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Software Engineering
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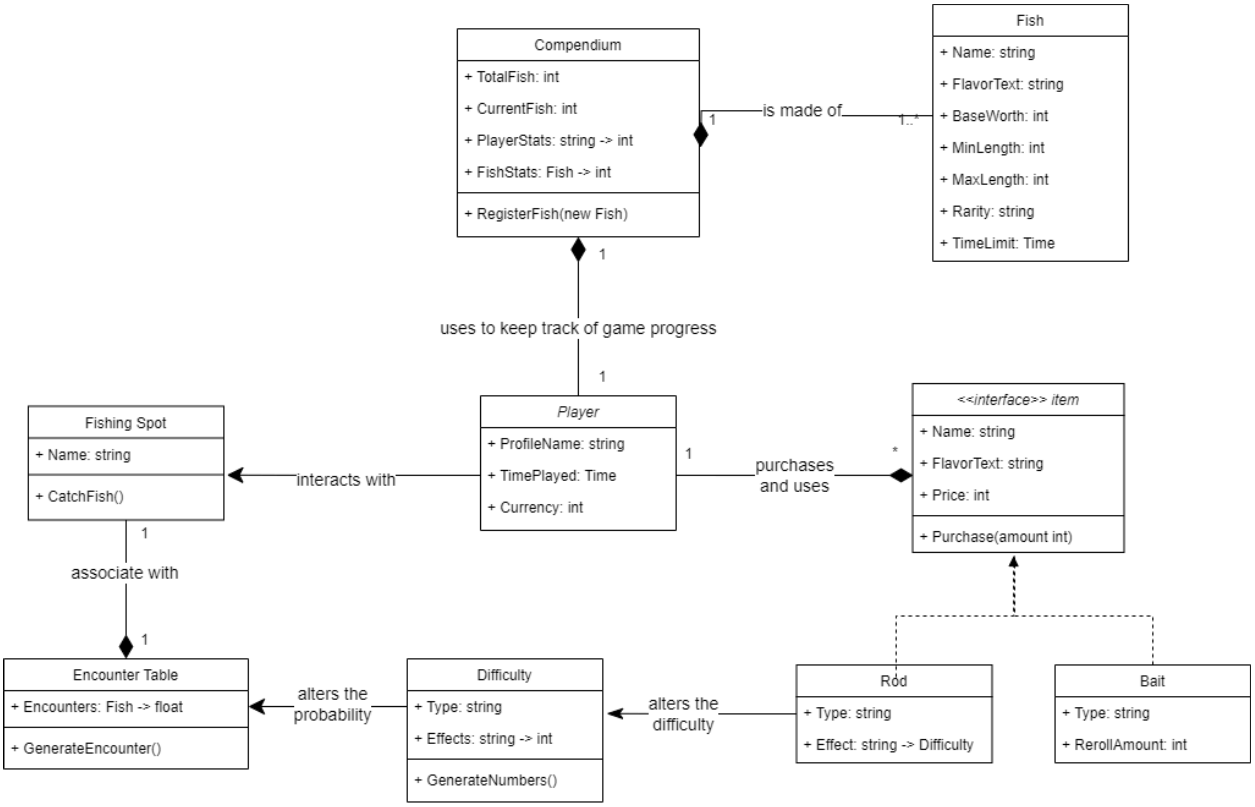
Project Diagrams

Class Diagram:



Classes

Player - The player class represents the data that the player object would hold. It is made up of a ProfileName string, a TimePlayed Time, and a currency integer.

Compendium - The compendium class keeps track of a lot of the statistics regarding gameplay and progress through the game. It is composed of integers for TotalFish and CurrentFish along with two maps. One that is string to integer for player statistics like total catches and such and then one for fish statistics which holds information regarding the collection of fish. It has a method RegisterFish which takes a Fish object and adds it to its collection.

Fish - The fish class represents the fish that the player will catch. It is composed of strings that represent the Name, FlavorText, and Rarity along with integers for the BaseWorth, MinLength, and MaxLength and also a TimeLimit Time.

Item interface - The item interface is a basis for objects that represent items that the player can contain. It is composed of two strings that represent the Name and FlavorText and a Price integer. It also has a method purchase which takes an integer amount

Rod - The rod class represents the different fishing rods the player can obtain to alter the difficulty. They are composed of a Type string and an Effect map.

Bait - The bait class represents the different bait that the player can use to help collect new fish. It is composed of a Type string and a RerollAmount integer.

Fishing Spot - The fishing spot class represents an area the player can fish in. They are made up of a Name string and a method CatchFish which allows the player to catch fish and play the main minigame.

Encounter Table - The encounter table class represents the probability of fish being found. It is composed of a map that holds the probabilities of fish. It also has a method GenerateEncounter that randomly generates a fish from the table.

Difficulty - The difficulty class represents different modifiers on problem generation. It has a Type string and an Effects map. It also has a method GenerateNumbers which generates numbers for a problem based on that difficulty.

Relationships

Player purchases and uses items - The player uses their currency to buy and purchase different things that inherit from the item interface

Compendium is made of Fish - The compendium holds information about the fish that the player has caught like whether they have found it or the total amount caught.

Player uses Compendium to keep track of game progress - The compendium holds a lot of information about fish and player statistics which shows the player their progress through the game.

Player interacts with Fishing Spot - The player interacts with a fishing spot to play the fishing minigame which is the main gameplay of the game.

Fishing Spot associates with an Encounter Table - Each fishing spot will have an encounter table mapped to it to make them each different. Certain fish may be available in one but not another.

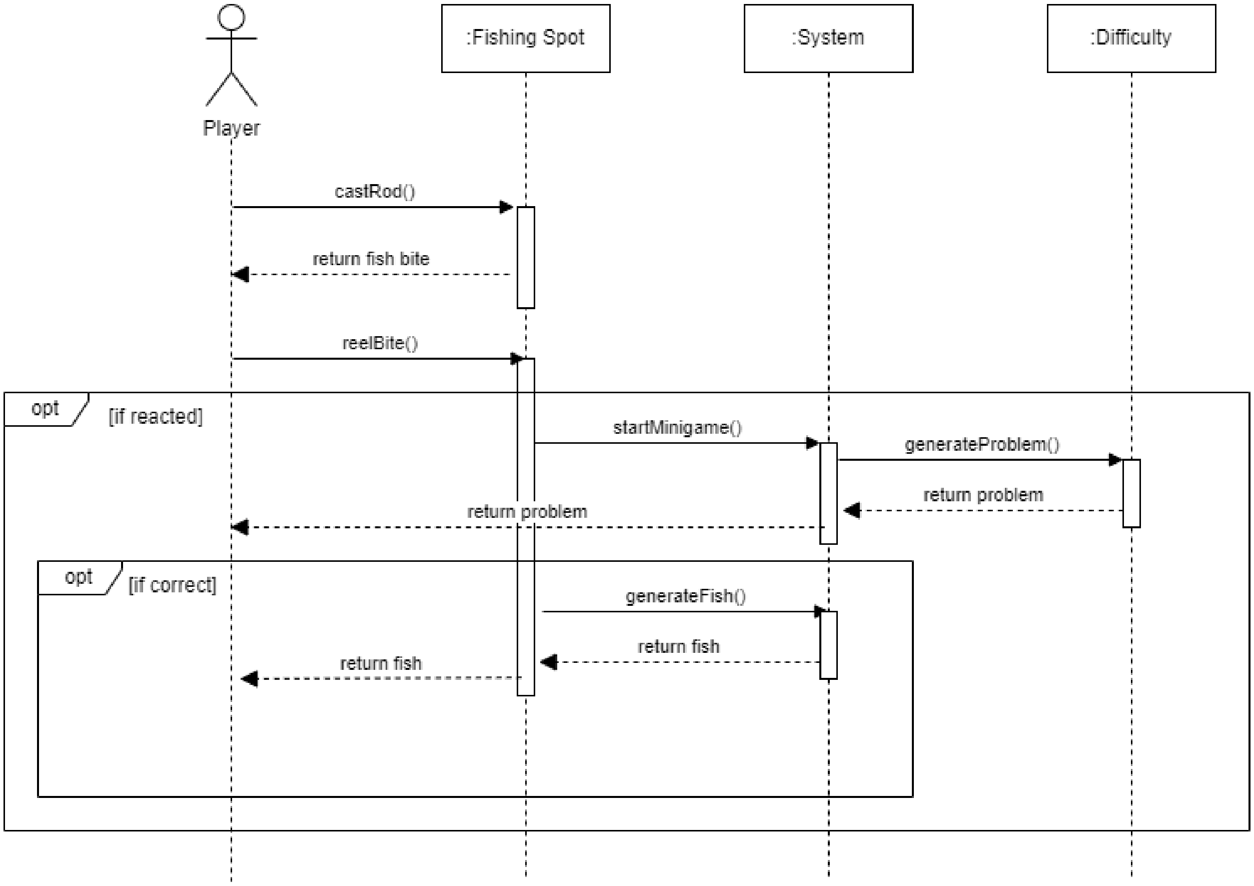
Difficulty alters the probability of Encounter Tables - The difficulty will make the game hard but also make more rare Fish in the encounter table have a higher chance of appearing for a risk reward aspect.

Rods alter the difficulty - The current rod that the player has equipped will alter the difficulty.

Inheritance

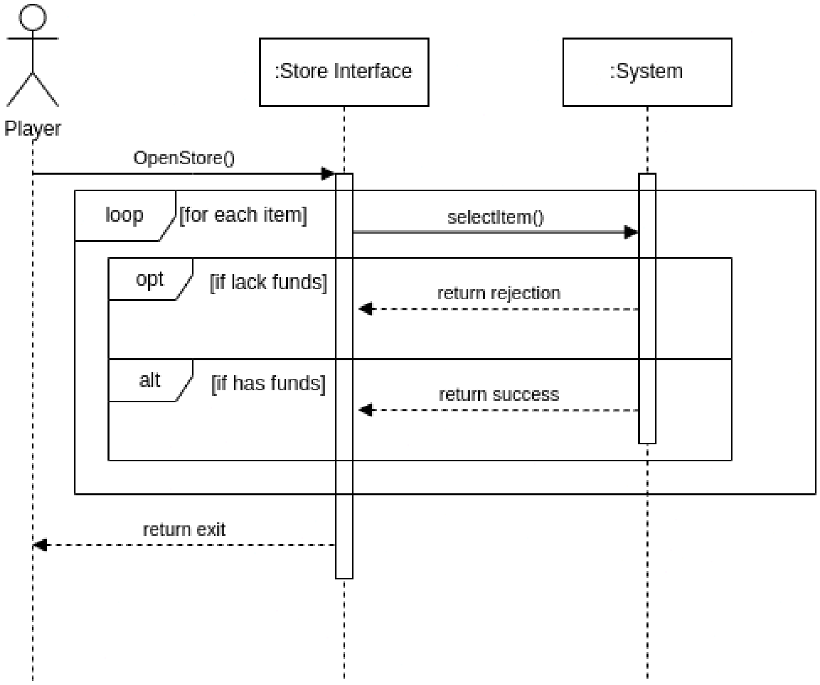
The rod and bait both inherit from the item interface. This is because they are both items that would be purchasable by the player and having an interface for items like this makes it easier to create different types of items.

Sequence Diagram #1:



This sequence diagram shows the process of the player catching a fish. The player begins by casting their rod which they then wait for a fish to bite. After one has bit, they need to reel in the fish. If they successfully react in time, the system will start the minigame which requires generating a problem that is based on the difficulty of the game. Then, the player is given the problem which they are then required to solve. If they solve it successfully a fish is then generated and returned to the player to be used to update their stats, collection, and increase their currency.

Sequence Diagram #2:



This sequence diagram shows the process of a player buying an item from a shop. This starts by the player opening up the store interface by interacting with it. After it is open, an item is selected in the interface where it is then bought if the player has enough currency. After that the cycle can continue until the interface is closed which then exits the player from the shop.