

# **Comp 680 Project Proposal**

Team 3

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## Overview

We propose a turned-based social game framework that leverages Amazon Web Services (AWS) to provide a managed, scalable, and decoupled platform for mobile video game developers. We will demonstrate the capabilities of the aforementioned framework by developing an online multiplayer turn-based tic-tac-toe game that utilizes the framework's core functionality. For the scope of the class, we will focus on developing on Android as a proof of concept. However the framework should be extensible to any operating system. The client-side game will be developed in Unity using AWS SDK for Unity. The back-end of the game will utilize many AWS services such as Cognito, DynamoDB, and Lambda, among others, to support the online multiplayer social aspect of the game. Refer to the Technology Stack section for a more detailed list of technology we will use. The goal is to provide a framework that is cheap to run across all scales.

## Technology Stack

### Client

- Unity3D
- AWS SDK
- UniRX
- Unity Stories (Redux/Flux State Containers)
- Google Sign-In

### Backend

- AWS Cognito
- AWS DynamoDB
- AWS SQS
- AWS SNS
- AWS Lambda
- AWS Memcached (Redis)
- AWS Route 53

### DevOps

- GitHub

# Sprint 1

## Business Goal/Objective

Create the base client-side tic-tac-toe gameplay functionality. The player should be allowed to login with a Google account, or sign-up by creating an account. The player should also be allowed to start a game with a random person online.

## User Stories (+ Technical Tasks)

1. As a player, I want to login with a Google account.
  - a. Use Google services to authenticate users
2. As a player, I want to create an account.
  - a. Create a user within a database
3. As a player, I want to be able to logout of my account.
  - a. De-authenticate users locally
4. As a player, I want to join a match with a random person.
  - a. Create a game session
  - b. Fill a game session with two random players
5. As a player, I want to place a game piece (a X or an O) on a empty tile on the board.
  - a. Use game engine to place objects within a game board
  - b. Validate placement of game pieces on board
6. As a player, I want to win the game by placing three of the same pattern, whether it is X or O, diagonally, horizontally, or vertically.
  - a. Have game board recognize victory conditions
  - b. Provide feedback that a game is won, prevent further actions within game
7. As a player, I want to quit a game.
  - a. Allow users to voluntarily leave a game session prematurely
8. As a player, I want to I want to view all the games I am currently playing so that I can rejoin any of them.
  - a. Provided users with a list of all game sessions in which they are active
9. As a player, I want to be in multiple games so that I can later resume them and continue player where I left off.
  - a. Allow users to enter and exit matches without dropping them

## **Sprint 2**

### **Business Goal/Objective**

Allow player to receive notifications about the game sessions they are currently in. Create a leaderboard system which allows players to compare their wins with all other people who play the game.

### **User Stories (+ Technical Tasks)**

1. As a player, I want to know when it is my turn via notification.
  - a. Give users a push notification containing game session updates
2. As a player, I want to get a notification outside of the app when it is my turn to play so that I can open the game session and make a move.
  - a. Allow users to use notification to direct them into an active match/session
3. As a player, I want to get a notification inside of the app when it is my turn to play so I can I can open the game session and make a move.
  - a. Give users in-game notifications for game session updates
  - b. Prevent push notifications from appearing while game is in foreground
4. As a player, I want to view the global leaderboards so that I can see how many wins I have compared to other players from around the world.
  - a. Store all user stats inside a database
  - b. Allow users to retrieve a list of leaders within the database
  - c. Allow users to see their relative location inside the database