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***‘Spark a New Resistance to the Darkness of Tyranny’*** – Dan Blackford

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| Table of Contents  1 Game Overview  2 Inspiration  3 Back Story  4 Unique Selling Points  5 Platform Minimum Requirements  6 Game Objectives  7 Game Rules  8 Game Structure  9 Game Play  9.1 Game Controls  9.2 Game Camera  9.3 Heads Up Display  10 Player  10.1 Character  10.2 Metrics  10.3 States  10.4 Combat  11 Enemies  11.1 Characters  11.2 Metrics  11.3 States  11.4 Combat  12 NPC Characters  13 Level Design  13.1 Quest Items  13.2 Traps  13.3 Totems  14 Media  14.1 Prose  14.2 Sprite Sheets  14.3 Art Assets  14.4 Sound Effects  14.5 Music Tracks  15 Design Goals  15.1 Structured Conflict  15.2 Interesting Decisions  16 Minimum Viable Product  17 Wishlist  18 Bibliography  19 Profiler  20 Script Analysis | Game Development Team Members    PRODUCER  Dan Blackford    GAME DESIGNER  Dan Blackford  PROGRAMMER  Dan Blackford  GRAPHICS  Dan Blackford  AUDIO  Dan Blackford  QUALITY ASSURANCE  Dan Blackford |

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# 1 Game Overview

Title: Grooby’s Quest

Platform: Windows, MacOS

Genre: Side Scrolling Combat Platformer

Rating: (10+) ESRB

Target: Retro Gamer or Arcade Action Gamer (All Ages)

Release date: November 2020

Grooby’s Quest is a combination of the traditional platformer genre and the genre of side view melee combat. The hero of the game is a Gnome Monk named Grooby, invading the strongholds of an evil regime to conquer enemies, steal from the treasury, and free political prisoners in an attempt to spark a resistance to the tyranny of this regime. Grooby will explore dangerous levels to fight Kobolds and evade traps, while searching for treasure chests, prisoners to free, and the exit to the next level.

# 2 Inspiration

The primary inspiration for Grooby’s Quest is the 1984 Datasoft game “Bruce Lee” for the Atari 800XL:

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This game included traditional platform elements of jumping, climbing, collecting items, and avoiding traps, with the mixed genre of melee combat with two foes that followed the player through the levels to make things more interesting and difficult. An attacking enemy could knock the player into a spike trap, or force the player to rush forward into timed traps with little planning. An enemy on the heels of the player could fall victim to a trap themselves, or the player could duck an attack and watch the enemy hit another enemy or fly fatally of an edge or into a trap. This led to a varied, challenging, and sometimes humorous gameplay experience; and never a dull moment under constant threat by the enemy characters.

Grooby’s Quest will contain all original graphics and sound effects inspired by this and other 8-bit Atari titles. This includes the following titles which were played recently for creative direction:

Pitfall 2 – Atari 800XL (Activision, 1984)

International Karate – Atari 800XL (Epyx, 1986)

Montezuma’s Revenge – Atari 800XL (Parker Brothers, 1984)

# 3 Back Story

Grooby’s Quest will follow the adventures of the forest gnome Grooby Flusbim, a monk who left his monastery to live a life of excitement and purpose travelling through the forests of the land.

In the present events, King Tombuk has been corrupted by the dark warlock Lord Protisk, and has spread his grip of tyranny and conquest throughout the surrounding lands. What better place than the deep forest for Grooby to stage a resistance?

Grooby must infiltrate the strongholds of King Tombuk to spark this resistance movement. The abundance of coins from the King’s crippling taxes could be retrieved to fund the movement with supplies, weapons, and even mercenaries. Good heroes imprisoned secretly by Protisk could be freed, surely to become powerful allies of the resistance. If all else fails, the tales of Grooby’s bravery and skill defeating the evil enforcers of Tombuk’s empire will inspire similar courage for others to organize and rise to defeat the ruthless reign of King Tombuk, and finally put a stop to the endless corruption woven by Lord Protisk.

# 4 Unique Selling Points

Fast paced motion and combat with realistic physics create a fun game play experience.

Unexpected emergent events from the interactions between platformer elements and real time NPC combat.

# 5 Platform Minimum Requirements

A stand-alone computer running Windows 10 or MacOS 10.15 (Catalina).

# 6 Game Objectives

The objective of the game is to score as many points as possible while surviving and exploring one stronghold of King Tombuk, organized into two levels. Points are awarded for defeating enemies, breaking into treasure chests, and freeing prisoners from their cages. Bonus points are also awarded for reaching the end of each level, and for surviving to the end of the game. Since each level increases in difficulty, the awarded points are multiplied by the level number, with level 2 providing a 2x point bonus.

# 7 Game Rules

A picture containing graphical user interface

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The player begins the game at the left side of the first level, with the entrance to the stronghold to the right. The environment is organized into platform tiles which can be navigated by the player. This involves walking or running on the current platform, climbing ladders or nets between platforms, and jumping or falling from one platform to another. Traps are triggered by interaction with a pressure plate or at periodic intervals, with careful timing and maneuvering required to evade damage from traps (see Level Design – Traps).

A picture containing different, hanging, blue, bag

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The player will enter Level 2 through an underground passage and will not be able to return to Level 1. At this point the player will receive a point bonus and extra life. The player will emerge from this underground level to the right of the stronghold, will receive a point bonus for game completion, and may then exit to the right to view the victory screen and final score.

A picture containing circuit, person, sitting, hand

Description automatically generated

The player will also encounter Kobold enemies which emerge from visible spawn points when approached by a player (see Enemies). The player may choose to fight an enemy, evade an enemy, lure an enemy into a trap, or any combination of these tactics. Enemies can only engage a player when on the same platform, so enemies can teleport to a spawn point on any other platform in pursuit of the player (see Level Design – Totems). If the enemy’s hit points are reduced to zero, the spawn points are disabled for 10 seconds at which point a new enemy can spawn.

A picture containing many, child, little, cake

Description automatically generated

Treasure chests can be opened by hitting the lock directly with the player’s nunchuck attack, with the treasure then automatically retrieved and points awarded (see Level Design – Quest Items). Imprisoned heroes are freed by smashing a magic lock having the appearance of a crystal ball. The prisoner will then teleport to a nearby totem which restores their equipment and provides a special exit for the freed hero (see Level Design – Totems). An invisible barrier prevents the hero from crossing the crystal ball, so that the player cannot directly approach the hero or the heroes totem.

A circuit board

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The player will generally progress from left to right through the level while traversing platforms at various heights. If the player is reduced to zero hit points, and the player has an available life, the player will reincarnate at the nearest checkpoint (see Level Design – Totems). Otherwise, the player will die and the game will end. The player will want to explore all side paths to maximize the points earned per level, but must weigh that risk with the possibility of dying before reaching the end of the level, and not receiving the bonus life and awarded point bonuses.

Text

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# 8 Game Structure

Diagram

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# 9 Game Play

## 9.1 Game Controls

|  |  |
| --- | --- |
| W | Jump (On Foot), Climb Up (Climbing), Slow Fall (Airborn) |
| S | Duck (On Foot), Climb Down (Climbing), Fast Fall (Airborn) |
| A | Move / Jump / Climb / Fall Left (double tap for Rolling Rock when On Foot) |
| D | Move / Jump / Climb / Fall Right (double tap for Rolling Rock when On Foot) |
| E | Swing Nunchucks (On Foot), Flying Kick (Airborn) |
| F | Rolling Rock (On Foot) |
| R | Reverse Facing |
| Space | Toggle Pause Game |
| Esc | Exit to Main Menu |

## 9.2 Game Camera

The game will use a custom camera controller based on three key values. The Base Position always tracks frame by frame with the player character location. The Current Offset and Target Offset control the relative offset of the game camera from the Base Position, for example to provide increased view distance to the right when the player is facing right.

The Current Offset is applied to the Base Position with each frame. When the Target Offset is changed, the Current Offset will move toward the Target Offset starting at a maximum velocity and interpolating smoothly to a minimum velocity as the target is reached.

The Target Offset is updated as follows:

* When on foot, increased view distance in the direction of player facing (left or right).
* When climbing, increased view distance in the direction of climb (up or down).
* When falling, increased view distance proportional to vertical velocity if over threshold.
* No offset when player is in the Idle state.

The camera is also constrained by minimum and maximum ranges in the x and y directions, for proper handling of the camera near the edges of a level.

## 9.3 Heads Up Display

**Tutorial** – During the tutorial, the current instructions are centered at the top of the screen, and update as the player reaches checkpoints triggered by reaching a certain position or accomplishing a specific task.

**Play Game** – During the playable game, a heads up display is presented at the top of the screen. The upper left of the screen displays the current health bar, followed by a small icon for each of the player’s remaining lives. The upper right of the screen displays the player’s current score.

# 10 Player

## 10.1 Character



The player character is Grooby the Gnome Monk, the protagonist of our story.

## 10.2 Metrics

Max Health: 100

Starting Lives: 3

Bonus Lives: 1 per level

## 10.3 States

**Idle** – If Idle for 5 seconds, the player swings his nunchucks, taps his foot, chews gum, and flips a coin while waiting for his quest to continue.

**On Foot** – The player has feet on the ground and may walk or run forward, slow to a stop, or reverse direction. Player may jump or climb down a ladder beneath him. Player may initiate the actions of Rolling Rock, Swing Nunchuck, or Duck.

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**Airborn** – The player has jumped, is falling, or is otherwise airborn. The player’s cape and outfit slow his fall and allow for some maneuvering right to left and to slow or speed the fall. Player may initiate the action of Flying Kick if not falling too fast.

**Climbing –** The player is holding on to a ladder or net. The player may climb upward or downward. On a net, the player may also climb left or right. The player will remain in this state until reaching the top of the ladder or net, or until climbing down to the bottom and dropping off the ladder or net. The player may not exit a ladder or net from the left or right side. No other actions are possible when in this state.

**Action –** The player has initiated and is in the progress of completing an action. These include Flying Kick, Rolling Rock, Swing Nunchucks, and Duck.

## 10.4 Combat

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**Flying Kick** – Player kicks downward from the air toward an enemy.

Damage: 10-20 depending on contact duration (x1.5 Level 1 Bonus)

****Knockback: 140

**Rolling Rock** – Player somersaults towards the enemy’s legs.

Damage: 20 (x1.5 Level 1 Bonus)

Knockback: 300

****

**Swing Nunchucks** – Player attacks enemy with nunchucks.

Damage: 25 (x1.5 Level 1 Bonus)

****Knockback: 300

**Duck** – Player quickly ducks to avoid an enemy attack.

Damage: N/A (x1.5 Level 1 Bonus)

Knockback: N/A

# 11 Enemies

## 11.1 Characters

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**Kobold** – A dangerous enemy which hops about with its tall but coiled body, attacking Grooby with his heavy club and clawed foot.

## 10.2 Metrics

Max Health: 60

Reward: 100 points x Level #

Respawn: Respawn after 10 seconds

## **A picture containing toy Description automatically generated**10.3 States

**Idle** – If unable to reach player, the Kobold will taunt the player for the player to return and fight.

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**On Foot** – The Kobold is able to hop forward, hop backward, or hop to reverse facing. The Kobold can initiate any action.

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**Airborn** – The Kobold is airborn from hopping or falling. The Kobold can initiate a Club Attack.

**Action –** The Kobold has initiated and is in progress of completing an action. These include Hop Kick, Club Attack, Club Block, and Braced Claw Counter.

## **A picture containing drawing Description automatically generated**10.4 Combat

**Hop Kick** – Kobold performs a high hop. attacking player with his clawed foot.

Damage: 15 (x0.75 Level 1 Handicap)

Knockback: 40

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**Club Attack** – Kobold swings downward at player with a heavy club.

Damage: 20 (x0.75 Level 1 Handicap)

Knockback: 40

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**Club Block** – Kobold uses his club to block a Nunchuck or Rolling Rock attack.

Damage: N/A

Knockback: N/A

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**Braced Claw Counter** – Kobold braces with his tail to counter a Rolling Rock attack with his clawed foot.

Damage: 10 (x0.75 Level 1 Handicap)

Knockback: 50

# 12 NPC Characters

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**The Alchemist**

Guides the player through the Tutorial level.



**Imprisoned Heroes**

Of various race and profession, imprisoned in plain clothes into magic cages. The hero’s equipment is restored when freed from the cage.



# 13 Level Design

## 13.1 Quest Items

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**Treasure Chest** – Break the lock with a Nunchuck Attack to reveal and retrieve the

treasure. Reward is 500 points x Level #.

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**Magic Lock** – Break the crystal ball with a Nunchuck Attack to free an imprisoned hero. Reward is 1000 points x Level #.

## 13.2 Traps

**Spike Trap** – Multiple spikes protrude from trap, triggered by a pressure plate or timer.

Damage: 10 per spike Knockback: N/A

**Spear Trap** – Multiple spears shoot from trap, triggered by a pressure plate or timer.

Damage: 7 per spear Knockback: 10 per spear

## 13.3 Totems

Icon

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Description automatically generated**Monastic Totem** – Illuminates when reached by the player. Provides a reincarnation spawn point if the player dies and has remaining lives. Heals player on first activation.

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**Logo

Description automatically generatedHeroes Totem** – Illuminates when a hero is freed from prison. Restores the hero’s equipment and provides an exit point for the hero.

A close up of a logo

Description automatically generated**A picture containing object, clock

Description automatically generatedLord Protisk Totem** – Spawn point or teleportation target for Kobolds. Illuminates when active. Only one Kobold is spawned at a time. When a Kobold is killed, the totems are not illuminated for 10 seconds while the spawn points are disabled.

# 14 Media

## 14.1 Prose

|  |  |
| --- | --- |
| End Victory | You have survived your great adventure! The hills and forests sing with the news of your heroic accomplishments, and the hearts of the oppressed stir with the valiant seeds of resistance… or perhaps revolution! |
| End Death | You have died one too many times, and your Monestary couldn't resurrect you. Surely you will be remembered for your heroic deeds, and as an inspiration for the impending resistance! Too bad you didn't live to see it... |
| New High Score | You have achieved a new high score of Y! Your last highest score was X. Great job! (Can you do better?) |
| Prior High Score | You have achieved a score of Y with this adventure, but your highest score was X… keep trying! |
| No Prior High Score | You have achieved a total score of Y! This has been recorded as your highest score. Can you do better? |
| No Points Scored | You did not score any points! Try playing the Tutorial, and remember to score points by slaying enemies, freeing prisoners, or breaking open chests. |
| Tutorial 1 | Welcome to Grooby’s Quest! I am the Alchemist and I’ll be your guide through this tutorial. Control Grooby using the keyboard keys ‘W’, ‘A’, ‘S’, and ‘D’ to move Up, Left, Down, and Right respectively. Now hold ‘D’ to run up into that building to the right. |
| Tutorial 2 | Grooby loves to run – great work! With your feet touching the ground you can press Up (‘W’) to jump. When holding a ladder, you can climb upward or move Down (‘S’) to climb downward. Or if the ladder is beneath you, press down to climb down it. Now jump to reach that ladder, and see if Grooby can climb his way to the top! |
| Tutorial 3 | Grooby has fun climbing, and it’s great exercise. But sometimes Grooby needs to fight. Tell Grooby to attack by pressing the ‘E’ key. Press this now to have Grooby swing his favorite pair of Nunchucks, then run left down the hallway and climb the next ladder. |
| Tutorial 4 | Grooby has many talents. While jumping or falling through the air, use the movement keys to nudge Grooby in any direction. Grooby always lands on his feet, but can still be hurt if he falls too far. Now run or jump off the ledge to the right and try to maneuver his fall. |
| Tutorial 5 | You landed that like a pro! Now let’s try Grooby’s favorite attack. Jump into the air while standing, walking, or running, then press Attack (‘E’) to send Grooby into a flying kick! Now use the flying kick to jump over the boulder to the right. |
| Tutorial 6 | You’re getting fairly dangerous, but a few more moves will help. To perform a somersault attack, press the ‘F’ key or double tap the movement key in the direction you are facing. Grooby calls this “the Rolling Rock”. Now use this move to slip under the boulder to the right. |
| Tutorial 7 | Good job! Remember this move to keep your enemies off their feet. Another ladder to climb? No, this is a net. Nets are like ladders but with room to climb from left to right. Are you still wondering what to do? Jump up and climb that net! Then head over to the bridge on the right. |
| Tutorial 8 | We’re almost done, but let’s learn some defense. To evade damage press down to duck, or move opposite your facing to back away. Hold the movement key to start running in that direction, or press the ‘R’ key to quickly change your facing. Here’s plenty of space to practice. Head to the right across the bridge when you’re finished. |
| Tutorial 9 | What’s in that chest? Too bad it’s locked. See if you can break it open with those nunchucks! |
| Tutorial 10 | Nice! This will help to fund the resistance, with some set aside for a refreshing beverage at the Tavern. There’s more to learn, keep travelling to the right! |
| Tutorial 11 | What’s the deal with the funny symbol? This is the totem of your monastic Order. If you die on your adventure, your Order will reincarnate you to the furthest totem you’ve reached bearing this symbol. Other totem symbols will summon enemies, or provide quick escape for heroes freed from prison. |
| Tutorial 12 | This is embarrassing but I need your help, please climb up the ladder and you’ll find me to the left… |
| Tutorial 13 | I managed to get myself locked in this blasted cage! I was going to show you how they worked, but I suppose this will do well enough. Just break that glowing orb with your nunchucks (you remember how right?). This will break the binding spell that keeps me in this prison. The nearby Totem of Heroes will do the rest! |
| Tutorial 14 | Thank you so much! That was quite a bind I found myself in! Head right to the next downward ladder, climb down to the lower level, and keep travelling right to exit this shrine. Thanks again! |
| Tutorial 15 | You’ve reached the end of this Tutorial! I’ve shown you the basics, but the strongholds of King Tombuk will be more dangerous. Watch out for fearsome monsters and deadly traps! Remember what I’ve taught you. Now head right or press ‘Esc’ to exit this level, and go play the game! (I mean ‘spark the resistance’… what game?) |

## 14.2 Sprite Sheets

All graphics for this game are original artworks. The following sprite sheets are utilized:

|  |  |
| --- | --- |
| grooby.png | Animations for Grooby player character |
| kobold.png | Animations for Kobold enemy character |
| prisoners.png | Still sprites for plain clothes prisoners and freed, equipped heroes |
| treasure.png | Treasure chest animations |
| magic\_lock.png | Magic lock animations for prisons |
| objects\_large.png | Totem symbols and boulders |
| objects\_small.png | Spikes and spears for traps |
| structure\_L1.png | Structural tiles for Level 1 and Tutorial |
| structure\_L2.png | Structural tiles for Level 2 |
| tiles\_accessory.png | Accessory and decoration tiles for all levels |

## 14.3 Art Assets

All graphics for this game will be original artworks. The following art assets are utilized:

|  |  |
| --- | --- |
| background\_Credits.png | “A Clearing in the Deep Forest” for Credits scene |
| background\_GameOver.png | “The Parchment of the Forest People” for Game Over scene |
| background\_MainMenu.png | “The Gnome and the Dragon” for Main Menu scene |
| splashScreen.png | Title image for splash screen |
| button\_Credits.png | Credits button |
| button\_MainMenu.png | Main Menu button |
| button\_PlayGame.png | Play Game button |
| button\_QuitGame.png | Quit Game button |
| button\_Tutorial.png | Tutorial button |
| mainTitle.png | “Grooby’s Quest” title graphic |
| textDeath.png | “You Have Died…” title graphic |
| textVictory.png | “You Are Victorious!” title graphic |

## 14.4 Sound Effects

|  |  |
| --- | --- |
| Activate Checkpoint.wav | Played when Monastic Totem is activated |
| Score Points.wav | Played when points are scored |
| Spawn Kobold.wav | Played when a Kobold is spawned from a Lord Protisk totem |
| Spawn Player.wav | Played when the player is respawned |
| Spear Shoot.wav | Played when a spear trap shoots spears |
| Spike Trap.wav | Played when a spike trap deploys spikes |
| Tutorial Progress2.wav | Played when a new tutorial instruction is displayed |
| Kobold Block 1.wav | Played on Kobold Block action |
| Kobold Counter.wav | Played on Kobold Counter Attack action |
| Kobold Death.wav | Played on Kobold death |
| Kobold Hit.wav | Played when Kobold is hit by an attack |
| Kobold Hop.wav | Played when the Kobold hops |
| Kobold Kick.wav | Played on Kobold high jump / kick |
| Kobold Swing.wav | Played when Kobold swings club |
| Kobold Taunt.wav | Played while Kobold is taunting the player |
| Player Block.wav | Played when Player or Kobold blocks an attack |
| Player Climb.wav | Played while Player is climbing |
| Player Death.wav | Played when Player is killed |
| Player Duck.wav | Played when Player ducks |
| Player Fall.wav | Played while Player is falling |
| Player Fly.wav | Played while Player is slowing fall |
| Player Hit.wav | Played when Player is hit by an attack |
| Player Idle 1.wav | Played while the Player is idle |
| Player Jump.wav | Played when the Player jumps |
| Player Kick.wav | Played when the Player performs a flying kick |
| Player Run.wav | Played while the Player is running |
| Player Swing2.wav | Played when the Player swings his Nunchucks |
| Player Walk.wav | Played while the Player is walking |
| Rolling Rock.wav | Played when the Player performs the Rolling Rock attack |

## 14.4 Music Tracks

|  |  |
| --- | --- |
| les\_gnomes | Theme song played in Main Menu |
| sail\_away\_lady | Played in Game Over screen after surviving all three levels |
| six\_cold\_feet\_in\_the\_ground | Played in Game Over screen after death with no spare lives |
| evil\_minded\_blues | Played during Credits |

# 15 Design Goals

## 15.1 Structured Conflict

**Trap Rooms** – Trap rooms contain treasure or restrict access to the next area. A system of interacting traps is designed as a puzzle with at least one possible solution to navigate through the traps without taking damage. However careful timing and precise execution is still required to evade damage or death. This provides the initial challenge of solving for that optimal path, with the repeated challenge with each playthrough to execute the solution with minimal or no damage.

**Melee Combat** – Melee combat against the enemy Kobolds rewards good timing and tactics in engaging the Kobold. However the Kobold’s behavior is not predictable and even a well timed move can be countered by lucky timing or an unexpected response by the Kobold. This provides a challenging and unpredictable experience with each fight, and always with some risk of damage or death when engaging an enemy. Some combat rooms contain traps which can be triggered by either the Player or the Kobold, and can either turn the tide of battle against the player or be used to the player’s advantage.

## 15.2 Interesting Decision

**Risky Side Quests** – The most direct path through the levels will bypass most of the treasure chests and the player will not encounter any imprisoned heros. With each level the player can determine the amount of risk of damage or death in exploring the level, to score as many points as possible before moving to the next level. Completing the first level heals the player, awards a bonus life, and awards a 1500 point bonus; and the second level awards a 4000 point bonus along with a more satisying “You Are Victorious!” result screen and music (as opposed to the less desireable “You Have Died!” scenario). So the player must weigh the reward of going for an extra treasure chest or freed prisoner with the risk of not finishing a level and missing out on that bonus.

**Checkpoint Healing** – Checkpoints will heal the player, but only the first time they are activated. This creates an interesting decision for the player when they arrive at a checkpoint and aren’t low on hit points. Activating the checkpoint will waste an opportunity to be healed by the same checkpoint later. Bypassing the checkpoint could provide a much needed healing later in the game, assuming the player can survive to reach the checkpoint, and that this benefit offsets any damage taken while backtracking. Further, if the player dies with the checkpoint inactive, they will respawn in a potentially less favorable position in the level.

# 16 Minimum Viable Product

* Main Menu and Credits
* Tutorial displays instructive text but is not playable
* Single playable level with Treasure Chests and Spike Traps
* Game Over screen with Score and High Score

# 17 Wishlist

* Other weapons can be found or purchased, then equipped
* Greater variety of enemies
* Improved enemy AI and player tracking
* Larger levels with greater variety of traps and events
* More levels with greater variety of tiles and backgrounds
* Original musical score
* Custom shaders for lighting and other effects

# 18 Bibliography

Alaclair Ensemble. (2014, July 1). Les Gnomes [MP3 Music]. Retrieved from

https://freemusicarchive.org/music/Alaclair\_Ensemble/Toute\_Est\_Impossible/Alaclair\_Ensemble\_-\_TOUTE\_EST\_IMPOSSIBLE\_-\_07\_LES\_GNOMES

Blackford, Daniel. (2020, October). A Clearing in the Deep Forest [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Backgrounds/background\_Credits.png

Blackford, Daniel. (2020, November). C# Scripts – Camera and HUD [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Camera

Blackford, Daniel. (2020, November). C# Scripts – General Purpose [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/General

Blackford, Daniel. (2020, November). C# Scripts – Kobold Behaviors [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Kobold

Blackford, Daniel. (2020, November). C# Scripts – Level Object Behaviors [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Objects

Blackford, Daniel. (2020, November). C# Scripts – Player Behaviors [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Player

Blackford, Daniel. (2020, November). C# Scripts – Top Level Managers [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Managers

Blackford, Daniel. (2020, November). C# Scripts – Trap Behaviors [C# Code Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Scripts/Traps

Blackford, Daniel. (2020, October). Grooby’s Quest UI Buttons [PNG Image Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Images/Buttons

Blackford, Daniel. (2020, November). Grooby’s Quest UI Titles [PNG Image Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Images/Titles

Blackford, Daniel. (2020, November). Sound Effects – General [WAV Audio Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Sounds/Clips/General

Blackford, Daniel. (2020, November). Sound Effects – Kobold Enemy [WAV Audio Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Sounds/Clips/Kobold

Blackford, Daniel. (2020, November). Sound Effects – Player Character [WAV Audio Folder]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/tree/master/Assets/Sounds/Clips/Player

Blackford, Daniel. (2020, November). Splash Screen for Grooby’s Quest [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Backgrounds/splashScreen.png

Blackford, Daniel. (2020, November). Sprite Sheet - Accessory Tiles [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Tiles/tiles\_accessory.png

Blackford, Daniel. (2020, October). Sprite Sheet - Grooby Player Character [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/grooby.png

Blackford, Daniel. (2020, October). Sprite Sheet - Hero Prisoner Figurines [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/prisoners.png

Blackford, Daniel. (2020, October). Sprite Sheet - Kobold Enemy Character [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/kobold.png

Blackford, Daniel. (2020, October). Sprite Sheet - Large Objects [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/objects\_large.png

Blackford, Daniel. (2020, October). Sprite Sheet - Level 1 Tiles [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Tiles/structure\_L1.png

Blackford, Daniel. (2020, November). Sprite Sheet – Level 2 [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Tiles/structure\_L2.png

Blackford, Daniel. (2020, October). Sprite Sheet - Magic Lock Object [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/magic\_lock.png

Blackford, Daniel. (2020, November). Sprite Sheet - Small Objects [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/objects\_small.png

Blackford, Daniel. (2020, October). Sprite Sheet - Treasure Chest Object [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Sprites/treasure.png

Blackford, Daniel. (2020, October). The Gnome and the Dragon [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Backgrounds/background\_MainMenu.png

Blackford, Daniel. (2020, October). The Parchment of the Forest People [PNG Image]. Retrieved from https://rijeka.sdsu.edu/dblackford/cs583f2020\_blackford\_daniel\_project\_2b/-/blob/master/Assets/Images/Backgrounds/background\_GameOver.png

Carr, Leroy. (1935, Feb 25). Six Cold Feet In The Ground [MP3 Music]. Retrieved from http://www.openmusicarchive.org/audio/Six\_Cold\_Feet\_In\_The\_Ground.mp3

ChristTrekker. (2015, Jun 20). Abibas Medium [OTF Font]. Retrieved from https://fontlibrary.org/en/font/abibas

Liston, Virginia. (1926, May 29). Evil Minded Blues [MP3 Music]. Retrieved from http://www.openmusicarchive.org/audio/Evil\_Minded\_Blues.mp3

Stephens, “Uncle Bunt”. (1926, Mar 29). Sail Away Lady [MP3 Music]. Retrieved from http://www.openmusicarchive.org/audio/Sail%20Away%20Lady%20by%20Uncle%20Bunt%20Stephens.mp3

# 17 Profiler

Graphical user interface

Description automatically generated

A busy scene for running the profiler.

# Chart, histogram Description automatically generated

Top half of profiler. Highest CPU usage is for Vsync so plenty of idle time between frames.

# Graphical user interface Description automatically generated

Bottom half of profiler.

# 18 Script Analysis

See external spreadsheet “CS583F2020\_2DGDD\_Blackford\_Daniel\_Script\_Analysis.xlsx”.