Simulation & Animation - SS 2025

Asteroid Pew Pew
Sumbmission 2

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1 Execution Instructions

The easiest way is to play the game at https://nicokandut.github.io/asteroid-pew-pew.
If you want to run the game locally, the project is a *npm* project.
To run it execute the following commands in the root folder:

```
npm ci
npm run dev
```

There are scripts to do this in the **bin** directory.
I hope this is okay for you :) if it is not okay please let us know and we can provide a version that strictly conforms to the submission specs (**index.html** in src folder, no *npm* command to run, etc).

2 Description of Controls

The controls are listed at the bottom left of the screen. Alternatively, you can see them here:

Key	Function
Escape	Pause / Resume the game, also displays the options menu for
WASD	Move the spaceship
Arrow Keys	Alternative to WASD
Space	Shoot bullets
Q	Shoot homing rockets
Mouse Cursor	Aim

3 Description of Current Implemented Techs

All feature implementations can be found in **/src/features/featurename.js**.

3.1 Fully Implemented Features

- **Hierarchical Transforms**
  The spaceship and rockets have children that inherit their transform. The spaceship has three levels: The ship itself - wings - flames. The Rockets only have an additional flame. Debug visualization can be found in the options menu.

- **Path Interpolation**
  The rockets deployed by pressing Q, follow precalculated spline paths. They use a fixed easing function to vary their speed along the path. Debug visualization can be found in the options menu.

3.2 Other things we would like feedback on

- **Variable Framerate**
  Framerate is capped by the browser. Configuring it is not super accurrate. Is this okay? Do we need to improve it? Is the approach in ***main.js*** okay for this purpose?

- **Update Rate**
  Update rate is fixed but configurable. Is the approach in ***main.js*** okay for this purpose?

- **Gameplay**
  What do you think of it? Anything that bothers you? Feedback is welcome.

- **Pause Screen**
  Is the pause screen good enough for you purposes? Does the menu obscure too much?

3.3 Sources for Images and Audio

3.3.1 Images

Name	Source
boom	https://gifer.com/en/gifs/explosion
favicon	self-made
background	https://www.pinterest.com/pin/7-sets-of-abstract-space-background--762304674422746071
spaceship	https://www.freepik.com/free-vector/modern-spaceship-collection-with-flat-design_2797155.h
asteroid	https://www.freepik.com/free-vector/sticker-template-with-meteorite-isolated_18345067.htm

3.3.2 Sounds

All sound files are from https://pixabay.com/sound-effects/search/