GAME DESIGN DOCUMENT: HAEMORRHOIDS!

A FANTASIC VOYAGE

Devin Grant-Miles

COMP710 Game Programming

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Table of Contents

Game overview

Haemorrhoids! is an immature and comedic take on the arcade classic Asteroids. The premise of the game is based on a similar idea to the 1966 film Fantastic Voyage, where technology makes it possible to shrink down in order to enter and travel within the human body.

The plot of the game centres around Doctor Cosmo van Nostrand, a proctologist shunned and expelled from the medical community, who has invented technology that can shrink him and his 'ship' down to microscopic size. He plans to use this technology to restore his reputation in medical science by revolutionising his field. He plans to shrink down small enough to enter his patients 'bodies and destroy their painful haemorrhoids using his ship's laser.

The setting of the game therefore takes place within a human rectum as opposed to space. Similar to the original, the player takes control of a ship and must shoot and destroy debris within the game world, such as haemorrhoids and other debris typical of such a place. The game takes place on a single screen of which the edges "wrap around each other", such that any game object that leaves one side of the screen is seamlessly wrapped to the opposite edge of the screen.

For the most part, the gameplay stays faithful to the original Asteroids, and should be fluid and polished yielding a quality gaming experience. The only difference is that each level involves destroying a single large Haemorrhoid in addition to the other debris. The Haemorrhoid, along with other debris, breaks up into smaller bits and must be completely destroyed before winning the game. The Haemorrhoid has significant health and therefore takes time to destroy, so an additional challenge to this game is to destroy it while avoiding debris. Ideally the game provides a sufficient challenge both in terms of mastering the mechanics of the ship and avoiding and destroying debris.

Gameplay

As per the original Asteroids, the game is a top-down, multidimensional shooter. The game is played on a single screen of which the edges wrap around top-bottom, left-right. The player can rotate the ship, apply forward thrust (in the direction the ship faces) and fire lasers to destroy debris. The objective of the player is to destroy all haemorrhoids and other debris, for which points are awarded.

There are three tiers of debris: large, medium, small. Large debris when destroyed splits into 2 medium debris which are each half the size, which also split into two small debris when destroyed, half the size of the mediums. Once the smallest debris is destroyed they no longer split. Points are given for each debris destroyed, with more points given for small debris destroyed since this is more challenging.

The players ship thrust should dampen over time when not applied so that thrust motion is not completely perpetual and gameplay is more fun and controllable. However, testing should be done on non-friction gameplay to determine best fit. The player ship should accelerate quickly and smoothly, and also have a maximum velocity.

Mechanics:

- All game entities wrap the screen edges.
- Debris floats at a constant rate and trajectory around the screen.
- When exploded, 2 children are spawned, set at random trajectories same velocity
- Bullets fired also have a constant velocity and trajectory, however have a limited "life" and are reused after a certain time. Ammo is unlimited.
- The players ship can rotate and thrust in a forward direction. A small amount of friction is added to make the ship a bit more controllable
- No friction is applied to any other game entity

Winning (and losing) the game:

The player starts with three lives. Each time the player's ship is hit by debris the player loses a life. When the player loses their last life the game is over. At game over, the player score is put on the high score board, if higher than the existing scores.

The player gets points when they destroy debris. More points are given for destroying debris that is smaller as it poses a greater challenge. Once the haemorrhoid and all debris is destroyed, a new level is created with more challenging gameplay. Difficulty should scale quite rapidly so that significant challenge is added towards the later levels. This should involve:

- Faster debris
- Enemies that LERP towards the player, such as bacteria

Core player activities are therefore:

- Avoid debris
- Destroy as much debris possible before game over

Controls:

In game:

The game can be controlled by either Xbox 360 controller or keyboard. In the case of an Xbox controller controls should be as follows:

- Left and right rotation: left analogue stick
- Thrust: AButton
- Shoot: XButton

Multiple inputs should be able to be processed at once e.g. rotate and thrust at the same time or shoot and rotate/thrust at the same time.

In menu:

- Menu item navigation: left analogue stick
- Select: AButton
- Back (if required): XButton

Keyboard alternatives:

- Left and right rotation: left and right arrows
- Thrust: up arrow
- Shoot: space

- Menu item navigation: arrow keys
- Select: enter
- Back (if required): escape

Player view:

The two main player views will be the in game view and the main menu.

The main menu will offer:

- Start game: start a new game
- High scores: presents high scores to user e.g. Dr. *Playername*
- Credits: displays credits for game
- Settings: offers setting changes such as sound on/off etc.

The main game view:

- Top down
    - Spaceship in the centre at game start
    - Debris floating on screen
    - Lives shown in bottom left
    - Score shown top left
    - Level number shown next to score

Key game algorithms

Screen wrap

An algorithm that wraps the screen edges so that objects that leave one side of the screen are re positioned and drawn on the opposite side. Ideally the algorithm will draw objects in transition from one side to another partially on both sides – this will require that the draw algorithm is altered.

Ship thrust and rotation

An algorithm that governs player thrust and rotation. This must ensure that thrust is responsive and fluid, while remaining fun.

Thrust will have:
- An upper limit
- A satisfying and realistic acceleration
- Some friction may be added to keep the game fun and playable (should be tested)

Rotation:
- Should be fluid
- Should rotate by degrees such that it returns to zero each rotation: e.g 15 or 30 degree turns each time.

Game should allow for multiple inputs at once.

Debris movement

Debris velocity and trajectory should be constant. Velocity should have a minimum and maximum.

Debris splitting

Only large debris is spawned at first. Both large and medium debris should split once, yielding two medium and small debris respectively. The debris should be spawned using the similar velocity/trajectory laws of their parents, with allowance for slightly faster movement. Particles should be spawned every time debris is destroyed.

Collisions

Debris should collide with the player ship and bullets only. Not with each other. Bullets and player ship only collide with debris and haemorrhoids.

Score keeping, levels and lives

Each time debris is destroyed by a bullet, points are awarded. More points are granted for smaller debris than larger debris. Destroying the haemorrhoid yields the most points and its debris treated similar to any other debris. Points belong to the player and the particular game instance. They carry over to further levels but not additional play-throughs.

Once there is no more debris the level should increase and large debris should be increased by 1, haemorrhoid's health increased, and max debris velocity increased. Each level should have different music.

The player should lose a life when hit by debris and be respawned in the centre of the screen, without colliding with debris that may currently be there. Once the player has no more lives the game is over e.g. player has 1 life remaining, they are hit, the game is over.

Aesthetic

The visuals should be cartoony, vibrant and disgusting, without being overly distasteful and/or realistic. They can be basic and "cheap" looking. Over the top is better. Levels should be the same backdrop: cartoon of inside a rectum. Below is an example of the aesthetic aimed for.
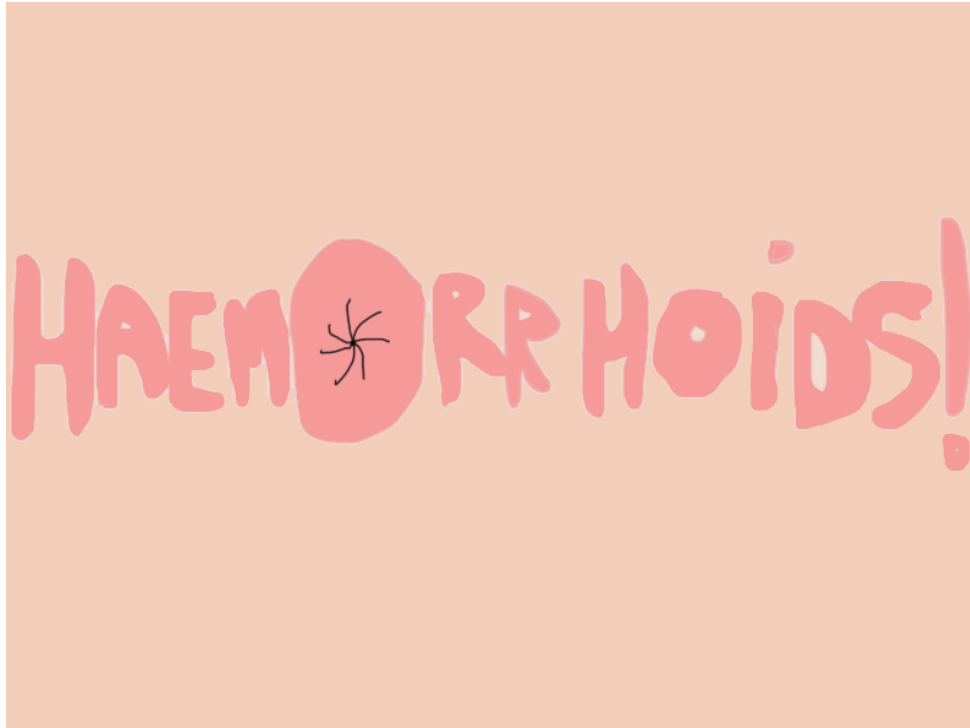
Graphical effects/animations may include:

- Zooming ship towards O in HeamOrrhoids! on title screen
- Exploding debris animation
- Exploding Haemorrhoid animation
- Thrust animation
- Particle effects (vibrant, plentiful)

Sound effects should be comical and can also be cheap sounding. Sounds effects should be similar, in that they are funny and varied.

- Squelches when hit or destroying debris
- Farts noises if hit by poop
- Screams when the Haemorrhoid is destroyed

Music should be ambient and of surprising quality and unique for each level. It should have retro/8bit feel. Should ramp up in temp with game difficulty.

Possible cut scenes/animations:

- Title screen before menu pops up should have the game name, created by Devin
  - The ship should zoom into the O in haemorrhoids and a fart effect heard.
  - After this the menu buttons pop up
- When the player first starts the ship may be shown enlarging from the orifice in the background
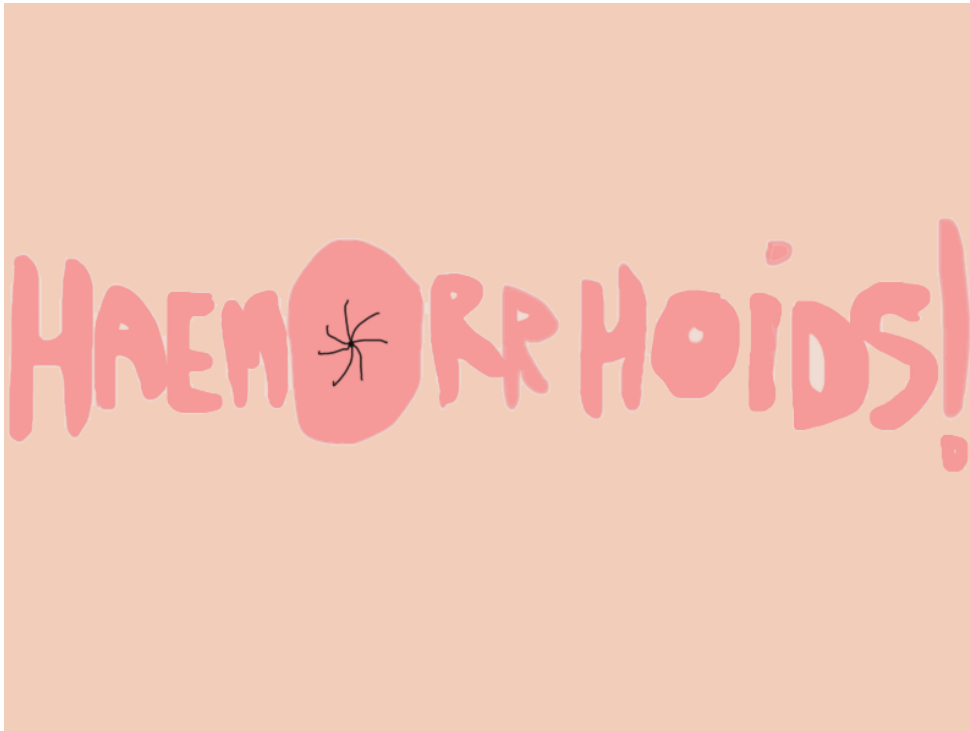
Required assets

Sprites/Art

- Playership
- Haemorrhoid
- Game background
- All debris (large, medium, small)
  - Corn kernels
  - Poop
  - Bits of Haemorrhoid
- Germ/antibodies enemies that LERP towards you
- A title screen
- Splash screens for AUT and other middleware
- Bullets (bright green)
- Particles for each debris type
- Text font for HUD showing points, lives and level
- A school bus if time permits (magic school bus easter egg)
  - Associated debris, blood guts stick people

Audio

- Music
  - Different loop for each level up to level 5 which will then be used for any additional level
- Effects
  - Haemorrhoid destroyed squelch and scream
  - Title screen
  - Bullet firing
    - Laser sound
  - Thrust/crappy car noise
  - Hit by debris
    - Fart noise
  - Debris destroyed
    - Squelch
- Dialogue (for magic school bus easter egg)
  - Kids screaming
  - Mrz Frizzel dialogue beep beep "seatbelts everyone"
  - Muffled scream for when haemorrhoid is destroyed

Animations

- Exploding debris
  - Each different kind
- Exploding ship

- Cloudy smoke behind ship when thrusting

Opening screen

- Splash screen
- Title and ship shrinking and zooming towards a butt in the word HaemOrrhoid

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