**Game Design Document**

Frogger Game

*Course:* CSIS250 (Computer Graphics)

*By:* Ghina Bou Ghannam

*Date:* 09-05-2025

**Contents**

[I. Introduction 3](#_Toc197723538)

[II. Game Overview 3](#_Toc197723539)

[III. Gameplay Mechanics 3](#_Toc197723540)

[1. **Controls:** 3](#_Toc197723541)

[2. **Objectives:** 3](#_Toc197723542)

[3. **Frog Actions:** 3](#_Toc197723543)

[4. **Progression Systems:** 3](#_Toc197723544)

[a. Levels: 3](#_Toc197723545)

[b. Scoring: 3](#_Toc197723546)

[c. Lives: 4](#_Toc197723547)

[IV. Story and Narrative 4](#_Toc197723548)

[V. Characters 4](#_Toc197723549)

[VI. Levels and Environments 4](#_Toc197723550)

[VII. Art Style and Visuals 5](#_Toc197723551)

[VIII. Audio Design 5](#_Toc197723552)

[1. Sound Effects: 5](#_Toc197723553)

[2. Background Music: 5](#_Toc197723554)

[IX. User Interface (UI) Design 5](#_Toc197723555)

[X. Technical Requirements 5](#_Toc197723556)

[XI. Marketing and Promotion 6](#_Toc197723557)

[XII. Budget and Schedule 6](#_Toc197723558)

[XIII. Appendices 6](#_Toc197723559)

[1. Reference Material 6](#_Toc197723560)

# Introduction

Frogger Clone is single player arcade style game developed using JavaScript and HTML Canvas element. The player guides 5 frogs, 1 by 1, to reach the goal safely during limited time. The frog passes in its way across a busy road and river with logs and turtles to jump over. Players who like challenging games that require focusing yet simple will enjoy this game.

# Game Overview

Players control frog at a time where they navigate to cross the lanes of moving cars and the river with the floating logs and moving turtles. The player should pass all the five frogs to reach the five goal zones at top of screen beside the green zone. Each frog should be passed from the start to the goal, so the next frog will automatically set its position at the start position. When all frogs reach the goal, a win screen displays If frog jumps on the green zone, it loses 1 live out of 3 lives. During the path, a frog gains 10 points for each unvisited lane passed successfully. The player should avoid the cars moving in different direction and speed when frog passing the road. Or, it loses a life and the frog returns to start point. After passing the road, there is a safe zone where the frog can wait the chance to jump on the moving turtles or logs. If the frog jumps on river, it loses a life. The player can pause, resume, restart or exit the game at any point. The game includes features as timer, score, and lives. Once all lives are lost, a game over screen appears. Moreover, “How to Play” instruction page is provided to guide new players.

# Gameplay Mechanics

1. **Controls:** The frog jumps by Up, Down, Right, and Left arrow keys. Each press equals one jump with a cooldown counter to avoid multiple clicks simultaneously. The game pauses when Escape key is clicked or mouse clicks the pause button. The player can click using the mouse to read instructions, start, exit, resume, restart, or move to next level.
2. **Objectives:** The main goal of game is to move sequentially all the five frogs to their home successfully, one at a time. They should be able to overcome the challenges on their way as cars and river. Also, they should try to reach goals with highest score.
3. **Frog Actions:** The frog can jump one step at a time which means it follow grid movement (50 width ,50 height), and it navigates to avoid cars and jump on logs and turtles. In Level 2, it gains extra score for colliding with the premium frog.

## **Progression Systems:**

1. Levels: The player starts from level 1. Then, he moves to the win screen, and he can choose to move to next level or exit. In level 2, more challenges are introduced such as the drowning turtle
2. Scoring: The score increases for jumping over a new unvisited lane and extra points based on remaining time when the goal is reached.
3. Lives: The player starts with 3 lives. A live is lost for colliding with cars, drowning in river… The game is over if all lives are lost.

# Story and Narrative

The cozy home of a few close friends who consist of frogs has been disturbed by noises and the constant threat of violence, making their once-safe place unsafe. The five brave friends are Ribbit, the leader; Jumpy, the fastest; Slider, who adapts to tricky surfaces; Sparkle, who is full of energy; and Froggy, the smartest. They decided to search for the best place to live peacefully, but they need to explore a dangerous path filled with fast-moving cars. They should be highly focused to manage the time limit and avoid the constant threat. After passing the road, they can rest before continuing their challenging path. Now there is a river, but fortunately many floating logs and turtles are moving. So, they need to jump on them safely. Ribbit will be guiding them by starting first. As Ribbit reaches the goal, the next frog will start its way toward the new home. The end goal is that all five friends are guided safely to their new home beside the green forest.

# Characters

The five frog friends are trying to escape the anger to find a secure home. The player actions each of these frogs in turn. First, the determined leader, Ribbit, whom the player controls in its journey to reach. The next is Jumpy, where the player helps to reach one of 4 goals available, as the 5th was occupied by Ribbit. After Ribbit, Slider is unlocked. Once Slider reaches the goal, Sparkle is next unlocked. Finally, Froggy becomes available. These five frogs possess the same base jumping and interaction guided by the player. In level 2, a premium frog appears on one of the logs only and keeps moving on it, where it offers the frog colliding with it bonus points.

# Levels and Environments

1. **Menu Level (Main Screen):** The introduction screen showing the name of the game with 3 buttons either to start, exit, or how to play (instructions page).
2. **Instructions Screen:** The “How to Play” screen provides information for players on how to play the game, including controls, unique mechanics, and objectives, with buttons to start the game or go back to the menu level.
3. **Level 1:** The first level of the Frogger game includes a road of 5 lanes with cars moving in different directions and speeds. Also, it includes a river with moving logs and turtles to provide safe passage.
4. **Level 2:** The second level introduces increased difficulty and more features, including the drowning turtles that drown for a short period and then appear, which poses a threat if the frog is currently on one of them. Moreover, the premium frog appears to be moving on one of the logs to offer the opportunity to gain extra points. However, the logs, turtles, and cars are moving faster.
5. **Win Screen:** The win screen is displayed when all five frogs reach the goals successfully. It shows the final score, congratulatory message, and buttons to restart, exit, or move next level if found.
6. **Lose Screen:** The game over screen is displayed when all lives are lost. It shows the final score, a “game over” message, and buttons to restart or exit the game. The player can’t move to the next level until level 1 is passed successfully.
7. **Pause Screen:** It appears on the top of the game when the player clicks the pause button or the Escape key, showing buttons to resume, restart, or exit the game.

# Art Style and Visuals

The game includes visual elements such as frogs, cars, logs, turtles, water tiles, road tiles, a safe zone, and a green zone to provide clear visuals for the game. It also uses a vibrant color palette from green to brown to make things appear as natural elements to increase the engagement of the player. Moreover, the frog features distinct animation features for its standing and jumping actions in all four directions in a very responsive way. Moreover, the drowning of the turtle is animated to appear more realistic and user-friendly.

# Audio Design

## Sound Effects:

* **Collision or Game Over:** *Loud crash.*
* **Goal Reached or Win Game:** *Happy ding.*
* **Time Ending:** *Ticking sound.*

1. Background Music: A looped theme plays during the main gameplay

# User Interface (UI) Design

The game screen is designed to keep everything clear and easy to follow. At the bottom, you’ll see the road which is split into five lanes with cars moving in different directions. Just above that is a safe zone where the frog can take a break from traffic. The top half of the screen shows the river which includes five lanes of moving logs and turtles that the frog can ride across. At the very top is the grass zone, where the frog’s goals are located which are circular spots the frog needs to reach to win.

On the bottom right, you'll see your score and remaining lives shown as a tiny frog icon. On the bottom left, a timer counts down remaining time to reach goal. If you need to pause, just tap the pause button in the top left corner or Escape key to display the menu with options to Resume, Restart, or Exit the game. Everything is laid out so it's fun, easy to understand, and keeps the action flowing!

# Technical Requirements

The game is designed to run within any web browser compatible with HTML5 Canvas and JavaScript, leveraging a custom game engine base, which includes the core files: Game.js, Sprite.js, and Level.js. The primary programming language used for development is JavaScript.

# Marketing and Promotion

The Frogger game will be promoted to attract players and build interest before and after launching. The frogger game is a product so it follows the product life cycle. During the product development, a short animated video will be posted on social media as teaser to start attracting the gamers. In the Introduction level, the goal is to build awareness and attract gamers to try the frogger game. New reels and Tiktok videos will be posted every week, and daily stories to engage with players and build community. It’s important to focus on the features of the game such as competing, requires to focus. It may also be linked to friends gathering in this case we’re building relationship with the gamers on deep and emotional level.

# Budget and Schedule

The frogger game is only developed by 1 developer. The development takes around 1 month with testing. The design didn’t cost anything. It was inspired from original Frogger game, and the graphics were found on public site. Similarly, the sound effects and music were found on public sites. The only cost is the time of developer working on the game since it’s a university project.

# Appendices

## Reference Material

* Sound Effects Retrieved from <https://classicgaming.cc/classics/frogger/sounds>
* Background Music Retrieved from <https://computerarcheology.com/Arcade/Frogger/>
* Background Image <https://cdn.tutsplus.com/mobile/authors/mark-hammonds/Corona-SDK_Frogger_Part-1_8.png>
* Frogger SpriteSheet <https://mir-s3-cdn-cf.behance.net/project_modules/source/f746d7154719851.6347323e2306d.png>