Programming Assignment 1

Preliminary Class Diagram

By: Atchima Klomkaew

1. Simulation
   1. This class parses the “xml” file to read the list of genes in order to create an instance of GeneMaster.
   2. It reads the parents information from the file to create 2 instances of Organism class.
   3. It also retrieves the amount of offspring the user desire to create.
2. GeneMaster
   1. This class contains all the genes and the corresponding trait, dominant allele, dominant symbol, recessive allele, and recessive symbol.
3. Organism
   1. This class represents a parent organism. It contains its genus, species, common name, as well as its genotype. For each gene in the genotype, it creates new instances of Gene.
   2. It passes a random allele for each Gene to Breed.
4. Gene
   1. Contains the information of each gene for a parent. This includes gene trait, dominant allele, dominant symbol, recessive allele, and recessive symbol.
5. Breed
   1. This class asks each parent (instance of Organism) to send a random allele for each Gene in order to create a new offspring containing its parents’ genes.
   2. The list of gene representing a new offspring is contained in an array. The list of offspring with genes is then put in a vector to keep them organized.
   3. It sends the vector to OffspringReader to analyze the offspring.
6. OffspringReader
   1. This class goes through the vector sent from Breed and analyzes each offspring. It contains multiple counters for each case of the offspring.
   2. For each gene, it checks the gene definition with GeneMaster.
   3. It ensures cases such as “Tt” and “tT” is interpreted correctly.