

Newton's Bounty

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0. Document History

Version 1.00

Version 1.01 - Added sources for sound assets and updated flowchart (13/04/18)

Version 1.02 - Added name of game and added sources for weapons and projectiles (15/04/18)

Version 1.03 - Removed warp jump, energy and environment features . Added the rest of the asset sources (16/04/18)

1. Overview and Vision Statement

A top down spaceship battle game for 1 or 2 players. Players will control a single ship. Momentum will carry the ship as it would in outer space (for example, to come to a halt the player would need to fire thrusters in the opposite direction of movement). The objective is to destroy the other ship. The ships will have broadside cannons as a main means of doing that. Ships are able to counter incoming missiles with a dedicated turret also controlled by the player. This results in a hectic scenario where the player must consider their ship's position, velocity, defence and offence all at once.

2. Inspirations

We liked the feeling of weighty ships in Battlefleet Gothic and wanted to implement a similar system in our game. Ships are carried by their momentum and changing directions or accelerating/decelerating looks like it takes considerable force.

3. Player Experience Goals

The goal of the game is to create a hectic environment by requiring the player to anticipate the opponent's actions and handling the player's positioning.

4. Audience and Platform

The game is targeted to be released on pc. Players who enjoy quick paced and skill based gameplay are the core audience. Additional players will be attracted to the sci-fi theme, action oriented gameplay and low barrier for entry. The game is also targeted to appeal to the underserved market of local coop games.

4.1 Legal Analysis

The libraries used for the game can be used for commercial purposes even without acknowledgement. The game uses no third party IP.

6. Gameplay

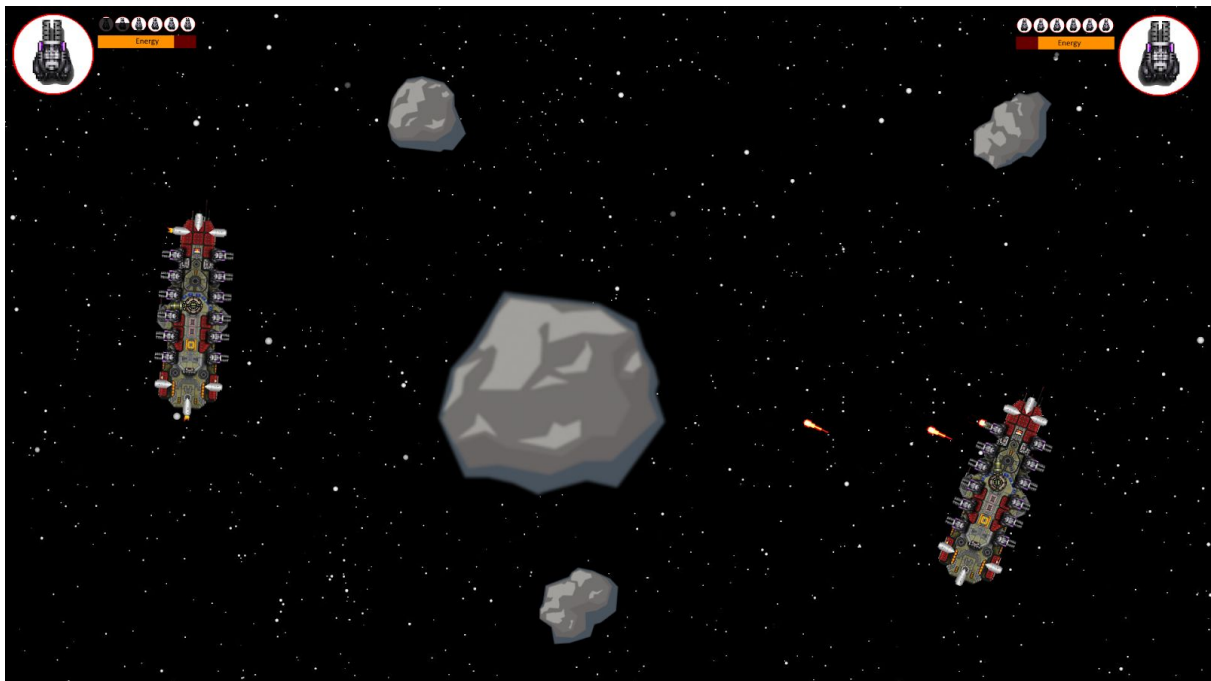
6.1 Overview

The core gameplay is managing the player's position while trying to outmanoeuvre and destroy the opponent.

6.2 Player Mode

The game is a local multiplayer game for 2 players with an option for 1 player versus AI.

6.3 Screen Mockup



6.4 Formal Elements

6.4.3 Players

The players have control of all the systems of their respective ship. The players can adopt different strategies depending on their gameplay style.

6.4.4 Objectives

The only objective is to destroy the opponent's ship.

6.4.5 Procedures

6.4.5.1 Movement

The player controls the movement of the ship using a directional input. The movement is impulse based, which creates the feeling of weight of the ships. The thrusters can be activated individually. There are 6 thrusters: 2 at the bow and the stern of the ship respectively and 2 at the bow and stern each rotated at a 90 degree angle to give the player the ability to turn rapidly.

6.4.5.2 Offense

The player can fire projectiles at the enemy based on their current weapon. Some weapons fire in a straight line while others have simple AI behaviours like homing. The player can select different weapons to fit their tactics or current needs

6.4.5.3 Defence

The player controls a defensive turret that can shoot down incoming projectiles. The turret is aimed by the player. It is inaccurate and has a rapid rate of fire. The player is encouraged to use movement

as a main defensive strategy, however some weapons, like the homing missiles will have to be countered with the turret.

6.4.6 Rules

6.4.6.1 Ship

The ship has a finite amount of hit points. After the hit points are depleted the ship is destroyed and the player loses the game.

6.4.6.2 Thrusters

Thrusters, when activated, apply an impulse on its location on the ship. Multiple thrusters can be activated at one time. The forces applied are considerably stronger than forces applied by standard movement.

6.4.6.3 Weapons

All offensive weapons are located on the broadside of the ship. The only way of aiming the weapons is by rotating the ship. Each weapon has a number of mounted guns and each has its own cooldown timer. All weapons can be fired in quick succession or in spaced out intervals. The weapons fire different projectiles based on which weapon is selected. All offensive projectiles can only collide with ships and defensive projectiles.

6.4.6.3.1 Cannons

The ship has 6 to 8 cannons. The cannons shoot relatively fast projectiles that do damage based on distance travelled (longer distance = less damage). Short cooldown time for each cannon.

6.4.6.3.2 Torpedoes

The ship has 3 to 5 torpedo mounts. Torpedoes move in a straight line at a medium pace, has higher damage than cannons. Torpedoes have limited range. When they reach the end of their range, impact a ship or are destroyed explode. The torpedoes have medium cooldown.

6.4.6.3.3 Homing missiles

The ship has 2 missile mounts. The missile follows the opponent's ship. There is no limit on range for missiles. Missiles explode only on contact with enemy ship and do not explode when destroyed by the defensive turret. Missile weapons have a high cooldown.

6.4.6.4 Defensive turret

The player ship has a defensive turret on the middle of the ship. The turret is manually controlled by the player. It has a firing arc of about 30 degrees, a low to medium range, no cooldown timer. The turret fires a lot of projectiles very rapidly. All projectiles take single hits to be destroyed by the defensive turret.

6.4.6.6 Environment

The environment will be a simple starscape background.

6.4.7 Resources

The main resource is the ship's hit points, which cannot be regenerated. All offensive weapons have cooldown periods after using them. These cooldowns are different for each weapon.

6.4.8 Conflict

Conflict is achieved by requiring the player to balance offense and defence.

6.4.9 Boundaries

The screen always keeps both players visible by zooming in and out based on player positions. If the players move too far away from each other a boundary which limits the play area to a finite amount of space is generated. The players attempting to venture beyond the boundary collide with it and lose their speed. This way the players that are trying to leave the play area are discouraged.

6.4.10 Outcome

Once a ship is destroyed the game ends and the end screen appears showing the winner.

7 Controls

7.1 Gamepad

Legend:

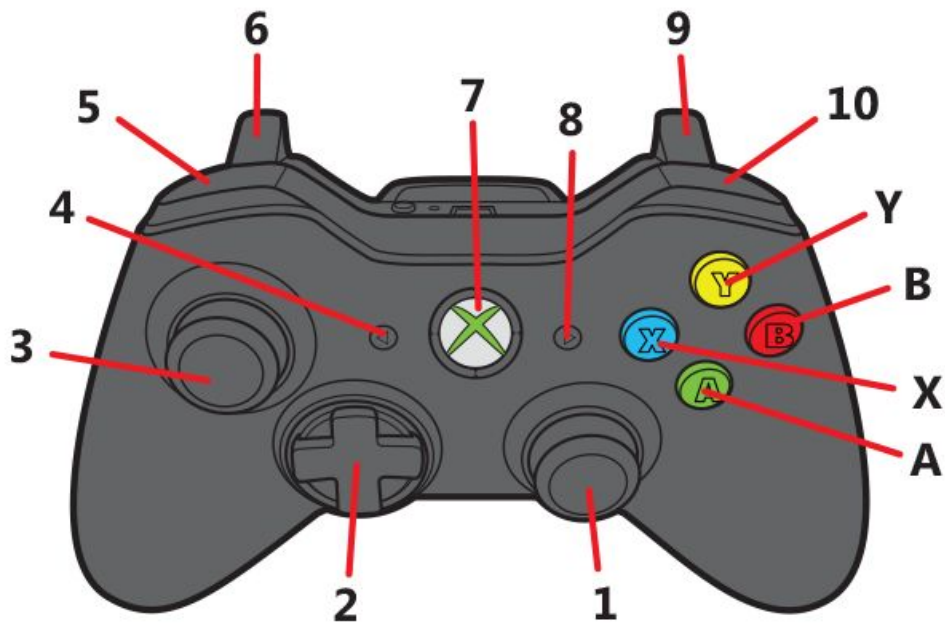
3 -Movement

A - fire selected weapon

B - select next weapon

10 - Fires the defensive turret (the turret is controlled with the right analog stick - 1)

8 - Pause



7.2 Keyboard

QWEASD - Movement

F - fire selected weapon

R - select next weapon

X - Fires the defensive turret

ZC - Rotates defensive turret

P - Pause

8 Levels

There is only one level.

9 Flowchart

The game uses one level.

10 Editor

The game will not include an editor.

11 Characters

The game does not feature characters.

12 Story

The game does not have a story.

13 Game World

There is no canonical game world.

14 Required Media List

14.1 User Interface Assets

Selected weapon	Same sprite as used for ship weapons.
Cooldown weapons	Same sprite as used for ship weapons.
Cooldown counter	Semi-transparent box. Animated by changing y scaling.
Health bar	Long box animated by x scaling.
Menu button	Outline for a menu button https://opengameart.org/content/sci-fi-ui-panel

14.2 Environment Assets

Background	A tiling image of space for the background. https://archive.org/details/Stars_2D
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14.3 Character-based Assets

Spaceship	A static sprite to represent each player (may be colour-coded for 2 players). Arianna
Plasma cannon	To be arranged in a row on each side of the ship. Only shown when plasma cannons are selected. https://opengameart.org/content/2d-spaceship-construction-kit
Torpedo pod	To be arranged in a row on each side of the ship. Only shown when torpedoes are selected. https://opengameart.org/content/2d-spaceship-construction-kit
Missile mount	To be arranged in a row on each side of the ship. Only shown when missiles are selected. https://opengameart.org/content/2d-spaceship-construction-kit

Defensive turret	Turret on the middle of the ship. https://opengameart.org/content/2d-spaceship-construction-kit
Defensive bullet	Bullet fired from the defensive turret. Not animated.

14.4 Animation Assets

Thruster burn	Thruster flame animation. Arianna
Main engine burn	Flame animation at the back of the spaceship. Arianna
Retrothruster burn	Smaller flame animation at the front of the ship. Arianna
Steering burn	Small flame animations at the forward and back sides of the ship. Arianna
Plasma shot	Projectile for the plasma cannon. A small “wobble” animation. https://opengameart.org/content/2d-spaceship-construction-kit
Torpedo	A torpedo with animated flame at the back. https://opengameart.org/content/2d-spaceship-construction-kit
Missile	A thicker missile with animated flame at the back. https://opengameart.org/content/2d-spaceship-construction-kit

14.5 Music Assets

Menu music	1 track for menu background music.
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	https://opengameart.org/content/through-space
Gameplay background music	1 – 3 tracks for background music played during gameplay. Fast paced to reinforce feeling of hectic gameplay. https://opengameart.org/content/last-stand-in-space

14.6 Sound Effect Assets

Plasma shot	A “pew” sound plasma cannon shots. 2 – 4 variations. https://opengameart.org/content/4-projectile-launches
Torpedo launch	A “whoosh” sound for a torpedo launch. 2 – 3 variations. https://opengameart.org/content/4-projectile-launches
Missile launch	A different “whoosh” sound for a missile launch. 1 – 2 variations. https://opengameart.org/content/4-projectile-launches
Booster thruster	A rumbling sound for continuous thruster operation. https://opengameart.org/content/space-ship-engine-sounds
Explosion	An explosion sound for missile and torpedo explosions. https://opengameart.org/content/bombexplosion8bit

15 Technical Specification

15.1 Development Platform and Tools

The game is developed on c++ using SFML and Box2D libraries.

15.2 Delivery Mechanism

Single executable game installer/uninstaller.

15.3 Game Engine

SFML and Box2d required.

15.4 User Interface Technical Requirements

No specific requirements for UI.

15.5 Controls Technical Specification

Gamepad recommended.

15.6 Network Requirements

The game is local multiplayer focused with a player versus AI option. There will be no networking capabilities.

15.7 System Parameters

Maximum 2 players. No online connectivity utilised.

15.8 Flowchart

