

Modern Arcade

Team Members:

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Project Description

Main Goal:

For the project, our group intends to implement a multiplayer game utilizing cloud technologies and pygame. The idea behind this project is to allow users to play with one another by invoking the instantiation of machines as more individuals join the session.

For the game itself, we will be building off of a project, previously developed by Praveen. The game involves a player sprite whose goal is to survive oncoming objects by either dodging or shooting them down. Our group hopes to extend the functionality of the project by creating a multiplayer and competitive environment by utilizing cloud technologies.

In terms of our own goals, we hope to gain hands-on experience in understanding the practicality and application of the cloud technologies we've discussed in class. As of now, we've decided to pursue this project as it allows us to explore from a perspective of creativity, which will be a driving motive to ensure the discovery of new ways to implement the interesting cloud concepts we've not only discussed in class, but ones that are being utilized at the forefront of industry, research, and innovation overall.

Motivations:

Our group believes that a cloud-based multiplayer game would provide a good demonstration of how a public cloud provides a useful, easily scalable interface for launching a project. This would be an engaging demonstration and by extending Praveen's project, we hope to have the extra time and freedom to incorporate more cloud technology into the project. Our initial goal is to launch the current single player game with AWS and to extend its functionality to include a two-player mode as well. We chose to

use a public cloud to build an application instead of replicating a research paper in order to get hands-on, practical experience with commonly used tools and to have the chance to be creative in building something new.

Some of our initial secondary goals would include developing statistical record-keeping and analysis, in-game combat functionality, chat communication functionality, and possibly even voice communication.

Cloud Technologies:

We are currently considering:

AWS EC2 Kubernetes Docker	AWS EKS Kubernetes Docker CloudWatch	AWS CloudFormation AWS Lambda AWS CloudWatch AWS S3
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We plan on scaling container nodes, which would satisfy the “3” requirement or going serverless with multiple cloud services. As of now, these are the cloud technologies we’ve discussed and are interested in exploring, however, this list is highly subject to change as we learn more about cloud technologies and computing overall.

Architecture:

As for the architecture of the project, we intend to have a container either host a game in between players, or a container hosting each individual player as they join. As a result, each container will have to communicate with one another, however, we still need to research how to implement such a functionality. As we are in the early stages of the project, the structure and contents of the architecture is still highly subject to change, as we learn more about cloud computing.

Division of Work (Subject to Change):

Initial game development - Praveen

Game connection/network programming - Ryan

Dockerize application - Max

Adapt game into AWS environment - Praveen

Track statistics, logs for game, parse, analyze - Max

Text chat and voice communication integration - Ryan