Café EatCon
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Game Economy Specifications

Overview:

The games economy system is dictated by the demand equation, and several game components that alter this equation.

The equation is Q = C – (S)(P) where:

Q = Quantity Demanded
C = Varying Factors
S = Slope of Demand Curve
P = Price

For our system, C is maximum customers in the game universe. This means that C is everyone who shows up if all of the products become free. The slope is the only variable that remains consistent throughout the game. Starter values will be decided while balancing the economy. The following is a walkthrough on how the economy system is updated at the completion of each level.

Variables:

LevelCustomers
MaxCustomers
Index
Slope
AveragePrice
(For Every Dish):
    CustomersDishX
    MarketDishX
    ServedDishX
    MissedDishX

Phase 1:

The game generates customers for the level. This value is taken from the variable LevelCustomers which is Q under the levels current setting. These customers submit orders based on the market share of dishes. The number of served and missed customers is then calculated based on the simulations outcome. The game calculates each dish's new demand as a function of CustomersDishX, ServedDishX, and MissedDishX. The new value of CustomersDishX is determined by the demand change function:

```
float ChangeDemand (CustomersDishX, ServedDishX, MissedDishX, Index ){

        TotalDishX = ServedDishX + MissedDishX;                  //Total Customers for DishX
        ChangeValue = 1 + (ServedDishX / TotalDishX) – Index;    //Value between 0 and 2
        Return ChangeValue
}
```

Once the simulation is complete, the old value of CustomersDishX is multiplied by the ChangeValue, and then stored as the new value for CustomersDishX in the upcoming level. Note that serving a higher percentage of customers than the given index will result in more customers for the following round. The system sums the values for CustomersDishX for each DishX, with the resulting value becoming the new MaxCustomers. Adding more customers to the universe shifts the demand curve to the right, and removing customers shifts it to the left. The new market share is calculated by the following function:

```
Float CalculateMarketShare (MaxCustomers, CustomersDishX){

        Return (CustomersDishX/MaxCustomers);
}
```

Phase 2:

Once simulation ends, the user is looking at a series of reports. The graph is the piece that is most critical to this economy. The graph is defined by the equation:

$$Q = MaxCustomers – (Slope)\ (AveragePrice)$$

The number of customers for the upcoming level is the value Q dependant on a finalized average price.

Using this equation, we can store each level's demand curve by storing the snapshot of variables MaxCustomers, Slope, and AveragePrice.