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# Bitter Birds

## Scope

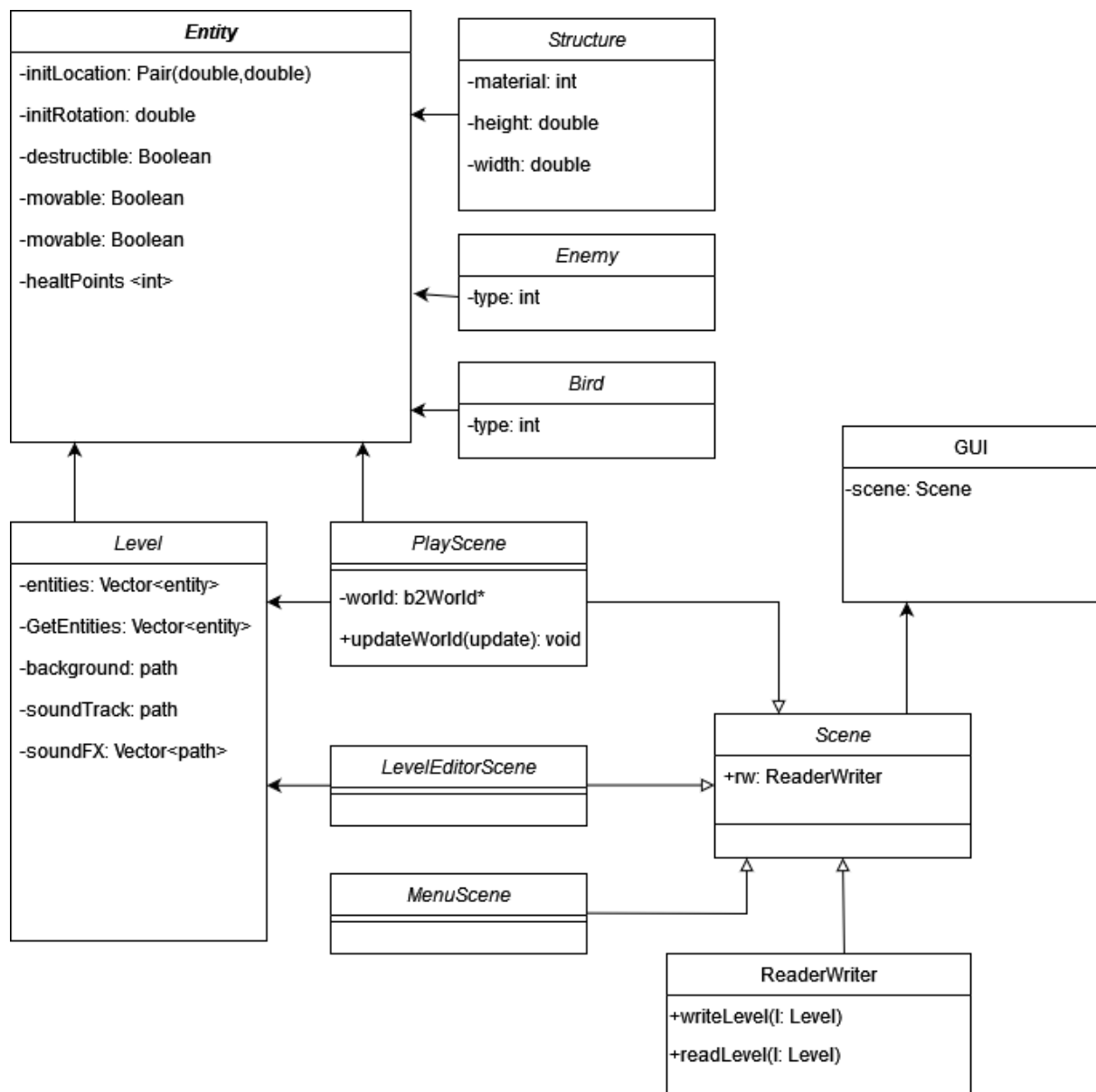
Project scope will include at least:

- Basic graphics, no animation needed. The view follows the bird as it moves sideways.
- At least 1 bird with a special action, for example: speed boost or explosion.
- Controlling the attack with a mouse (at least throwing and special action).
- Game levels are loaded from files, not hardcoded.
- At least 3 game levels with increasing difficulty.
- Simple user interface that shows information such as points and throwables left, enemies left.
- Physics simulation

And additionally we will add

- High score list, saved per level, player can enter a nickname
- Stars to rate how well player played and some logic to calculate them
- Level editor to create levels and to save them in a file
- Sound effects
- Better graphics; animations, nice textures, camera animations etc.
- Different game modes: reach goal in time, collect all items, other kind of challenges
- Multiplayer: game can be played from a “client” and a “server side” stores the scores to one place

## Structure



So this UML represents our initial idea for the structure of the project. The idea is that we have one abstract class scene, which feeds the information to the GUI. Then

we have the level reader/writer object in Scene so we can use it easily in both PlayScene, which is essentially our Game class, and LevelEditorScene.

Our level class for the game is essentially a light class with the entities' initial locations, sizes, and so on, which for it is easy to implement the level loading and saving to a file. All the actual locations and other stuff is kept and handled by Box2D library and foreach b2body in the b2world class there is an entity linked to it.

This UML just shows the main classes and a lot of smaller stuff is missing such as multiplayer and special actions.

## **Libraries**

We plan on utilizing the following libraries, these are subject to change as the project progresses.

- Box2D for physics
- SFML for graphics/sound
- OpenGL (possibly)
- Socket (possibly other) for multiplayer

## **Work division and responsibilities**

Our group members agree that the work should be split evenly, but the level of proficiency in this topic and technologies varies a lot. This will most likely be seen as some members producing more results and some less.

The group has made a preliminary decision on implementing all of the basic and additional goals of the project provided on the A+ topic page, resulting in a substantial amount of work. However, the team feels quite confident in our skills to overcome these challenges and to produce great results.

Responsibilities might fluctuate between team members depending on schedules, but it is clear Luukas is more experienced in such projects, likely resulting in many team members consulting him about various topics over the course of the project.

## **Schedule and milestones**

### **1. Planning and Basic Setup 31.10.2023**

- Project plan
- Setup development environment and version control.

### **2. Player Controls and Physics 12.11.2023**

- Implement slingshot mechanics and basic bird launching.
- Add mouse input for aiming.
- Implement basic collision detection.

### **3. Level Design and Structure 16.11.2023**

- Create level layouts for a few simple levels.
- Define target and obstacle placement.
- Implement destruction physics for structures.
- Level loading from a file
- Transition logic between levels

### **4. Scoring and Win/Lose Conditions 19.11.2023**

- Develop a scoring system based on target destruction.
- Implement basic win/lose conditions.
- Expand win/lose conditions (e.g., running out of birds).
- Enhance scoring and feedback.

### **5. Audio, Visual Effects, and UI 23.11.2023**

- Add sound effects for basic actions.
- Implement visual effects for destruction.
- Create the main menu and user interface.
- Implement scoring display and level progression.

### **6. Additional features 26.11.2023**

- Adding the level editor
- Testing and bug fixing the level editor

- Adding different birds
- Adding special effects for the different birds
- Adding a leaderboard

#### 7. Testing and polishing 4.12.2023

- Bug fixing
- Code and asset optimization