

Multiplayer Web Framework



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Listening server vs Dedicated server

- Listening Server
 - Pros
 - Provides a simple way for game developers to implement multiplayer.
 - Servers are automatically hosted by the players (no hardware needed to maintain game)
 - Cons
 - Slower servers - Extra computing (less player count)
 - Short server lifetime - Dependent on the hosting player
 - Cheaters - Impossible to have reliable anti cheat logic on hosting player

Listening server vs Dedicated server

- Dedicated Server
 - Pros
 - Fast servers - Only computes server logic (large player count)
 - Player independent lifetime
 - No cheaters - Anti cheat logic is reliable for every player
 - Cons
 - Requires management of servers (hardware needed)
 - Harder to maintain long term (ie scaling playerbase)

Statement of Purpose

- Problem
 - The use of dedicated servers provides many benefits but is a hard goal to achieve for indie developers as it requires organization if you want to maintain a game long term.
- Solution
 - Create a server management system so indie developers can start making multiplayer games with dedicated servers.

Research & Background

- Research
 - Backend development (web api)
 - Frontend development (Blazor WASM)
 - Communication across machines
 - Using http
 - Http response codes
 - .NET Core development
 - Dependency injection framework
 - SQL Server
 - Datatools project type
 - Figuring out which project templates I needed

Requirements

- Project Language(s)
 - C#
 - SQL Server
 - C++
- Software
 - Visual Studio Community 2019
 - Unreal Engine 4.26
 - SQL Server
- Hardware
 - 2 computers
- Misc
 - Microsoft Azure account

Project Demonstration

Test Plan

- Created a list of features
 - Verify they work
- Used form creation tool to allow others to test

Test results

Submission Date	Name	Can view available Hosts	Can refresh Host table	Can view available Game Instances	Can create joinable Game Instance	Can shut down and remove Game Instance	Can refresh Game Instance table
4/10/21	Michael Entry	Yes	Yes	Yes	Yes	Yes	Yes
4/9/21	Wyatt McBride	Yes	Yes	Yes	Yes	Yes	Yes
4/9/21	Michael Nicholson	Yes	Yes	Yes	Yes	Yes	Yes
4/9/21	Matthew Ketusky	Yes	Yes	Yes	Yes	Yes	Yes
4/9/21	Christian Hinkle	Yes	Yes	Yes	Yes	Yes	Yes

Challenges overcome

- Web development
 - Took me some time but eventually got the hang of it
- 3 different project types
 - Blazor Web Assembly
 - .Net Core Web API
 - Azure Function app

Future Enhancements

- Add ability to communicate to more than one Host.
- More security
 - Web application should use some form of authentication