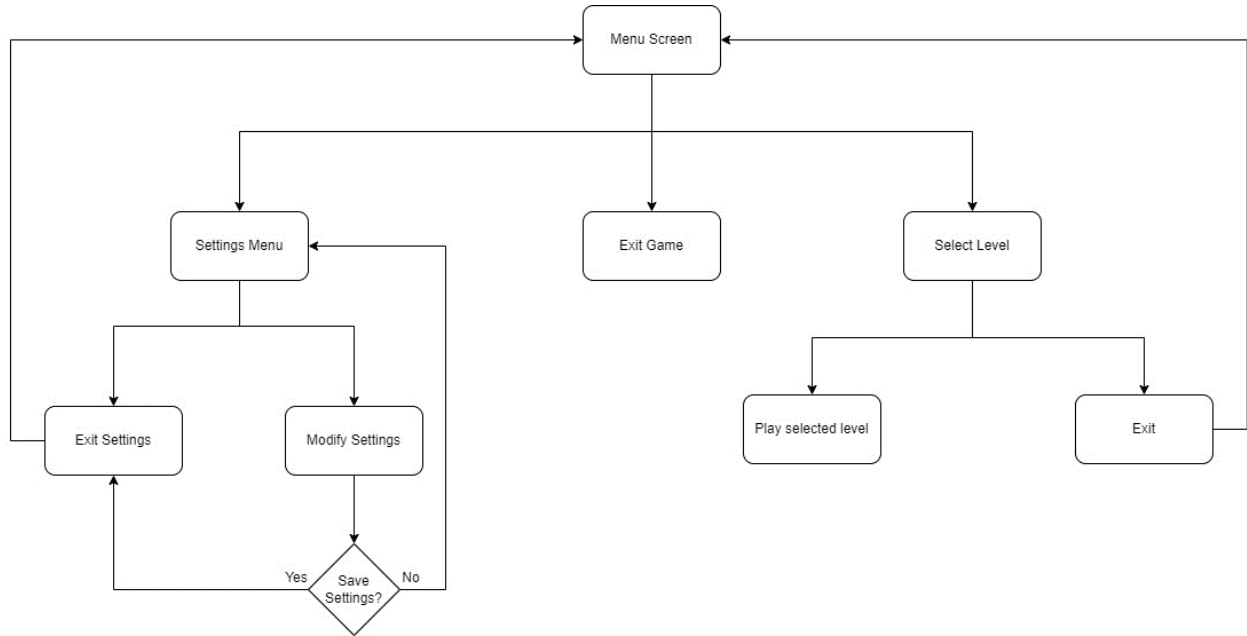
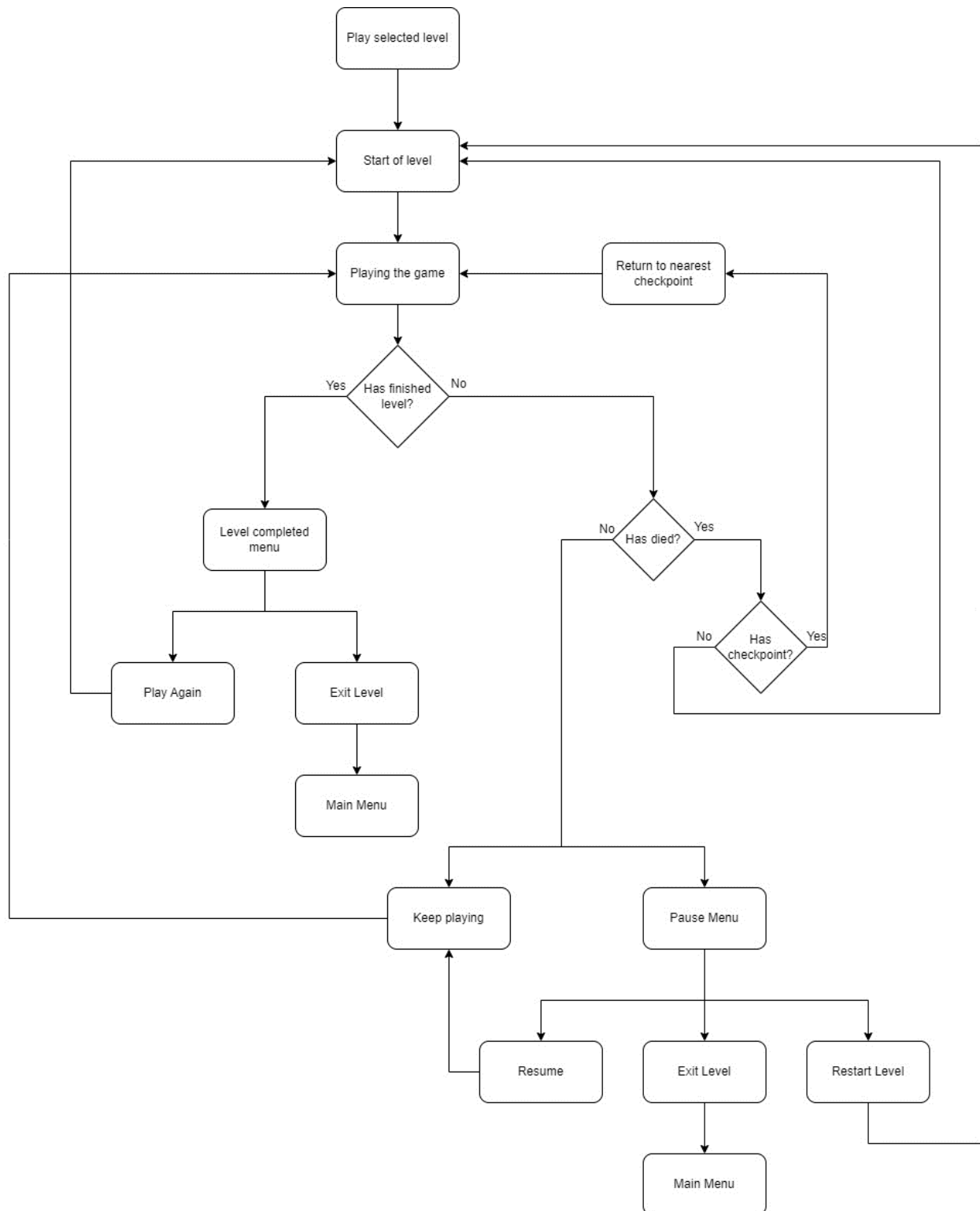


Activity Diagram

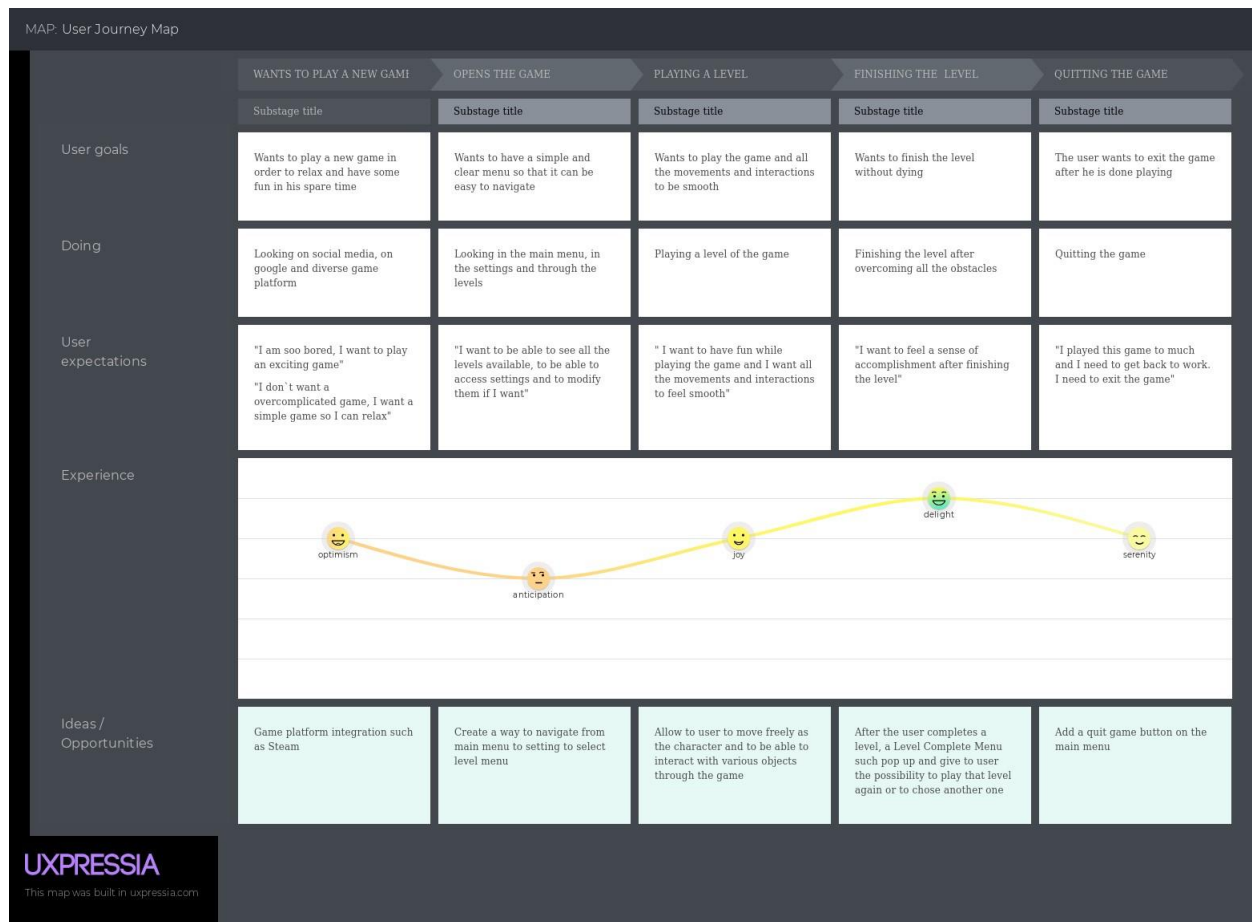
Main Menu Activity Diagram:



Playing Game Activity Diagram:



Customer Journey Map



Non-Functional Requirements

Performance

- The game should start in less that 20 seconds
- The game should run at a minimum framerate of 30 fps on any machine that meets the minimum requirements, 60 fps for any machine that meets the recommended pc requirements
- The game levels should load in less than 5 seconds

Stability

- The game should not crash more than 2 times/day on any computer that meets the minimum requirements

Low PC Requirements

The game should be able to run on the majority of modern computers

Minimum PC Requirements

- OS: Windows 10/11
- Processor: 2.0 Ghz
- Memory: 4GB
- Hard Disk Space: 1GB
- Video Card: 128MB Video Memory

Recommended PC Requirements

- OS: Windows 10/11
- Processor: 3.0 Ghz
- Memory: 8GB
- Hard Disk Space: 1GB
- Video Card: 256MB Video Memory

Display

- The game should be able to enter fullscreen mode on any display with an aspect ratio of 16:9 or 16:10

Input

- The game should be played using only mouse/touchpad input and less than 8 keyboard keys.

Prioritized Product Backlog

The prioritized product backlog below follows the following structure:

- Backlog task (Difficulty)
 1. User story related to task #1
 2. User story related to task #2

Backlog tasks with no user stories associated to them are either reserved for future releases or requested by the development team

- Make the textures from the Unity Asset Store – Pixel Adventure 1 usable (configure the standard settings for a 2D game) - (Difficulty: 2)
 1. As a user, I want to have immersive textures and animations for the player character and the game environment so that I can enjoy an enhanced gaming experience.

- Create a level which will be used and updated on the go to test the different functions of the game (traversal, physics, object interaction, etc.) - (Difficulty: 4)
- Write the script for basic player movement (moving left, right and jumping) - (Difficulty: 3)
 1. As a user, I want to move left and right using the arrow keys or a controller so that I can navigate the game environment.
 2. As a user, I want to make the character jump with a button press so that I can overcome obstacles and reach higher platforms.
- Create/Find stripes for the necessary animations for basic player movement (moving left, right, jumping, staying idle) - (Difficulty: 2)
 1. As a user, I want to have immersive textures and animations for the player character and the game environment so that I can enjoy an enhanced gaming experience.
- Develop the first level. This level should be simple and show the basic features of the game (mentioned above + double jump) - (Difficulty: 7)
 1. As a user, I want the first level to be not too easy, but to still teach me the basic controls, so that I can get accustomed to the game.
- Create a checkpoint system. - (Difficulty: 3)
 1. As a user, I want to have a checkpoint system in order to go back to spawn if I fail the level, allowing me to retry without starting from the beginning.
 2. As a user, I want the first level to contain moving platforms, so that I can pass pits that would be too big to jump over.
 3. As a user, I want the first level to contain rotating saws, so that I need to time my inputs to get past them.
- Implement basic traps (rotating saws, spikes, arrow block) and the needed scripts for traps - (Difficulty: 5)
 1. As a user, I want to avoid obstacles and traps by jumping, or using other movements to pose a challenge through the game.
- Implement scripts for the player interacting with traps, player falling out of bounds, scripts for player death - (Difficulty: 4)
 1. As a user, I want to have immersive textures and animations for the player character and the game environment so that I can enjoy an enhanced gaming experience.

- Develop the functionalities needed for collecting and counting items - (Difficulty: 5)
 1. As a user, I want to be able to collect three special objects that unlock new movement abilities, so that I get a sense of progression.
 2. As a user, I want to collect power-ups or items by touching or jumping on them so that I can enhance my character's abilities.

- Write scripts for special items and the effects they have on the player(double jump, wall jump, dash) - (Difficulty: 10)
 1. As a user, I want to be able to evolve my character's jump ability, being able to jump once mid-air before touching the ground , so that the platforming feels smoother.
 2. As a user, I want to be able to make the character perform wall jumps, so that I can traverse vertical levels.
 3. As a user, I want to be able to dash a fixed distance, so that I can quickly avoid falling to death and avoid arrows.

- Create level 2. This level should present the challenges of the previous level and challenges related to wall jumping - (Difficulty: 10)
 1. As a user, I want the second level to be harder, so that I can get a better feeling of accomplishment once I finish it.
 2. As a user, I want the second level to have the traps from level 1 and the addition of spikes, so that I feel like the game gets more challenging.

- Create level 3. This level should present the challenges of the previous level and challenges related to dashing – (Difficulty: 10)
 1. As a user, I want the third level to be the hardest, so that I can beat the game once I truly master the game's movement.
 2. As a user, I want the third level to have the traps from level 2 and the addition of an arrow launcher, so that I need to use all the tools at my disposal to avoid them.

- Implement the start menu and its functionalities (choose level, change settings, etc.) - (Difficulty: 5)
 1. As a user, I want to be able to navigate a UI to play the levels and quit the game, making the overall gaming experience user-friendly and accessible.

- Implement the pause menu and its options (restart level, exit level, settings, etc.) - (Difficulty: 6)
 1. As a user, I want the pause menu to display options such as resume, restart level, and exit level, providing me with control over my gameplay experience and so that I can go and attend to other matters.

- Implement the level select menu and its options (choose level, exit to main menu) - (Difficulty: 4)
 1. As a user, I want to be able to navigate a UI to play the levels, making the overall gaming experience user-friendly and accessible.
- Implement the level completed menu and its options (replay level, exit level) - (Difficulty: 4)
 1. As a user, I want the option to play again after completing a level so that I can immediately retry and improve my performance.
- *Implement slippery ice platforms (frictionless) - (Difficulty: 3)
- *Add a basic shooting mechanic and implement it in platforming (breaking walls, eliminate enemies, etc.) - (Difficulty: 10)
- *Add enemy creeps that can block the path/attack the player - (Difficulty: 10)

*intended for future releases

Problem Statement and Product Vision

Problem Statement

In today's competitive gaming landscape, there's a demand for a 2D platformer game that can engage players with an enjoyable visual style and a straightforward storyline while delivering a range of gameplay experiences. Existing platformer games often lack the ability to cater to a broad player base and may try to introduce many novel ideas, without having a good core for movement or basic mechanics. Our challenge is to address these concerns and create a platformer that offers a satisfying experience for a diverse player group while considering practical constraint.

Product Vision

Our 2D platformer game puts emphasis on engaging gameplay and visual aesthetics, tailored to the confines of our university project. We aim to offer an entertaining gaming experience for a broad audience, featuring a variety of visually appealing levels, each with its own set of entertaining challenges. While we prioritize gameplay, we will include basic accessibility features to ensure an enjoyable experience for all players. Our objective is to craft a platformer that provides an accessible and enjoyable gaming experience, with less focus on an intricate storyline.

Product Features and Functionalities

Playable character:

Movement:

- The character shall have access to basic movement abilities like left and right movement and jump that makes it possible to move freely

Special abilities:

- The character shall have special abilities that enables the user to solve puzzles in order to progress through the game such as double jump, wall jump and others

Customization:

- The user shall have the ability to personalize their character with additional cosmetic items that can be unlocked while playing the game
- The player shall be able to collect objects that will help him progress through the levels or to unlock cosmetic items

Checkpoint System:

- The game shall implement checkpoint mechanics that will return the player to the latest checkpoint if they die

Out Of Bounds:

- Falling out of bounds shall be possible in the game, action that will kill the player

Levels:

- The user shall have access to a variety of meticulously designed levels with increasing difficulty with lots of challenges

- All levels shall include static platform and moving platform that will help the player go across the map

Level 1:

- The first level of the game shall be more like a tutorial for the user, helping him learn the basic movement of the character

- The level shall also feature the first trap of the game, rotating saw blades, which shall kill the player if touched, forcing the user to avoid them

- During this level, the user shall be able to unlock the double jump, ability that allows the character to jump twice before touching the floor again

Level 2:

- The second level shall introduce the user to a more advanced movement ability, the wall jump, ability that shall let the player jump off a vertical surface, such as a wall; this maneuver shall allow the character to reach higher platforms or change direction in mid-air.

- In addition to the rotating saw blades, this level shall include spike traps, spikes that emerge from the ground, walls, or ceilings, posing a threat to the player

Level 3:

- The final level of the game shall be the hardest of them all integrating all the functionalities of the game

- The dash shall be the last ability that player will unlock; this shall allow the player to use a burst of movement in a specific direction

- This level shall include all the traps that the user has faced in the preview levels, but shall also incorporate a new trap, the arrow launcher, a cube placed in a wall that propels arrow towards a certain point at a fix rate of fire

User Interface:

Main Menu:

- The start menu shall give the user access to select the level which they want to play, give them access to change the settings, and the possibility to exit the game

Pause Menu:

- The user shall be able to pause the game in the middle of the level by pressing the pause button which will make the pause menu appear

- The "Pause Menu" shall let the user have the possibility of choosing the following 3 options: resume the level from the current position, restart the level or exit the level which returns the user to the start menu

Level Complete Menu:

- The "Level Complete" menu shall appear after completing a level and it shall let the user play the same level again or to exit to the level selection page

Future Releases:

Steam and Steam Workshop integration:

- The user shall be able to download the game directly from the Steam game catalog

- The user shall have the option to connect using their Steam account

Discord Integration:

- Game Status Updates: while playing the game, Discord shall update the player's status with relevant information, such as the title of the current mission or the player's level.

- Spectator Mode: this shall allow other users to spectate a friend while they are playing the game

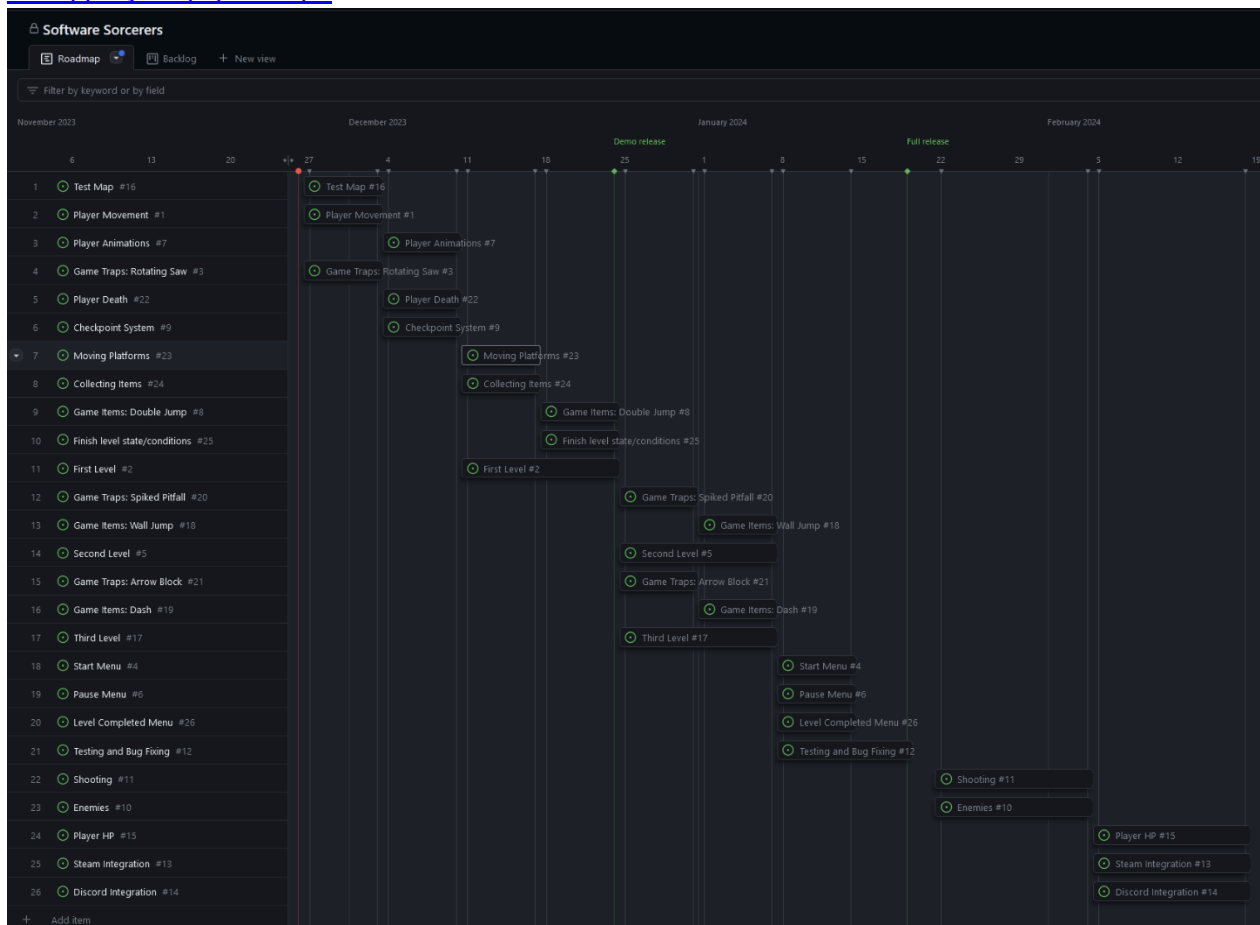
- Discord Overlay: the user shall be able to view and interact with Discord while playing the game; this includes quick access to text and voice chat without having to exit or leave the game

Achievements:

-After completing a challenge such as collecting a certain amount of points or finishing the game below a given time, the player will receive a achievement to show their mastery of the game

Product Roadmap

It can also be found at <https://github.com/orgs/ingenierie-software-2023-2024/projects/7/views/1>



Integration Points

- Integration with Steam digital distribution service
- Integration with Discord overlay and user status

UI Mockups

Gameplay



Level Completed Menu



Pause Menu



Main Menu

Game Name

Select Level

Settings

Exit Game

Level Select Menu

Select Level

1 2 3 4 5

Exit

Play

Settings Menu

Settings

Music Volume

SFX Volume

Exit

Save

User Stories and Acceptance Criteria

User Stories

Basic Requirements

- As a user, I want to have immersive textures and animations for the player character and the game environment so that I can enjoy an enhanced gaming experience.
- As a user, I want to move left and right using the arrow keys or a controller so that I can navigate the game environment.
- As a user, I want to make the character jump with a button press so that I can overcome obstacles and reach higher platforms.
- As a user, I want to avoid obstacles and traps by jumping, or using other movements to pose a challenge through the game.

Levels

General

- As a user, I want to be able to play three different levels, so that I can fully experience the in game world.
- As a user, I want to unlock new levels by completing the previous ones, adding a sense of advancement and unlocking new challenges.
- As a user, I want to complete a level by reaching the end goal, providing a sense of accomplishment and progression.
- As a user, I want to have a checkpoint system in order to go back to spawn if I fail the level, allowing me to retry without starting from the beginning.

Level 1

- As a user, I want the first level to be not too easy, but to still teach me the basic controls, so that I can get accustomed to the game.
- As a user, I want the first level to contain moving platforms, so that I can pass pits that would be too big to jump over.
- As a user, I want the first level to contain rotating saws, so that I need to time my inputs to get past them.

Level 2

- As a user, I want the second level to be harder, so that I can get a better feeling of accomplishment once I finish it.

- As a user, I want the second level to have the traps from level 1 and the addition of spikes, so that I feel like the game gets more challenging.

Level 3

- As a user, I want the third level to be the hardest, so that I can beat the game once I truly master the game's movement.
- As a user, I want the third level to have the traps from level 2 and the addition of an arrow launcher, so that I need to use all the tools at my disposal to avoid them.

Power-Ups

- As a user, I want to be able to collect three special objects that unlock new movement abilities, so that I get a sense of progression.
- As a user, I want to collect power-ups or items by touching or jumping on them so that I can enhance my character's abilities.
- As a user, I want to be able to evolve my character's jump ability, being able to jump once mid-air before touching the ground, so that the platforming feels smoother.
- As a user, I want to be able to make the character perform wall jumps, so that I can traverse vertical levels.
- As a user, I want to be able to dash a fixed distance, so that I can quickly avoid falling to death and avoid arrows.

UI

- As a user, I want to be able to navigate a UI to play the levels and quit the game, making the overall gaming experience user-friendly and accessible.
- As a user, I want the pause menu to display options such as resume, restart level, and exit level, providing me with control over my gameplay experience and so that I can go and attend to other matters.
- As a user, I want the option to play again after completing a level so that I can immediately retry and improve my performance.

Acceptance criteria for sprint 1

As a user, I want to move left and right using the arrow keys or a controller so that I can navigate the game environment.

- o Given the user is playing the game,

- when the user presses the left or right arrow key or uses a controller,
- then the character should move left or right accordingly in the game environment.

- Given the user is playing the game,
- when the user moves towards a pit,
- then the character should fall to death and not float over the pit.

- Given the user is playing the game,
- when the user moves towards a solid object,
- then the character should not be able to pass through it.

As a user, I want to make the character jump with a button press so that I can overcome obstacles and reach higher platforms.

- Given the user is playing the game,
- when the user presses the designated jump button,
- then the character should move vertically a set distance.

- Given the user is playing the game,
- when the user presses the designated jump button multiple times in a row,
- then the character should be able to jump only once he has touched the ground.

- Given the user is playing the game,
- when the user presses the designated jump button and there is an obstacle above the character,
- then the character should not be able to pass through the obstacle.

- Given the user is playing the game,
- when the user presses both left/right and jump at the same time,
- then the character should move diagonally in the direction chosen by the left and right keys.

- Given the user is playing the game,
- when the user presses both left/right and jump at the same time and aims to land on a platform,
- then the character should stop falling where his model meets the platform and not fall through it.

As a user, I want to have immersive textures and animations for the player character and the game environment so that I can enjoy an enhanced gaming experience.

- Given the user is playing the game,
- when the character moves to the left or to the right,
- then a walking animation should play during the movement input.

- Given the user is playing the game,

- when the character jumps,
- then a jumping animations should play while the character jumps and lands.

- Given the user is playing the game,
- when in the scene a rotating saw blade is present,
- then a rotation animation should be played on the saw blade.

As a user, I want to have a checkpoint system in order to go back to spawn if I fail the level, allowing me to retry without starting from the beginning.

- Given the user is playing the game,
 - when the character dies by any means,
 - then if no checkpoints were reached prior to dying, he should spawn at the start of the current level.
-
- Given the user is playing the game,
 - when the character dies by any means,
 - then if he reached a checkpoint prior to dying, he should spawn at the checkpoint and not at the start of the current level.

As a user, I want the first level to contain rotating saws, so that I need to time my inputs to get past them.

- Given the user is playing the game,
 - when the character walks into a rotating saw blade,
 - then the character should die and spawn accordingly.
-
- Given the user is playing the game,
 - when the character jumps into a rotating saw blade,
 - then the character should die and spawn accordingly.

User Personas

NAME

Félix Lengyel

MARKET SIZE



0.5 %

TYPE

Video Game
Streamer

Goals

- Achieve a high-level mastery of any game he plays
- Always challenge himself with hard games
- Bringing public attention to the indie games scene

Demographic

♂ Male 28 years

📍 Laval, Quebec

Single

Twitch Streamer

\$ 2,200,000

Quote

“The result is irrelevant because the effort was there.”

Background

After finishing high school and a brief stint in business administration at CEGEP, Félix Lengyel, known as xQc, started streaming on Twitch at the age of 19, initially playing League of Legends. His fame grew with his involvement in Overwatch, leading to a name change to xQcOW. In the esports realm, he began with smaller tournaments and joined Denial Esports, later forming the independent team Arc6. During this time, his intense dedication to gaming had negative impacts on his personal life. Despite challenges, he represented Team Canada in the 2017 Overwatch World Cup, earning the title of the event's most valuable player, despite the team's loss to South Korea in the finals. After quitting Overwatch esports scene, he has now taken an interest into playing indie video games on stream such as the 2D platformer Jump King, and many other difficult games from the same genre.

Gaming skills

Reaction time



Strategic thinking



Dexterity



Adaptability



Motivations

Is deeply passionate about playing video games and genuinely enjoys the gaming experience.

Derives joy from entertaining and making people laugh through engaging commentary and humorous interactions.

Seeing himself improve in games where the window of opportunity is small and thus having the character's achievements being earned and not handed.

Frustrations

Coping with negative comments, trolling, or toxic behaviour in the chat.

Struggling to maintain a balance between producing high-quality content and adhering to a consistent streaming schedule.

Playing games that guide the player too much or that offer a way too generous room for error and thus ruining the risk-reward ratio.

Scenarios

As xQc starts his stream, a viewer suggest the following: "Hey xQc! Try out this platformer game I found! It's full of surprises, and I'd love to see you tackle it!" The chat agrees, and xQc, decides to give the game a shot. The ensuing gameplay becomes a rollercoaster of laughter and suspense as xQc navigates the platformer's obstacles, creating memorable moments for both him and his viewers, thus promoting the game.

Technical Skills

Stream setup and management



Troubleshooting technical issues



Social media and community management



NAME

Sam Fisher

MARKET SIZE



31 %

TYPE

Casual Gamer



Goals

- Wants a quick and easy way to relax
- Have fun doing something undemanding
- Have something exciting to do, whether he is at home, at the office, on the train, etc.

Quote

“Nothing compares to a few hours of gaming after a long day of work”

Demographic

♂ Male 28 years

📍 United States

Lives With Girlfriend

Administrative assistant

\$50,000

Background

Works in a typical office setting, handling administrative tasks. Enjoys casual gaming during breaks or after work to unwind and relax

Motivations

- Appealing graphics that set the right atmosphere
- Gameplay that is fun, bombastic and not too complicated

Frustrations

- Hates complicated games with a steep learning curve
- Dislikes games which require a huge time investment

Gaming Skills

Reaction Time



Strategic Thinking



Dexterity



Adaptability



Technical Skills

Digital game setup process



Troubleshooting Technical



Issues



Using digital stores to give



Scenarios

Sam gets back home after a long day of work and is looking forward to playing some videogames. As he is browsing through his digital store, he comes across a 2D platformer. Interested, he decides to give its demo a try. He finds the game very fun and enjoyable, so he buys the full version and begins playing through the levels. After about 1-2 hours of gaming, Sam decides that it is time to go to sleep and is looking forward to playing the game tomorrow, perhaps during a break at work.