Pond: A Koi Breeding Game

Degree programme : BSc in Computer Science | Specialisation : Computer Perception and Virtual Reality
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The field of game development is constantly evolving, and game engines are becoming more powerful every year. The goal of this bachelor thesis is to develop a game using one of the most popular professional game engines, namely Unreal Engine 5.

The Game

The game, called Pond, is a koi breeding game where you collect different varieties of koi by breeding your fish. The color, pattern and shape of every koi is determined by its genetics. Because of the way patterns are generated, not even fish with the same genetics will look exactly the same. Every fish is truly unique!

The Fish

Koi, much like goldfish, are colorful fish kept in ponds. They are a variety of the Amur carp (Cyprinus rubrofuscus) that have been developed in Japan, where they are culturally significant.

Goals

The purpose of Pond is to simulate the keeping and breeding of koi for people who are interested in them. Abstracting the realities of koi breeding in a way that makes it fun to play as a game, while not deviating too far from reality. Additionally it has also been to give me a deeper insight into the development of games.

Results

A working prototype that allows you to manage a pond with the fish in it was implemented. The koi swim around their environment in a natural way, feed on small crustaceans that spawn around plants, and can even be bred to get new varieties.

Through the making of Pond I gained a lot of insight into the development of games with Unreal Engine 5. Using tools like the Blueprint Visual Scripting system to create an initial prototype and then refactoring performance critical parts to C++ gave me the new level of insight that I was looking for.
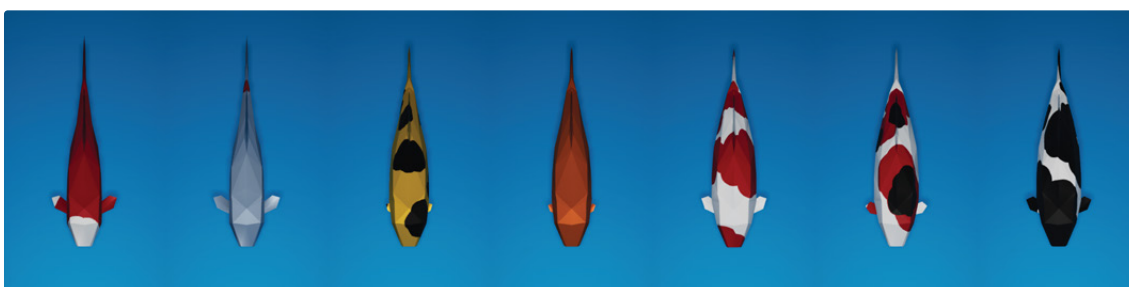
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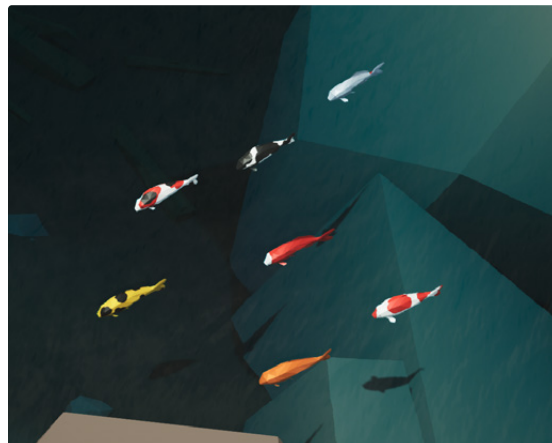
A glint of koi swimming in-game.

Koi showing different colors and body shapes in Pond.