**Game Design Document of Lab6 – Go! Go! Frogger!!**

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GAME 202: Object Oriented Programming

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**Go! Go! Frogger!!**

Make your way to the pond!

**• Introduction**

Players are going to control the frog to across the road to the pound. There will be cars in the way which can bump the frog. Once the frog gets bumped by the cars, players lose; once frog successfully across the road, they are going to need to cross the river by getting on the logs to reaches the pound, once they fall into the river or hit the green platform, they lose, if they successfully cross the river and get into the pounds, they win.

**• Design**

It is a simple game, the style of the look is going to be cute, and the background music is also cute. The players can experience the cute scene and the exciting gameplay.

A screenshot of a video game

Description automatically generated

**• Class Structure**

CApp.h, CApp.cpp >> Handle the whole game, like a central of controlling department.

CApp\_OnEvent.cpp >> Handle game events (controlling part)

CApp\_Oninit.cpp >> Initialize the game

CApp\_OnLoop.cpp >> Control the looping part (which part should be loopingly handled).

CApp\_OnRender.cpp >> Render the outcome.

CPlayer.h, CPlayer.cpp >> Build the character.

CScroll\_Player.h, CScroll\_Player.cpp >> Scroll the background (here is for the river).

CSpriteSheet.h, CSpriteSheet.cpp >> Handle the image part, load them and set their info (width/height).

CApp\_OnCleanUp.cpp >> Cleanup the memory.

**• Description**

Some concept is like the lab5 part4, creating a controllable character (controlled on keyboard), detect collision, display game info (Score), moving cars (like moving snow sprites), moving logs, scrolling river background and there will be sound effect added to the game.

**• Goals and Challenges**

The goal is to reach the pound without getting hit by the cars or falling into the river. There will challenges for players to overcome such as avoid getting hit by the cars from different directions and speed, reach the pound by riding on the logs, and not hit the border on the left and right.

1. Title Page
   1. Game Name –

Go! Go! Frogger!! Make your way to the pound!

1. Game Overview
   1. Game Concept

The goal of the game is to cross a busy road and a river full of dangers to guide the frogs one by one to their homes.

* 1. Genre  
     Action
  2. Target Audience  
     Age Group: ESRB rating -E (everyone)

Types of Gamers: Casual to Hardcore  
Casual players

* 1. Game Flow Summary – How does the player move through the game?

The player controls a frog trying to guide a frog to the other side at the top of the screen without getting hit by the cars or falling into the river.

* 1. Look and Feel – What is the basic look and feel of the game?   
     It is a simple looking game with colorful characters and scene design.

1. Gameplay and Mechanics
   1. Gameplay
      1. Game Progression

The frog starts at the bottom of the screen and contains a horizontal road along which cars, trucks and bulldozers travel at high speed. Players must guide frogs between opposing lanes to avoid becoming a road killer, resulting in loss of life. After the road, there is a middle strip that separates the two main parts of the screen. The upper part of the screen is a river with logs moving horizontally across the screen. Players must guide frogs to cross the river to the frog’s homes

* + 1. Objectives – What are the objectives of the game?

Objective of the game are to guide the frogs to the other side at the top of the screen without getting hit by the cars, trucks and by standing on the logs to move through the river.

* + 1. Play Flow – How does the game flow for the game player  
         
       The Game is set up in 3rd person view for the player, the player has a bird view to control the frogs.
  1. Mechanics –
     1. Movement in the game  
        Players use keyboard to control the frog to move up/down/left/right.
     2. Economy – What is the economy of the game? How does it work? (Lives and score)

Once the frogs get hit by vehicles or fall into the river, the players fail. Press p to restart.

Logic Flow -- A graphical description of how each screen is related to every other and a description of the purpose of each screen.

Diagram

Description automatically generated

1. Interface
   1. Visual System. If you have a HUD, what is on it?

The score is shown on top left of the screen.

* 1. Control System – How does the game player control the game. What are the specific commands?

Keyboard inputs to move player.

Up/down/left/right button to control the movement.

* 1. Audio, music, sound effects   
     Relating sound effect gets triggered once certain events happen, such as frog wins and gets hit by the vehicles.

1. Artificial Intelligence
   1. Opponent and Enemy AI –  
      Enemies(vehicles) moving on the track with speed in a certain range.
   2. Support AI -- Player and Collision Detection

Each object in the game has specific height and width, once the frog close to the role within its height and width, it can be seen as they are collided.

1. Game Art – Key assets, how they are being developed. Or Free assets? Free assets found on internet can be sited here.

Using the source from: [SourceLink](http://froggerclassic.appspot.com/)

Music is from my previous Unity Engine scripting project.

1. Score system

Just like American football, once the frog pushes to certain distance, the player gets certain score. The winning score is 80!

1. Technical Challenges

How to handle the situation that when the frog collides with multiple logs?

Ans: add a bool “onWoodAlready” to check if it’s already on the log. Once it’s already on the log, it won’t trigger the velocity movement on the other logs which are also collided with the frog.

How to scroll the river but not scroll the green pound?

Ans: add another picture with green platform in it only and cover it up on the background.