

Genome

Representation → *data members*

- genome → array of booleans or integers, or `std::bitset<N>`
- mutation rate M (number of toggled bits, global) → static data member
- number of genes N (global) → static data member

Construction → *constructors & destructor*

- created by default: all 0 (good)
- created as copy: just copy, no mutation
- destruction: nothing

Properties → *const member functions*

- number of bad genes among the first n

Operations → *non-const member functions*

- mutate (may be used at giving birth)
- set mutation rate (global)

Animal

Representation

- bad genes threshold T (global)
- reproduction age R (global)
- birth rate b (global)
- age
- genome
- pregnant

Construction

- by default with age 0 and default genome
- copy construction: perfect copy
- creation from a genome (for giving birth)
- destruction: nothing

Properties

- age?
- alive?
- pregnant?
- maximum age

Operations

- age it (optionally give birth if pregnant)
- give birth
- set the global properties T,R,b (global)

Population

Representation

- collection of animals (array or some container)
- maximum population size N_{\max} (global)

Construction

- empty by default
- created with a certain number of animals
- copy should be perfect
- destruction: delete all animals

Properties

- population size
- probability that animal dies from starvation N/N_{\max}

Operations

- go through all animals
- remove an animal
- add an animal
- set maximum population size (global)