Partial SimMSOE Design Document
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(This document is intended to serve as an example of how to document your design. It is also an example of what I expect for the "Program Design/Algorithm" section of your final report. It is not necessary a suggestion regarding how your program should be designed.)

Overview

The *Game* class contains the public main method that is run to play a game. A *Game* object manages the user input and organizes the game. An object of the *Tribe* class represents the "tribe" ….

Class Game

Provides a main method, manages the user interface, maintains the state of the game.

Data Members

int year – Current year in the simulation. Starts at 1.

…Other Data…

Methods

Game(int myDuration, int myInterval) – Constructor, parameters are overall duration of simulation and interval for changing resource allocations.

private void play() – Starts and manages game play. Manages user input. Organizes calls to Tribe methods.

    Pseudocode or flowchart…

private void userAllocation(Tribe tribe) – Prompts for, collects and sets resource allocation for specified tribe.

…Possible Other Methods…

Class Tribe

Represents the state of a tribe and their environment and accounts for the passage of time.

Data Members

Random random – Random number generator, provided in constructor.
int population – Initial value set in constructor.
int food – Percentage of available resources currently allocated to food production.

…Other data members…

double invasionRisk – Fractional risk of invasion, between 0.01 and 1.0, initial value set
in constructor.
double weather – Weather severity index. A normally distributed random value from a
population with a mean of 1.0 and a standard deviation of 0.1. Updated annually.

Methods

public Tribe(int population, double invasion, double revolt, Random random) –
Constructor, creates a new "tribe." Provides the random number generator used
throughout the tribe calculations.

private double b() – Birthrate calculation. Returns the fractional annual birthrate (between
0.0 and 0.20). Function of food and health allocations.

       Pseudocode or flowchart …

…Other methods…

public boolean setAllocation(int food, int health, int defense, int entertainment) – Sets the
resource allocation for the tribe. Sets the allocation and returns *true* if the sum of
parameter values is 100, otherwise leaves the allocations unchanged and returns
false.

       Pseudocode or flowchart …

public int incrementYear() – Performs all the calculations for moving from one year to
the next. Generally returns the population. Returns −1 if there was an invasion.
Returns −2 if there was a revolt.

       Pseudocode or flowchart…