

Grid Landscapes

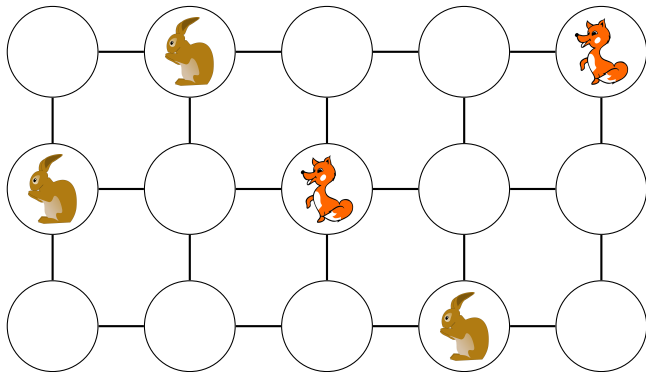
Some Object-Oriented Thoughts

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Agents in a grid



Object-Oriented Model

Option 1: The environment object

Object-Oriented Model

Option 2: Active cells

Distributed Computing

- Agent-based systems are a good candidate for parallelisation
- One agent per thread
 - may run different agents on different computers
- The landscape (grid) can also be distributed
 - 1 requires autonomous objects to handle regions
 - 2 a region can be a single cell or multiple (connected) cells
- A grid region must
 - 1 manage the environment for residing agents
 - 2 interface with adjacent regions
 - 3 manage interaction at region boundaries (agents moving in and out of the region)

Summary

- Two ways to implement a grid world
 - Active environment — a cell is a Cartesian co-ordinate
 - Active cells — no central management of the environment
- Active cells can be distributed (multi-threading, multi-host)
- Don't overdo it
 - 1 An object per cell makes a lot of objects instantiated
 - 2 Possible memory and computational overhead
- Hierarchical model is possible
 - Grid — Region – Cell
 - Autonomous and distributable regions
 - Dumb and simple cells