Game Design Document Template

Course: GAME 360 - Development with Game Engines

Semester: Fall 2025

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New games = just gdd | Existing game = gdd and build (existing)

1. GAME OVERVIEW

Game Title

Buggle Quest

Genre

Top-down shooter

Target Audience

Casual players who enjoy short little shooter games. Young to young adults.

Estimated Playtime

5-10 minutes (single complete playthrough)

Elevator Pitch

Establish your role as the village's hero. Use your slingshot and your endless supply of pebbles and stop the parasitic wasps from attacking your home! Collect shiny bottlecaps and defeat the wasps once and for all!

Core Gameplay Loop

Player interacts with the NPCs in the village. Player learns the ability to shoot. Player runs around enemy ridden area and shoots enemies with slingshot and pebbles. Collect bottlecaps and kill wasps to gain more points. Gain more points to gain another direction of shooting. Keep gaining points to get to 10,000 and win.

Unique Selling Points

- Hand-drawn art style for characters, and environmental elements.
- Quirky bug NPCs
- One shooter level!

2. GAMEPLAY DESIGN

Core Mechanics

Primary Mechanic 1: Slingshot

- *Description:* Press the F key and start firing ammo!
- *Purpose:* This is the most important mechanic in the game because it helps with progression. It kills enemies and helps score you points.

Primary Mechanic 2: Bottlecap Collection

- *Description:* Gold, shiny, collectible soda bottlecaps spawn around the game area as the player shoots wasps. These bottlecaps are worth
- *Purpose:* Collecting bottlecaps helps earn the player more points throughout the level in order to help bring their score up.

Primary Mechanic 3: Sociability

- *Description:* While not required, the player can interact with NPCs and other interactable things in the village area.
- *Purpose:* It was believed to bring a bit more life into the game besides just spawning the player right into the main part of the game.

Player Controls

- **Movement:** WASD / Arrow Keys - Move character in 4 directions
- **Shoot:** F – Fire weapon
- **Primary Action:** Left Click / E - Interact
- **Pause:** ESC - Pause game

Win Condition

The player wins by defeating wasps and collecting bottlecaps to get points. The player must get to 10,005 points in order to win!

Lose Condition

The player loses if their health reaches zero by getting in contact with the wasp enemies. The player is then given the option to replay the level, go to the main menu, or quit the game.

Progression & Difficulty

• **Early Game:** The player is first dropped into the main character's home village, where by interacting with an NPC reveals how to shoot. By approaching the sign on the furthest side of the village, the player is dropped into the plains, where the wasp shooting and collectathon begins.

• **Mid Game:** As the player gains more points through the level, they're given extra firing points while the enemy spawn rate gets more frequent.

• **Late Game:** The player has earned all four firing points and is closer to the goal, though the spawn rate for the enemies gets faster, adding a bit of challenge.

3. TECHNICAL PLAN (1 page)

Pattern Integration & Expansion

Singleton Pattern Usage:

GameManager:

- **Current (Task 3):** Manages UI and game stats, allows for restart/refresh of UI assets when needed, Triggers collectible pickup, Triggers restart, and Generates collectibles in game area.

AudioManager:

- **Current (Task 3):** Plays sound effect,

Observer Pattern Events:

Current Events (Task 3):

- *OnScoreChanged:* Updates the score from defeating enemies and collecting collectibles.
- *OnLivesChanged:* Updates when player takes damage from an enemy.
- *OnGameOver:* Triggers game over panel if the player dies before reaching the goal score.
- *OnLevelComplete:* Triggers victory panel if the player reaches the goal score.
- *OnEnemiesKilled:* Updates the amount of enemies the player defeats.

State Machine Implementation:

Player State Machine:

- **Current States (Task 3):** Idle, Moving

Enemy State Machine:

- **Current States (Task 3):** Die

Features to Add (Weeks 11-16)

Week 11: Non-Playable Character Setup

- Prepare scripts for NPC interaction

- Setup locations for NPCs

- Plan dialogue/flavor text

Week 12: Working With NPCs

- Polishing code for NPC interactions

- Creating NPC assets

- Setting up NPC animators

- Getting sound effects for interactions

Week 13: Fixing Bugs, Adjusting Volume, and New assets

- Fixing player spawn in walkable level

- (If Time Permits) Add new enemy type

- (If Time Permits) Add menu option for pause

- (If Time Permits) Add secret level

Week 14: Polishing
- Bug fixes

- Playtesting

Week 15: Final Polish, Documentation, and Beginning Presentation Preparation
- More bug fixes and optimization
- Complete technical documentation
- Start presentation materials

Week 16: Presentation Preparation
- Complete presentation materials
- Practice demo and Q&A

4. SCOPE & TIMELINE

Core Features (Must Have)

- *Feature 1:* Player movement and basic controls
- *Feature 2:* Enemy with patrol/chase
- *Feature 3:* Win/lose conditions
- *Feature 4:* UI (health, score)
- *Feature 5:* Collectible pickup
- *Feature 6:* Audio system (music + SFX)

Stretch Goals (If Time Permits)

- *Goal 1:* More NPC interaction
- *Goal 2:* Multiple enemy types with different behaviors
- *Goal 3:* Secret level(?)

Will NOT Include

- *Multiple shooter levels -* focusing on one complete, polished level
- *Cutscenes or narrative sequences -* would require additional art/animation
- *Inventory system -* adds complexity beyond scope
- *Power-ups –* requires more animation, art, and extra coding

5. ARTISTIC STYLE AND DESIGN CHOICES

Visual Style & Inspiration

Art Direction:

       A hand-drawn, simple art style with warm colors for characters to make them stand out from their environment. Rounded shapes and cute design elements to make it more family friendly. All bugs drawn in a somewhat anthropomorphic style to suit the game. Style is of the artist's personal art style.
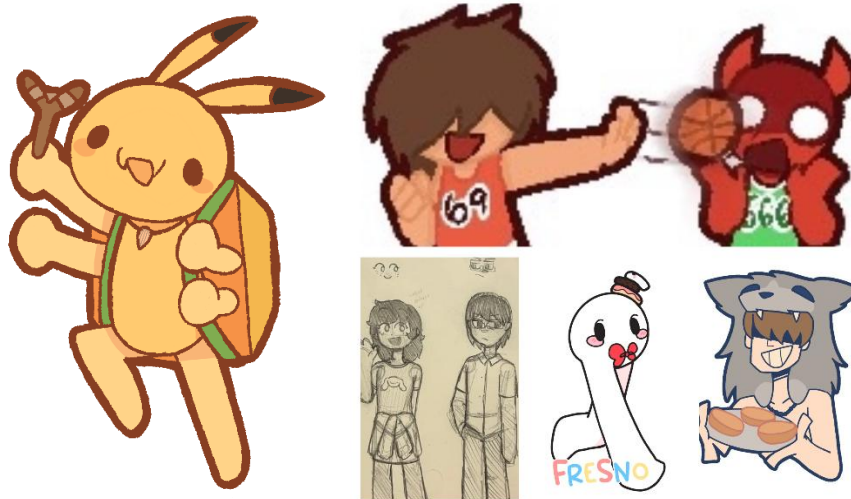
Inspiration Examples:

- **_Thoughts:_** The idea of little bugs going on adventures.
- **_Top-down RPGs_**

Color Palette:

- **_Game Assets:_**
    - **_Grass:_** #a5ca4f, #6c8b19
    - **_UI:_** #5b3138, #8e5252, #b06a63, #ba756a
    - **_Houses:_** #a5ca4f, #6c8b19, #804d39, #915d48, #5e3b2d, #6a4537, #ffc951, #ffb1b4, #ff9a9d,
    - **_Ammo:_** #7f746c, # a0958d, #a79d95, #b2a8a2, #b7ada5, #ffffff
    - **_Signs:_** #d5977f, #be8169, #b1725a, #ff4518, #a5ca4f, #6c8b19, #885840, #311f17
    - **_Collectibles:_** #ffc662, #ffc051, #fcb435, #ff521f, #ffcfc3, #8e4e22
    - **_Enemy death effect:_** #ffffff
- **_Characters:_**
    - **_Rubi (Ruby Tortoise Beetle):_** #ffd388, #f9b576, #ffca70, #faab61, #f4b74e, #f69247, #3e3128, #ffc090, #c29877, #c29877, #a46f47, #905f3a, #9ab963, #83af54, #74a143
    - **_Wasps (Parasitic Wasp):_** #bb4e39, #4e2f25, #e8c894, #72625f, #756865, #ffe980, #fff1cd, #825f53

- o ***Velvet (Velvet Worm):*** #a45842, #ffc2ae, #fcab93, #f49579, #f28768, #ee7855, #fce1d8, #e3b9ad
- o ***Ollie (Roly Poly):*** #956355, #7d493b, #e5b395, #d69681, #5e2727
- o ***Gideon (Brown Rhinoceros Beetle):*** #a03325, #8b291d, #4c2c28, #371d1a, #ffffff, #000000
- o ***Bungle (???):*** #ffffff, #191919, #000000, #2d2a2a, #ffe5b1
- o ***Snail (Marcel):*** #e07b50, #7f2d0a, #b4452a, #e36445, #9f280f
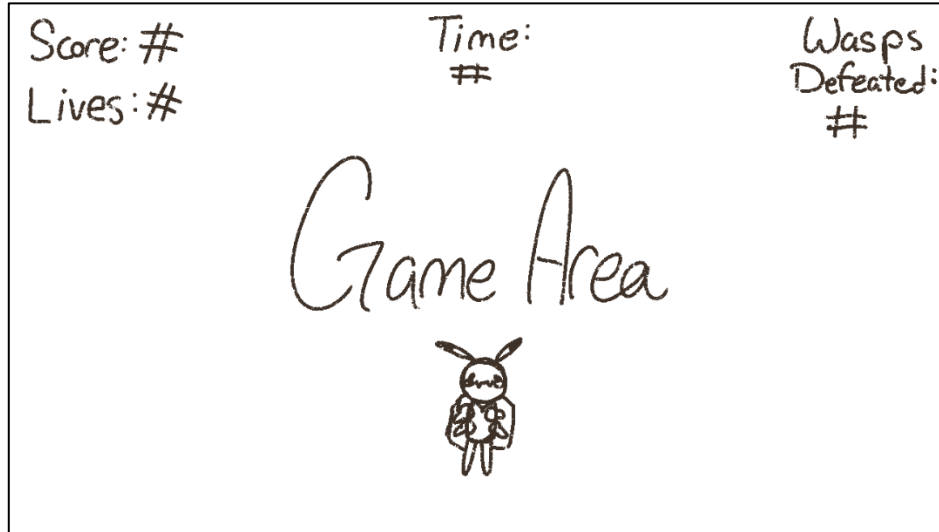- • ***Purpose:*** Soft, bold, and warm colors for visibility

Asset Sources:
- • ***Grass texture:*** found on shutterstock
- • ***Qaaxee font:*** found on fontspace
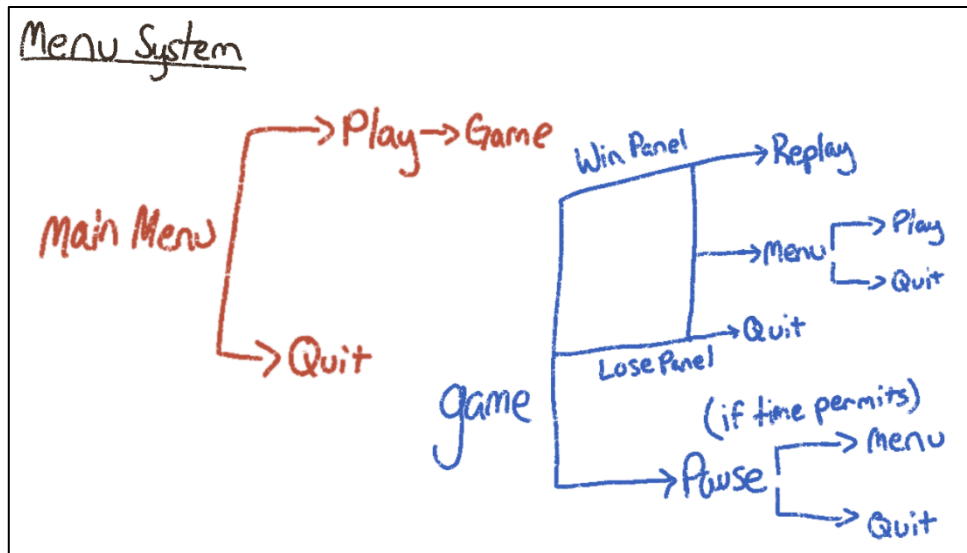
User Interface (UI) Design

UI Elements Needed:
- • ***Main Menu:*** Title, Play Button and Quit Button
- • ***HUD (In-Game):*** Life counter (top-left), Score (top-left), Timer (top-center), Enemy counter (top right)
- • ***Game Over Screen:*** "The wasps win :(", Retry button, Main Menu button, Quit Button
- • ***Victory Screen:*** "You beat the wasps!", Replay button, Menu button, Quit button
- • ***[If time permits] Pause:*** Main Menu button and Quit button

UI Mockup/Layout:

Menu Systems (Map Out)

Menu System

Main Menu → Play → Game
Main Menu → Quit

game → Win Panel → Replay
Win Panel → Menu → Play
Menu → Quit
Lose Panel → Quit
(if time permits) Pause → menu
Pause → Quit

Sound Design

Music:

- ***Main Menu Theme:*** Hateno Village (The Legend of Zelda: Breath of the Wild)
- ***Shooter-Level Music:*** Island Tour Day (Animal Crossing: New Leaf)
- ***Victory Music:*** Wrong Victory sound (Undertale)
- ***Lose Music:*** Clown song (Deltarune Chapter 3)
- ***Village Music:*** Sally's Theme (Dinkum)
- ***Cave(?) Music:*** Jamiroquai - Virtual Insanity (Sega Genesis Remix on YouTube)

Sound Effects Priority:

- ***High Priority:*** Shooting sound
- ***Medium Priority:*** Talking sound effects, Collectible pickup sound
- ***Low Priority:*** Music

List specific sound sources:

- ***The Sound Resource:*** https://sounds.spriters-resource.com/3ds/streetpassmiiplaza/asset/476043/, https://sounds.spriters-resource.com/pc_computer/undertale/asset/399803/
- ***YouTube:*** https://www.youtube.com/watch?v=7ONd4x_62ns
- ***Khinsider:*** https://downloads.khinsider.com/game-soundtracks/album/dinkum-original-game-soundtrack-2022/32.%2520Sally%2527s%2520Theme.mp3, https://downloads.khinsider.com/game-soundtracks/album/animal-crossing-new-leaf-welcome-aamiibo-soundtrack/1-157%2520Island%2520Tour%2520%25E2%2580%2593%2520Day.mp3, https://downloads.khinsider.com/game-soundtracks/album/the-legend-of-zelda-breath-of-the-wild/3-01.%2520Hateno%2520Village.mp3
- ***Animalese (voices):*** https://acedio.github.io/animalese.js/

Icon Design

Icon Option:

- ***Description:*** Rubi's (the main character) face at a diagonal, squished into the icon.
- ***Colors:*** #ffca70, #faab61, #3e3128, #3e3128
- ***Rationale:*** It represents my game because it is the main character of my game. Anyone who plays the game would be able to recognize the icon and it has a different shape compared to most game icons that are just squares.

Accessibility Considerations

- Readable text size (minimum 16pt for UI)
- Clear audio cues (don't rely solely on visuals)
- Adjustable volume controls

APPENDIX & RESOURCES

References & Inspiration

- **_Thoughts:_** The idea of little bugs going on adventures.
- **_Top-down RPGs_**
- **Tutorial/Resource:**

  - : **_UNITY 2D NPC DIALOGUE SYSTEM TUTORIAL_** _(yt: diving_squid)_ – This tutorial helped with the understanding of how to create NPC and flavor text interactions in the village section of the game.
  - **_: Player Tracking and Camera Bounds – Top Down Unity 2d #4_** _(yt: Game Code Library)_ – This tutorial helped explain how to set up camera boundaries so the camera would not let the player view beyond the edges of the game area.
  - **_: Changing Scenes In Unity | Action RPG in Unity | Part ½_** _(yt: Night Run Studio)_ – The video helped with the understanding of how to switch between scenes without using buttons.
  - **_: Enemy and Player Death | Unity Platformer Series_** _(yt: The Hello World Guy)_ – This video helped explain how to fix the enemy deaths and apply death animations to pair with the state machines.

GDD Examples & Templates Used

Professional GDD examples reviewed:

- **_Unity GDD Template:_** Unity Connect Documentation

Version History

- Version 1.0 | November 7, 2025 | Initial GDD submission for Project Setup
- Version 1.1 | [Date] | [Updates after playtesting feedback]
- Version 2.0 | [Date] | [Major feature additions or scope changes]

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Total Page Count: ~5 pages of core content