

Vanier College – Fall 2022

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Game Programming 2

Game Design Document

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1. *Game Name*

Destroy Daddy

2. *Game Overview*

2.1. *Game Concept*

“Destroy Daddy” is a space battle and exploration game. The game revolves around the main player, who is half-human and half-alien and who is seeking revenge for his mother’s death. Throughout the game the player travels through space, defeats alien enemies, unlocks abilities, etc.

2.2. *Genre*

RPG, Shooters (TPS), Action-Adventure, Sandbox, Open-world exploration

2.3. *Target Audience*

Fans of space exploration, shooting action, and puzzle games. AKA Space lovers

2.4. *Game Flow Summary*

The player starts the game on Earth and moves to other planets as they want (taking into consideration some aspects of the game, like fuel for the spaceship, distance, difficulty level). On Earth, the player can go between two main screens. The shop, which will allow them to purchase items, and upgrades. The spaceship, which will allow them to modify their spaceship, like the model, and to add/remove upgrades, as well as to refuel. Then, there will be another 4-6 planets from which the player can travel to and from, collecting items, currency and defeating enemies while unlocking abilities. There will also be the Moon which is another place the player can go to refuel his spaceship. As a final boss, there will be the purple planet, which will be the player’s final destination where he will finally get to fulfill his objective and get revenge for his mother’s death.

2.5. *Look and Feel*

The basic look and feel of the game would be that of a colorful cartoon since the visual style would be based on the game Astroneer. It would be vibrant because of the use of bright colours. The series of colors aim to make the game look inviting while the player explores the space.

3. *Gameplay and Mechanics*

3.1. *Gameplay*

3.1.1. *Game Progression*

The player starts on Earth and from there, they are able to choose where they go next while taking into consideration how much fuel they have and the difficulty of the planet they want to go to. There will be 4-6 planets they can choose from, all located at different places with different difficulty levels. As this is also an

exploration game, the player will pilot their own spaceship with the help of a map to guide them. As they move along the different planets, they will defeat different enemies and unlock abilities. As they unlock abilities, they are able to take on harder difficulties and gather what's needed for the "final boss" which is a planet that is only unlocked once the player defeats all the enemies from the other planets. Every defeated enemy provides the player with currency which is what the player will use to upgrade abilities, buy new tools and weapons, refuel their spaceship and buy a new one or upgrade their current one.

3.1.2. Mission/Challenge Structure

This game consists mainly of small missions and challenges that are composed of alien enemies and obstacles on each planet. The player will unlock the final mission (defeat the final boss) once all the other ones have been successfully completed. There will also be puzzles to be solved in each planet to get a piece of the utility needed to unlock the final boss (the king).

3.1.3. Puzzle Structure

The puzzles will vary from planet to planet, for example, on one planet, a user might need to collect clues to get the order of which to shoot targets, while on another planet there could be a maze, and on another, they need to collect something to unlock a mini boss.

3.1.4. Objectives – What are the objectives of the game?

The main objective of the game is to avenge the player's mother by defeating the final boss (the king).

There are also sub-categories that were previously mentioned, such as the puzzles in each planet and its alien enemies.

Another objective for the player is to become as strong as possible, by unlocking all upgrades, abilities, tools, and spaceships.

3.1.5. Play Flow – How does the game flow for the game player

This game has an open-world concept and so the player can navigate through the game and fulfil the objectives as they wish. That being said, some of the objectives will be locked behind progression, for example further planets will require fuel capacity upgrades.

3.2. Mechanics – rules to the game and interactions between elements

3.2.1. Physics – How does the physical universe work?

Gravity is dependent on the planet the user is interacting with. There will be different gravities on different planets, with no gravity in space. This will change how the physics are applied to the player in these environments. Lower gravity will

make projectiles go further, and the player and enemies will jump higher. The opposite can be said for higher gravity. The only time the player would be in no gravity, would be in the ship flying between planets.

3.2.2. Movement in the game

The player will be controlling a small astronaut who walks around. They will be able to completely control the direction the astronaut is moving and facing, and the astronaut will always face away from the camera. The astronaut can also jump. The only other form of movement will be controlling the ship, which will work in response to the direction the camera is facing.

3.2.3. Objects – how to pick them up and move them

The player can pick up objects using the E key and it will be attached to the player until they press E again to drop them. A user can only hold 1 object at a time (Weapons and tools are not considered objects).

3.2.4. Actions

To move around, the player can use WASD, and space to jump. F will be to pick up items, and interact with objects. Left Click is used to shoot and the camera can be moved with the mouse. The spaceship will also be controlled with WASD, and will tilt in the direction of the key relative to the camera. In the spaceship, space will be used to start/stop thrust.

3.2.5. Combat

The player will have a variety of weapons that can be used to fight off the enemy hordes. The enemies will spawn in waves from a few set points on the planet, and they will wander the planet until within a certain range of the player, then they will chase the player and depending on their attack method, they will attack the player. Every enemy will have a set amount of damage that can be taken, but this will not be available for the player to see, to leave new difficulties completely unknown. If the player approaches a spawn point for the enemies, that specific point will not spawn anything, to keep the player from farming the spawn point.

3.2.6. Economy

As the player defeats enemies, they will rack up experience to unlock upgrades. Experience will be far more abundant than currency. This means that the player will need to make choices as to how to spend their money on which specific upgrades. These upgrades will be available in the shop on the home world.

3.2.7. Screen Flow

Our screens will be broken down into the following:

- Main Menu
 - Spacey background with options the player can select to do things like read controls, save/load games, and start
- Sub-Menus

- Will open when any of the above functions are opened.
- Home Planet1 (Earth) with Shop
The original spawn. It contains the shop, and aesthetically will resemble earth in many ways (Water, Grass, Clouds).
- Home Planet 2 (Moon) - Allows the player to refuel
- Space
 - Alien Planet

3.3. *Game Options*

The game is relatively fixed in that there aren't many options, however the player will have 100% freedom in our open world to explore and try whatever they like. Gameplay and mechanics will be affected mainly by upgrades and abilities, but if the player wants to try to fly into the sun, they can do that too.

3.4. *Replaying and Saving*

There will be an implemented autosave feature, where every time the player lands the ship on one of the home worlds, it will save the game. There will also be the option to manually save, that will only be available while the player is on any planet. The most recent save will be the one that the player will load into from the main menu, whether it be an autosave or a manual save. The menu will also have an option for the player to restart the game from 0% progress, however this will delete all existing saves.

3.5. *Cheats and Easter Eggs*

The game will not contain any cheats, however there will be a series of easter eggs throughout the in-game universe. One example of an easter egg, is on the boss planet after defeating the boss, if the player revisits the empty planet, on the far side there will be a small house, and in the house will be a table with a picture of the whole dev team. Another in-game secret that may be there is a planet very far away in the complete opposite direction from the main cluster that can only be accessed with a fully upgraded ship. This planet will contain a secret weapon/ability that is very powerful, although nothing in the game until post-final boss will hint at its existence, and it is up to the player to discover it.

4. *Story, Setting and Character*

4.1. *Story and Narrative*

The story of the game revolves around the main character, who is half-human and half-alien and was raised by his mother on Earth. However, she was killed by his father, the king of the aliens. The harbored resentment the protagonist has for his father gradually increases until one day, he decides to hunt him down and get revenge for his mother. To do so, he must travel to different planets and speak to different "alien" tribes to get information about his father's whereabouts, although not all of them are willing to share such information without a fight. To do so, he must also solve different puzzles which will provide him with different pieces of the utility he will need to confront his father.

There will be an opening cutscene to tell the backstory of the protagonist, and a short cutscene when the player arrives on any planet. There will be one final cutscene when the player encounters the final boss.

4.2. *Game World*

4.2.1. *General look and feel of the world*

The game takes place in one universe with multiple planets. Each planet has its level of difficulty, different obstacles and overall a different theme to it. However, all planets will follow a general theme: cartoon and bright colours. The flow of the game ultimately depends on the choices that the player will make. Ex: if the player wants to risk going to a further planet to win more experience, that's up to them as long as they have enough fuel. The universe is made to be explored by the player.

4.2.2. *Areas*

There will be about 4-6 planets/areas (such can be considered levels) in the universe not including Earth and Moon. The earth and moon planet will be the home worlds where the player will be able to recharge and upgrade their tools. Each planet will have a different theme, gravity and types of enemies. Overall, each planet will have a different look. The most difficult planet will be the purple planet which is the planet to destroy the daddy (the end goal of the game).

4.3. *Characters*

Bloop is the character that the user plays. His dad is the king of aliens while his mom is a regular human. This makes him half-human and half-alien. He's always been a bit of an outsider. Never fully accepted by the aliens despite who his father is, nor by the humans. What makes him even more of an outsider is the story of his parents. His mom was killed by his dad who is the king of aliens. Growing up without a mother because of his father made him build up resentment towards his father over the years. He also used this time to train so one day, he will be able to fight his father. He is finally ready to get the justice his mother deserves.

Bloop's father, who doesn't deserve to be named, is the ultimate enemy. He is the most powerful alien amongst all aliens. His position of being king made him arrogant and believe that everyone else is beneath him, including his wife and son. When he found out he was having a son, all he could think about was how delighted he was to have a boy who could eventually take over (but obviously never be as good as him). His wife didn't agree with his ideology and he couldn't stand it. One day this built up into an argument ending with him killing his wife, leaving his son without a mother.

5. Levels

5.1. Levels

The levels would be the different planets in the universe. There isn't much of an order for which planets need to be conquered. It is up to the player to choose where he wants to go as long as he has the fuel necessary for his spaceship to take him there. In order to get more fuel you must be on planet Earth or the Moon. As the player continues to play the game, they can unlock upgrades to the ship that can allow you to increase your fuel capacity.

Each planet will have its own set of enemies that must be defeated. The longer the player is on the planet, the strength in the enemies will increase. As the player explores each planet, they will come across different puzzles, each locking away, a piece of what is needed to unlock the purple planet (where his father is). The player must conquer all planets before taking on that final challenge.

5.2. Training Level

There will be no explicit training level, but rather the controls will be explained to the player for each mechanic as they encounter them.

6. Interface

6.1. Visual System

If you have a HUD, what is on it?

- Minimap in the top right corner(shows all planets once accessed with a mouse or by pressing M)
- Fuel bar
- Currency counter
- Health bar
- Experience bar in the top left corner
- Spaceship icon (When not in the ship)
- Shop icon (On Earth)
- Help icon
- Menu icon
- Abilities icons in the bottom right corner
- Weapons tray in the center bottom

What menus are you displaying?

- Home/Start Menu (which is connected to the other menus)
 - Start button
 - Resume button
 - Exit button
 - Settings button
- How to Play/Help Menu
 - Back to Start/Main menu button

- Next/Previous button (if needed)
- Settings Menu
 - Back to Start/Main menu button
 - Controls for brightness and volume, etc.

What is the camera model?

- The game will be in 3rd person perspective. The camera will be fixed on the player so it is able to move on any axis around the player.

6.2. *Control System*

How does the game player control the game?

The player can control the game using the keyboard and the mouse.

What are the specific commands?

- ESC: to exit the game
- P: to pause the game
- WASD: to move
- Spacebar: to jump and to control spaceship speed
- E: to pick up items, objects, currency
- Left click: shoot or attack
- Mouse: move camera
- Left and right arrow: to switch weapons
- Numbers (1, 2, 3,): to switch abilities
- M: to open map

6.3. *Audio, music and sound effects*

Music

- Background music(when game launches)

Sound effects

- Spaceship sound effect
- Fighting sound effects
 - Pain sound effect
 - Weapon sound effect
- Victory sound effect
- Death/Loss sound effect
- Level Up sound effect
- Movement sound effects
- Earning currency sound effect
- Object collision sound effect

6.4. *Help System*

- Help icon in the game scenes located at the top
- Pressing F1 to open a pop-up instruction of how to play the game

7. Artificial Intelligence

7.1. Opponent and Enemy AI

In our approach, enemies and opponents of the player are generated automatically in the game. The active enemies and opponents who play against the player will each have a distinct behaviour from each other which will make the player evoke effective behaviour when it comes to decision making based on the difficulty of the enemy. The enemies will also have to be adaptive to the game since the AI difficulty will increase or decrease based on the planet in which they are on, and how long they've been on it.

7.2. Non-combat and Friendly Characters

The player will be supported with external companions such as non-combat and friendly characters that will guide him or her to progress in the game. These allies will be non-playable characters and will not be able to receive damage from either player or enemies. Their roles will be to guide, and positions will always be stationary so they can be found easier. The player will have the option to buy or tame pets in certain planets.

7.3. Support AI

The player will be aided with a couple of hints to know when they have collided with another object, ground, or taken damage. By doing so the user is provided with feedback and chooses an action to change their course. Since it's important to provide players with helpful resources the game will also include a pathfinding feature that will guide the player to the nearest planet or exit point near them.

8. Technical

8.1. Target Hardware

The minimal hardware requirements that the end-user will have to meet in order to play the game on their devices are as follow:

Operating System	Windows	MacOS	Linux
OS	Windows 7 or Windows 10, 64-bit only	MacOS High Sierra or newer	Ubuntu 16.04, Ubuntu 18.04, and CentOS 7

CPU	I5 or higher X64 architecture required	i5 X64 or ARM64 M1 Apple silicon or higher	X64 architecture with SSE2 instruction set support
Graphics API	DX10, DX11, and DX12-capable GPUs	Metal-capable Intel and AMD GPUs	OpenGL 3.2+ or Vulkan-capable, Nvidia and AMD GPUs.
Additional requirements	Hardware vendor officially supported drivers	Apple officially supported drivers	Gnome desktop environment running on top of X11 windowing system and newer

8.2. *Development hardware and software*

The game itself will be designed and build using Unity Game Engine and C# as the programming languages. The core mechanics of the game will be rules and functions that will be given to game objects and assets (characters, environmental elements, etc.), to follow or perform actions decided by the script written.

8.3. *Network requirements*

Users will have to install Unity on their devices to be able to play Destroy Daddy. The recommended minimum requirements are as follows:

OS	Windows 7 or Windows 10, 64-bit only	MacOS High Sierra or newer	Ubuntu 16.04, Ubuntu 18.04, and CentOS 7
CPU	i5 or higher X64 architecture required	i5 X64 or ARM64 M1 Apple silicon or higher	X64 architecture with SSE2 instruction set support
Graphics API	DX10, DX11, and DX12-capable GPUs	Metal-capable Intel and AMD GPUs	OpenGL 3.2+ or Vulkan-capable, Nvidia and AMD GPUs.

Additional requirements	Supported drivers and latest updates	Supported drivers and latest updates	Gnome desktop environment running on top of X11 windowing system and newer
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WIFI functionality

Game functionality would not require any sort of connection to wifi since the game will be portable on users computers without the need to download any features or assets. All game components will come ready to play and be on the game files.

9. Game Art

All game art will be free licensed or created by us the developers. Assets are being used from different sources such as Unity's own assets store and Itch.io. Assets will be imported into the editor and manipulated such as they fit our vision of the game. As shown in the example below each imported asset will help our team develop our vision of what a space shooter game should look like and the style of the game. We set our sights on having an animated game with a draw style to it rather than the regular AAA style. Here are some examples of the type of art/assets our game will have:

Lasers rounds	GameObject Station	Environment	Space
			