Marine Biology Simulation Case Study

**Environment Interface**

- `numFlows`
- `numCels`
- `isValid`
- `numCellSides`
- `numAdjacentNeighbors`
- `randomDirection`
- `getDirection`
- `getNeighbor`
- `neighborsOf`
- `newObjects`
- `allObjects`
- `isEmpt`
- `objectAt`
- `add`
- `remove`
- `recordMove`

**Classes that Implement Environment**

- `SquareEnvironment`
  - `numFlows`
  - `numCels`
  - `isValid`
  - `numCellSides`
  - `numAdjacentNeighbors`
  - `randomDirection`
  - `getDirection`
  - `getNeighbor`
  - `neighborsOf`

- `BoundedEnvClass`
  - `numFlows`
  - `numCels`
  - `isValid`
  - `numCellSides`
  - `numAdjacentNeighbors`
  - `randomDirection`
  - `getDirection`
  - `getNeighbor`
  - `neighborsOf`
  - `numObjects`
  - `allObjects`
  - `isEmpt`
  - `objectAt`
  - `add`
  - `remove`
  - `recordMove`

- `UnboundedEnvClass`
  - `numFlows`
  - `numCels`
  - `isValid`
  - `numCellSides`
  - `numAdjacentNeighbors`
  - `randomDirection`
  - `getDirection`
  - `getNeighbor`
  - `neighborsOf`
  - `numObjects`
  - `allObjects`
  - `isEmpt`
  - `objectAt`
  - `add`
  - `remove`
  - `recordMove`

**Overview:**
- **Cast of Characters:** | **The Driver**
- **Initial Program:** Simulation: step | Fish: act and move | nextLocation | emptyNeighbors
- **Breeding and Dying:** Fish: modified act method | move | breed | die
- **Specialized Fish:** DarterFish | DarterFish: move | SlowFish: nextLocation
- **Environment Implementations:** Environment Class Hierarchy