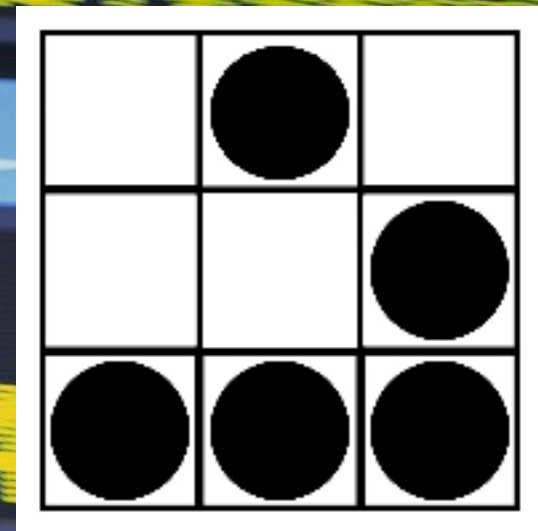


Market Simulator

Project by:
Michael Van Veen
&
Michael V. Riedlin



Why A Market Sim?

- Wanted to observe market behavior
- Seemed like a relevant topic

Our Economy in a nutshell

- We're looking at a competitive, two good market
- Sells are made at the lowest efficient price
- Agents who are unable to cope leave market

Technical Interests

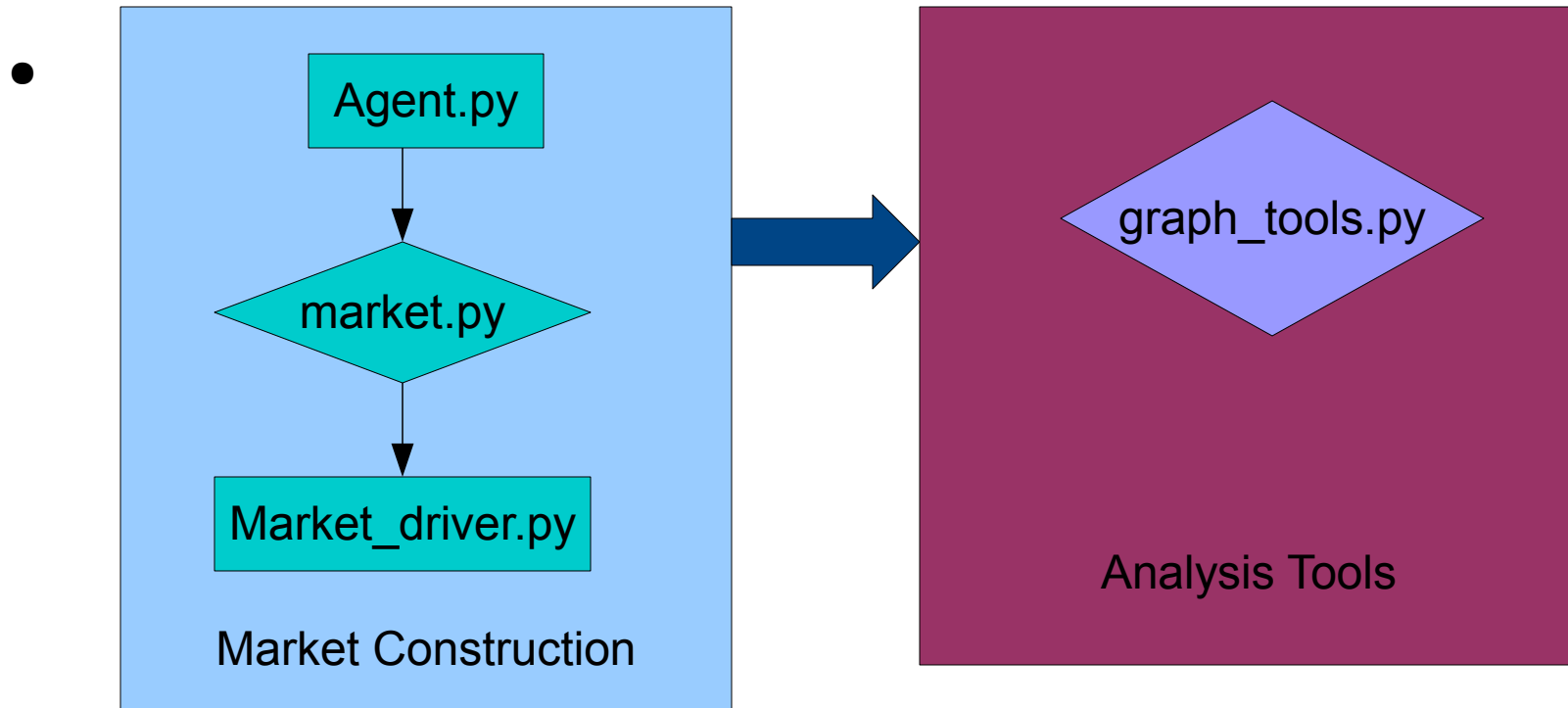
- Lends itself nicely to a cellular automata model
- Agents have a set number of characteristics
- As well as behaviors performed each iteration

Conceptual Implementation

- Take a bunch of agents
- Assign them initial state drawn from global state
 - Quantities, thresholds, rates
- Make buy/sell orders on the market per each agent
- Perform transactions in an auction format

Python Implementation

- Currently 3 object files and a driver



Agent.py

- Agents are the main economic agents within our market. Each agent has resource quotas, as well as parameters that describe the behavior that the agent performs at every iteration.
- Requirements:
 - Store state information for two resource quantities, as well as any behaviour parameters required
 - Store state information for every iteration
 - Provide easy accessors/mutators to these parameters
- Provide a function which provides agent behavior for a given iteration (this function will be called by market class).
 - Reset resource quantities according to rate
 - Update consumption/reuptake rate
 - Make buy/sell offers according to agent state

Market.py

- A market is a container class for agents
- Requirements:
 - Store and manage all agents within a market
 - Construct n agents from a set of global parameters. Draw individual agent parameters from a gaussian distribution.
 - Iterate alive agents at every iteration
 - Determine survival state of all agents
- Coordinate buy and sell offers
 - Buy offers are selected randomly

Driver

- Drives market class
- The “knobs,” if you will
- Directs random distro. of agent qualities

Graphtools.py

- Accepts a market object as initial parameter
- Displays market/agent data
- Being expanded

Avenues for Analysis

- Currently:
 - Plotting average wealth vs. time
 - Distribution of wealth
 - Agent attrition rate
- Future:
 - Graphing supply/demand
 - Examination of variation of global market parameters
 - Examination of different agent behavior?
 - Modify buyer determination procedures?