

Fish Simulation Part II: Class Design

Simulation
<ul style="list-style-type: none"> + Simulation() + Step(Environment env) + Run(Environment env, int steps)

Environment
<ul style="list-style-type: none"> - myWorld : matrix<Fish> - myFishCreated : int - myFishCount : int
<ul style="list-style-type: none"> + Environment(input:istream) + NumRows() : int + NumCols() : int + AllFish() : vector<Fish> + IsEmpty(pos:Position) : bool + Update(oldLoc:Position, fish:Fish) + AddFish(pos:Position) - InRange(pos:Position) : bool

Fish
<ul style="list-style-type: none"> - myID : int - myPos : Position - amIDefined : bool - randomVals : RandGen
<ul style="list-style-type: none"> + Fish() + Fish(id:int, pos:Position) + Id() : int + Location() : Position + IsUndefined() : bool + ToString() : string + ShowMe() : char + Move(env:Environment) - EmptyNeighbors(env:Environment, pos:Position) : Neighborhood - AddIfEmpty(env:Environment, nbrs:Neighborhood, pos:Position)

Position
<ul style="list-style-type: none"> - myWorld : matrix<Fish> - myFishCreated : int - myFishCount : int
<ul style="list-style-type: none"> + Position() + Position(r:int, c:int) + Row() : int + Col() : int + North() : Position + South() : Position + East() : Position + West() : Position + Equals(other:Position) : bool + ToString() : string

RandGen
<ul style="list-style-type: none"> - xPrev : long - yPrev : long
<ul style="list-style-type: none"> + RandGen() + RandGen(seed:long) + RandInt(max:int) : int + RandInt(low:int, max:int) : int + RandReal() : double + RandInt(low:double, max:double) : double - Rand() : long

Neighborhood
<ul style="list-style-type: none"> - myList : vector<Position> - myCount : int
<ul style="list-style-type: none"> + Neighborhood() + Size() : int + Select(index:int) : Position + Add(pos:Position) + ToString() : string