Allwolf Implementation

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Outline

Shared Memory with `ConcurrentHashMap`

Definition

A hash table supporting full concurrency of retrievals and adjustable expected concurrency for updates.

How does it work?

The table is internally partitioned to try to permit the indicated number of concurrent updates without contention.

Why use it?

More concurrency.

CyclicBarrier

Definition

A synchronization aid that allows a set of threads to all wait for each other to reach a common barrier point.

```
barrier = new CyclicBarrier(NUM_OF_SHEEP + NUM_OF_WOLVES, new EndGameCheck());
```

Listing 1: Initializing the `CyclicBarrier` in `Game.java`

```
public void run()
{
    while(alive)
    {
        board.moveAgent(this, nextPos());
        barrier.await();
    }
}
```

Listing 2: Using the `CyclicBarrier` in `Agent.java`

- Assert that an agent moves only *once* per cycle.
- Check for *end game* condition after each cycle using the inner class `EndGameCheck`

Variable Agent Speed

Description

Allow each agent type to move an arbitrary distance in *north*, *south*, *east*, or *west* direction(s) per cycle.

Concurrency problems

Agent computes next position but another agent has already moved there.