to create the game.
5. **Distributed Systems and Networks:** Because each operating system being different I investigated ways to publish the game to run on all dives. I found Develop 4 which enables cross-platform game creation. It’s an IDE that can be run on any device. Once the game is created you can simply export the game file into the web, iOS, Android, and many more options that will allow cross-play. This will help with dependencies. To prevent other problems like outages or connectivity, the company will need to make sure their servers are strong enough to support large player volumes along with backup power for power outages.
6. **Security:** Windows comes with built-in security protection software. Though to secure user data and information it would be recommended to use another source. Though if we are talking about what is on the machine windows comes pre-equipped with protection. This system scans for malware (malicious software), viruses, and security threats. This all happens in real-time, and because threats change the system updates automatically to keep the system and user information safe