

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 | 10/9/2022 | Brianna Marsh | I will be helping my team, at CTS, develop a new web-based game (only available on android) called Draw It or Lose It. This game will have four rounds, lasting one-minute each. The client’s parameters will be more detailed down below. |

**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 Game Room wants my company, CTS, to aide them in developing a new Web-based game called Draw It or Lose It. As a technology consultant, I will make sure that this game is easy to use and extremely user friendly. We will make sure that for each game, there are four rounds that are lasting one-minute long. We will be designing this game for the use of androids only. As requested by the client, we will make sure that the game will be able to have one or more games involved, only one game can exist (in memory) at a given time, the game and team names must be unique, and each team will be able to have multiple players.

**[Design Constraints](#_2et92p0)**

Like I stated before, it is our goal to make Draw It or Lose It a game that is easy to use and user friendly. With that being said, we must make sure that we must ensure that the appearance of the game is easy on the user’s eyes. The font of the words in your game matters. We will choose the font that stands out the most for this project. Another design constraint we must be aware of is the screen size. Being that many users will be playing this game on their android phones, we will make sure that the code, as well as the design, will be as simple as possible.

**[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)**

This UML Class diagram shows the relationships between all the important aspects of this game. The game service block shows how the game itself, the team, and the individual player all are connected to and have the attributes of everything that is in the game serve block. The game, team, and player all inherit everything that is in the entity block.

The singleton tester block helps test the page and speed up test writing. The singleton tester block is connected to the program driver block which helps implement the code. The object-oriented programming principles that stand out to me, that I see demonstrated in this UML class diagram, are class and inheritance. Seeing the class in the diagram helps the developer when we implement the code. This tells us how to start our code efficiently and effectively by having separate classes. The inheritance is very important because you can see the items that certain classes inherit from one another. Overall, these oop principles helps organize our code, before we even get to the code.

**"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** | With Mac, you can connect to computers over a network. You can connect with Windows Boot Camp. The hosts for Mac is hard to find, which is a con. They also cost more than Linux and Windows | On top of Linux being high in security, it is also affordable. It is also open source, which is an advantage for those who code. The disadvantage is that it can be a major learning curve. | Windows comes with a large amount of storage. They also have a great customer service team. They offer a server based deployment method. Although it is not pricy, depending on which Windows platform you use, it is not free and that would be a disadvantage. | Statistics shows that mobile devices hosting web software applications are coming to a plateau. This is because consumers do not want to keep downloading new apps onto their mobile devices. They are handheld and convenient. |
| **Client Side** | Mac can be pricy, but there are a few free options available if you search. With every new Mac, you can run Windows on it with native speed. To check other compatibility, you must go into the system updates from the settings. | Linux has a natural compatibility with other operating systems. To test which is compatible, you can use Windows on a Virtual Machine with IEs installed, IEs4Linux, or Wine and Winetricks. Linux is preferred because of its affordability. The servers can take a high volume of applications that run fast and smooth for users. | Although Windows is compatible with most operating systems, you can test it by checking the system requirements for your Windows version. Along with sharing desktops and workspaces, Windows can also run multiple applications at once. Getting started with hosting a Windows web based software does not take long to set up and is very user friendly. | It costs in between $60k - $150,000 to develop an app. You will need a full developing team for this project! The times is based on what was decided in the initial meeting between the client and the developing team (by way of the Product Owner). The most popular backend coding, SaaS, is what will be needed to make the project a success. |
| **Development Tools** | You will need UNIX Tools and Apple’s macOS to build the Mac software. You do not need to pay for an apple developer, so you do not need to have a development team. | MySQL, Apache, Perl Script, and PHP are the scripting languages used to help boost the speed and access. There are no licensing costs or fees that are associated with getting started. Multiple developing teams are not needed for Linux. There are no unique technical requirements that are needed, for your development team, as long as Linux is operating properly. | You will need Visual Studio, Windows App SDK, and Windows SDK in order to build the software for deploying on Windows. The licensing costs are related to the development tools. | There are multiple development teams that are needed to develop an app (depending on how big the project). The licensing costs are related to the development tools. |

**Recommendations**

Analyze the characteristics of and techniques specific to various systems architectures and make a recommendation to The Gaming Room. Specifically, address the following:

**Operating Platform**: The operating platform that I recommend The Game Room to expand Draw It or Lose It to other computing environments would have to be the ***Mobile Devices*** platform. I believe that with a game of this caliber, it works best to be able to play it one the go, whenever, and wherever you want; This can be achieved by having this game accessible to your fingertips via your mobile device.

**Operating Systems Architectures**: Having The Game Room produce Draw It or Lose It on the mobile devices platform, they will need a full developing team to bring this game to life. Although it will cost the client $60 – $150,000k to develop this mobile app, the financial return will be larger than the finances they are putting out. This handheld game is convenient and will need a strong backend development coding team to use SaaS to make this project a success.

**Storage Management**: The storage management system that I recommend for having the game Draw It or Lose It on mobile devices is the *ManageEngine Mobile Device Manager Plus*. With this storage management system, it supports multiple systems, gives you reports, and access to helpful remote customer service reps to help when you need help with your product.

**Memory Management**: For Androids in particularly, for memory management, *Android Profiling Tools* is used to manage memory. This helps track down errors and memory allocations as well as monitors network traffic usage and tracks energy usage to help the battery of the device.

**Distributed Systems and Networks**: If the mobile device is connected to Wi-Fi, the game should connect properly. Unfortunately, if there is a power or Wi-Fi outage in your area, you will be unable to connect your server to the game. With the ManageEngine Mobile Device Manager Plus, you can transfer data outside of the network to different devices.

**Security**: To protect the user’s information on their mobile devices and in between various platforms, Android has privacy and security features that are needed. In the settings, the user should implement their auto reset permissions, limit background location access, utilize Scoped Storage, utilize one-time permission, and utilize your security updates to keep out bugs and have the latest security on the phones.

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