Game Room

Software Design Template

Version 1.0

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Document Revision History

Version	Date	Author	Comments
1.0	mm/dd/yyyy	<Your-Name>	<Brief description of changes in this revision>

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Executive Summary

The company Gaming Room wants to develop a web based game called Draw It or Lose It that serves multiple platforms that is based on their current game. The game is currently only available on Android and consist of images being rendered in rounds and the team must guess the puzzle before the time expires. The staff doesn't know how facilitate the environment and needs help in streamlining development.

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 memory at any given time. This can be accomplished by creating unique identifiers for each instance of a game, team, or player.*

Design Constraints

- *Game needs to run on multiple platforms*
- *Must be based on their current game*
- *Game and team names must all be unique*
- *Only one instance of the game can exist in memory at any given time*
- *Need at least two teams to start a game*
- *Each team needs multiple players*

Domain Model

The main method is within the ProgramDriver class, and it has a direct association with SingletonTester class. The Entity class is the parent class to Game, Team, and Player classes. They inherit all of the variables and methods of the Entity class. GameService must only have one instance of itself running at any time. The class uses the singleton pattern to only allow one instance. The GameService class can add games, the Game class can add teams, and the Team class can add players.

Server Side

Mac: The MacOS server that is available to purchase is called the Mac OS X server. The server is priced at $499 for the 10 client license, and $999 for unlimited client. The client access limit is for file sharing, and either can be used as a web server with no difference. It is a high performance 64 bit computer platform and makes deploying and hosting Internet web sites less complex. The cons of the server include there aren't frequent updates for interfacing servers and support isn't cheap.

Linux: A linux server is built on the Linux open-source operating system. It is a low cost option and since its open source there is a community of resources to use. It also has enhanced permissions to boost security and can work with cloud technology to be scaled. A commonly used web

server on the linux system is Apache. A hosting package with Apache start at $59.95 a month and includes setup assist. A con associated with linux servers is that not all versions have long-term support and updating between versions can be complex.

Windows: There are four editions of Windows server that support data storage, applications, and communications. The four editions are Essential, Foundation, Standard, and Datacenter. A Windows server can cost between $20-$125 to lease and $972-$6155 to own. The server provides excellent security and is compatible with Microsoft applications. The cons of using a Windows server include that it doesn't support server core and the server license doesn't include virtualization rights.

Mobile Devices: There are several type of servers that can be run on Android devices. When running a server the android device just needs to know the protocol for sharing information. A android as a web server requires minimal processing power for hosting. It is simple to run the HTTP protocol on an Android device, but the setup is difficult. A platform running a server via an android device is called Servers Ultimate costs $9.99. The cons of this server are there most of them are old and they don't have the same power as a computer.

Client Side

Mac: A valued feature of the MacOS X server is the client management capability built into it. You can manage most of the aspects of the user experience to fit all needs of client. You can configure preferences for individual users, groups, or workstations. A con associated with the flexibility is confusion when managing preferences because of the different layers. It isn't open source so it would be more expensive then other options when developing client side. It would also take a moderate amount of experience and time to develop client side.

Linux: Linux is open source so the cost associated with developing the client side would be minimum. Since Linux is not commonly used it would take experience to develop it and plenty of time.It would take an extended amount of time because experienced individuals may still encounter difficulties.

Windows: A major benefit of Windows server is the capabilities to manage computer groups. It allows you to target updates to specific groups of client computers. Each computer that is added can be added to specific group and receive updates based on their orientation. The cost would be similar to the Mac server because they are both not open source platforms. This means it would be more expensive compared to Linux. The experience required would be minimal as it's less complex to develop, and this means it would require less time to configure.

Mobile Devices: The cost associated with developing the client side are minimal. Experience would be necessary as implementation may be more difficult than other devices. The time associated may be extended as there are many aspects that would need to be developed to work on multiple operating systems and devices.

Development Tools

Mac: The most popular option for running languages on Mac is Swift. A convenient tool for building web based applications is Xcode. It is an integrated development environment that provides developer tools. It can support multiple languages and can be used for design, coding, testing, and debugging. Languages that would be used for front end include HTML,CSS, and JavaScript.

Linux: A popular IDE that is used with Linux is Sublime. It is considered the lightest and feature rich IDE used by professionals. Sublime offers a free trial but business licenses are an annual tiered subscription. It ranges from $50-$65 a year depending on the number of seats. The language that would be best for developing the backend of the web based app would be C++ and Javascript/HTML for front end.

Windows: The best comprehensive IDE for Windows includes Visual Studios and Eclipse. The licensing costs for Visual studio are $45 per month and $250 per month. There are packages for small to mid size businesses and large organizations, the packages differ based on amount of users. The best language for developing server side with Windows is C#. The front end could be developed using HTML/Javascript.

Mobile Devices: A popular IDE used for Android devices is Visual Studio. The prices are the same as for Windows relating to the licensing costs. Visual Studio integrates with Xamarin and using C++ to develop and test applications.

Recommendations

Operating Platform: The operating platform recommended for the developing the applications is Windows. It is the most commonly used system and isn't complex to develop. The cost to develop isn't expensive compared to other operating systems, and it requires less time to develop.

Operating Systems Architectures: The operating systems architecture separates the core operating system components from the user interface and application programming interfaces. This allows it to be compatible with a range of hardware and software, and allow for flexibility. The core of the operating system architecture is the kernel which is responsible for managing the system's resources, such as memory. The kernel also provides basic services and APIs that are used by the other components of the operating system, such as the file system, networking, and security.

Storage Management: An appropriate storage management system that could be used with Windows is Microsoft Storage Spaces. It is s a built-in storage management system

in Windows that allows users to create and manage virtual disks and storage pools. It supports a wide range of storage devices, including hard drives, solid-state drives, and network-attached storage. Another option is Disk Management tool that allows users to manage and configure disk drives and partitions and it can be used for basic storage management tasks.

Memory Management: Windows uses a combination of physical memory and virtual memory to manage memory for applications. Physical memory is the actual memory installed on a computer, while virtual memory is a temporary space on the hard drive that is used to supplement the physical memory when needed.Windows uses "paging" to manage the movement of data between physical and virtual memory. Paging works by dividing the available physical and virtual memory into small units called “pages.”. The goal of Windows' memory management system is to ensure that applications have access to the memory they need to run smoothly.

Distributed Systems and Networks: A way for the application to communicate between various platforms with distributed software and the network that connects the devices would be by using a client-side server. A client-side server uses a messaging protocol to communicate with other servers or clients over a network. A messaging protocol defines a standard format for sending and receiving messages, and enables the client-side server to exchange information and data with other servers or clients. The connectivity between the components allows for communication and data sharing, which is essential for the system to function properly. It would need to be strong network because connectivity failure could cause outages and other issues.

Security: There are many methods for protecting user information on and between various platforms. The first method is to implement authentication and access controls to ensure that only authorized users are able to access user data. This could including using two-factor authentication or strong password criteria. Another method is to monitor access to user data to detect and prevent unauthorized access or misuse. This can include using logs and other tools to track access to user data.