Aspace

Aspace is a simple 2D top-down ship demo built with Raylib and C++.

Introducing Collision System

Right now the game features a Separating Axis Theorem (SAT) based collision detection system that provides:

- 70% - 80% Accurate convex polygon collision detection
- AABB checks if AABB passes then only SAT is computed
- Minimum translation vectors for collision resolution
- Support for rotating hitboxes
- High performance through spatial partitioning
- Each entity can have its own collision shape defined as a convex polygon, allowing for precise interactions between game objects.
- For now the collision vertices are hardcoded to their respective ship class.

Features

- Pixel-art ship with modular sprite-parts (thrusters, weapons, ...)
- Player-controller wrapper that can swap to bigger ships later

- Camera that follows any `CameraTarget` entity
- Component-based world grid for lightweight collision / culling
- Pure CMake build – no Makefile hacks – ships with raylib sources
- **NEW** SAT-based collision detection system for accurate hitboxes

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Prerequisites

	Windows	**Linux / macOS**
Compiler	MinGW-w64 10+	GCC 10+ / Clang 12+ (Wasn't tested on either OS so it's not guranteed that the build will be created successfully or not)
CMake	≥ 3.10...3.90	`sudo apt install cmake` or `brew install cmake`
Ninja	*(optional)* `choco install ninja` or `scoop install ninja`	`sudo apt install ninja-build` or `brew install ninja`

> **No global raylib install is required** – the build pulls the exact tag we need. (Which is 250 MB)

Getting the code

```
git clone --recursive https://github.com/zenzxnse/Aspace.git
cd space-something
```

Using `--recursive` is only needed if you keep raylib as a git-submodule.
With FetchContent (default), a plain `git clone` is enough.

Building

Quick Build (Debug and Release)

```
# Run the build script - builds both Debug and Release versions
./build.bat
```

Build (Debug)

```
cmake -G Ninja -B build -DCMAKE_BUILD_TYPE=Debug
cmake --build build
```

Or Hit F5 (Make sure you have CMake Tools installed as well as g++)

For MacOs or Linux you may want to use the terminal instead of Visual Studio since the compiler path is hardcoded into tasks for windows.

Build (Release)

```
cmake -G Ninja -B build -DCMAKE_BUILD_TYPE=Release
cmake --build build
```

Run

```
./build/bin/Aspace
```

Project Layout

```
├── CMakeLists.txt      # Build configuration (FetchContent for Raylib)
├── include/            # Public headers (Entity, World, Animator, etc.)
├── src/                # Game source files (main.cpp, BasicShip)
├── rsc/                # Resources (textures, spritesheets)
└── build/              # Out-of-source build directory
```

License

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Author

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