

“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 | 07/10/2023 | Jake Grubert | Web-based game that is available on multiple platforms. Team work and strategy game that consists of guessing images as they are shown. |

**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 going to have a game created called “Draw It or Lose It” which is web-based and available on numerous platforms. Currently this game is only accessible on android but may have more systems to operate on. There are a few main aspects to the game, but the general idea is that there are multiple teams that contain multiple members taking turns of minute longs rounds 4 times. There will be a picture drawn from the library and the team taking their turn will guess until their minute is up. If the answer is not given, the opposing team members are awarded 15 seconds to answer until it is up.

## Requirements

*<* Please note: While this section is not being assessed, it will support your outline of the design constraints below. *In your summary, identify each of the client’s business and technical requirements in a clear and concise manner.>*

## [Design Constraints](#_2et92p0)

-Multiple teams needed to play

-Multiple members per team

-Unique game/team names required to check availability of desired name

-Multiple instances of game existing is not possible at any time

-Multiple platform availability necessary

That is the list of requirements necessary to keep in mind while creating code/software. Application development must be considered while we discuss the game aspect. The Gaming Room has requested to run this game on all machines. Being as we currently have it on Android it will later be needed to work into other options of devices. Code must be able to be re-written to access these other devices which us different operating systems.

## [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)

Game, Team, and Player classes have a relationship created between them in the Entity. They will all inherit information from Entity. A diagram such as a UML shows this with inheritance. “Name” and “Id” are references that will share commonality in each class. This then shows Entity as the superclass. Team and Player classes have a composition (has a) type whereas Game has a Team and GameService has games. UML is being used so the has-a type is then referred to as aggregation. Looking at the diagram we see GameService has a reference of Games, Games a reference of Team, and Team a refence 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](#_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** | Terminal commands are flexible for configuration of server, access, and necessary changes. Web hosting is popular characteristic. Different web hosting requirements are available, and it is upgradeable. For web hosting services it isn’t as preferred as other options this is a disadvantage. | Most similarities with mac and a plus is the cost. Security flaws are always prevented before a problem occurs. The highest preferred for web hosting services. At times it is difficult to find applications that will be able to help the web hosting needs. | Other OS have less software availability than windows. Mostly dominant to the other platforms. There are high resource requirements, consumers are comfortable, and the time spent loading is low. Easily susceptible to viruses and little support tech. | Makes the best use if immobility is the server. Specifications are best with different devices. Best use as well if it is tracked in a single place. Very portable and mobile and popular. The advantages are the pricing is better, it is more agreeable, and the reach is wider. Disadvantages include security is poor and there is a high selectiveness to different devices. |
| **Client Side** | The application development process needs a moderate level of expertise and time investment. The cost is comparable to that of Windows. What steps are necessary to ensure that the application works well on all web browser platforms and mobile devices? | Optimal proficiency and time commitment with minimal expenses. steps must be taken during the application development process to guarantee compatibility with various web browser platforms and mobile devices | A basic level of expertise and time investment is necessary, with costs comparable to those of a Mac.  measures must be undertaken in the application development process to guarantee compatibility across all web browser platforms and mobile devices | Offers the flexibility for clients and developers to access updates from anywhere, albeit with a slightly higher implementation complexity compared to other devices. |
| **Development Tools** | When utilizing Macs, Swift becomes a popular option for running programming languages. Additionally, incorporating handy tools like Notepad++ is possible. Macs are capable of running various programming languages, including but not limited to HTML, CSS, JavaScript, as well as supporting frontend libraries and general-purpose languages such as Java, Python, PHP, and Ruby. | Linux is compatible with visual studio, eclipse, and notepad++, which serve as user-friendly and convenient tools. Furthermore, Linux supports a wide range of programming languages and additional tools. These languages include, but are not limited to, HTML, CSS, JavaScript, along with libraries for frontend development, as well as general-purpose languages like Java, Python, PHP, and Ruby. | Windows provides a user-friendly experience that is comparably easier to use than Linux while offering similar functionality. Popular programming languages such as visual studio and eclipse are compatible with Windows, and multiple tools like notepad++ make development simple and straightforward. Supported languages include HTML, CSS, JavaScript, along with libraries for frontend development, as well as general-purpose languages like Java, Python, PHP, and Ruby. | Android and Swift offer limitless possibilities for creating applications, as both languages and software are compatible with all three platforms. The languages encompass a wide range, including but not limited to HTML, CSS, JavaScript, along with libraries for frontend development, as well as general-purpose languages like 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 suggest beginning The Gaming Room project on Windows devices, as they offer a wide selection of software options and require minimal expertise and cost to get started. Additionally, Windows provides numerous integrated development environments (IDEs) to choose from, ensuring an abundance of options for development.
2. **Operating Systems Architectures**:

Windows offers essential services utilized by all Windows-based applications, facilitating the display of Graphical User Interfaces (GUIs) and granting access to system resources and additional functionalities. These applications encompass graphics and multimedia, messaging, and web services. Access to these services can be obtained through a user account or a dedicated server.

1. **Storage Management**:

Windows 10 incorporates a useful functionality known as Storage Sense, which enables users to examine and organize files stored on their hard drive while monitoring the amount of space they occupy. Additional features include the ability to designate preferred save locations for apps, making them more accessible. Similar to other devices, Windows 10 also supports cloud storage for data backup. The built-in storage system facilitates convenient file creation and organization, ensuring that large projects are safeguarded against loss or accidental deletion.

1. **Memory Management**:

During the game development process, it is necessary to establish a database or library containing a vast collection of images. The memory allocation feature facilitates the effortless storage of pictures outside the default picture folder, providing a more secure location for keeping the entire project consolidated. This becomes particularly useful when working with an integrated development environment (IDE) and accessing files from within it to create the game.

1. **Distributed Systems and Networks**:

Given the differences between operating systems, I conducted research to identify methods for publishing the game to run on various devices. During this investigation, I discovered Develop 4, an integrated development environment (IDE) that facilitates cross-platform game development. This versatile IDE can be utilized on any device. Once the game is created, it can be exported as a file for deployment on platforms such as the web, iOS, Android, and many more, allowing for seamless cross-play. This approach also helps address dependency-related issues. To ensure a smooth gaming experience and mitigate problems like outages or connectivity issues, the company should prioritize robust server infrastructure capable of handling high player volumes, along with backup power systems to handle potential power outages.

1. **Security**:

Windows includes pre-installed security protection software. However, for enhanced security and safeguarding user data and information, it is advisable to consider using additional security measures from external sources. Nevertheless, in terms of the built-in features, Windows provides protection by performing regular scans for malware, viruses, and other security threats. This scanning occurs in real-time, and to adapt to evolving threats, the system automatically updates itself to ensure the ongoing safety of the system and user data.