

MASON Retirement Age

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RA

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Outline

- 1 Introduction
- 2 Replication
- 3 Object Oriented Programming
- 4 The Joy of Garbage Collection

The two souls of the paper

- An experiment in replication

The two souls of the paper

- An experiment in replication
- An experiment in MASON

- If we choose a very simple model, can we achieve “numerical identity”?

Replication

- If we choose a very simple model, can we achieve “numerical identity”?
- No

Replication

- If we choose a very simple model, can we achieve “numerical identity”?
- No
- Numerical identity is really hard

- *Models are completely independent from visualization, which can be added, removed, or changed at any time*

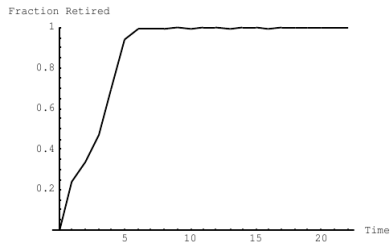
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- Can we believe advertisement?

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- Can we believe advertisement?
- Maybe.

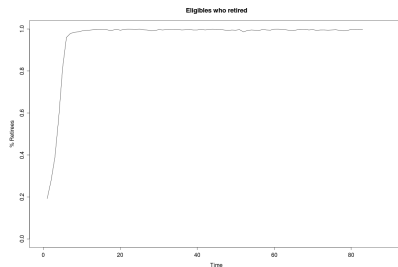
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The Good



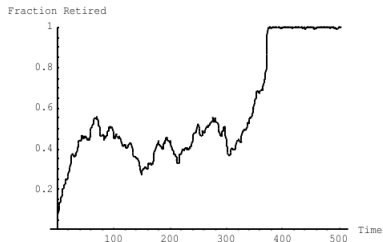
(a) Original Paper



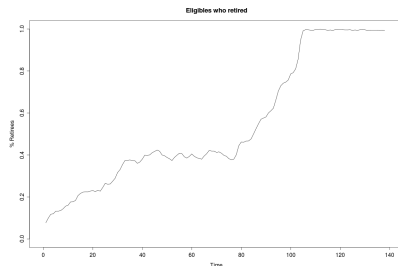
(b) MASON replication

Figure: 20% rational agents case comparison

The Good



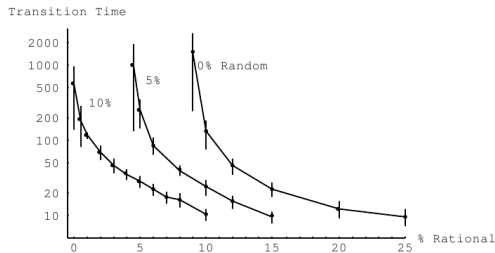
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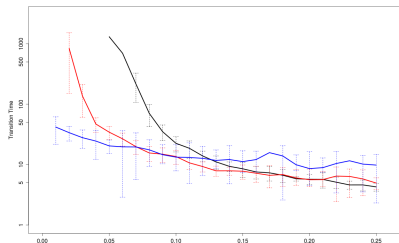
(b) MASON replication

Figure: 5% rational agents case comparison

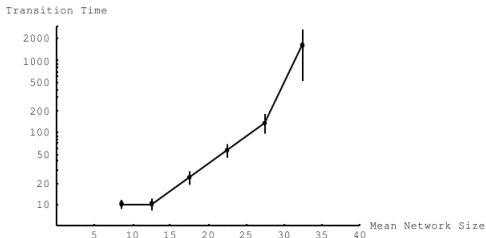
The (kind of) good



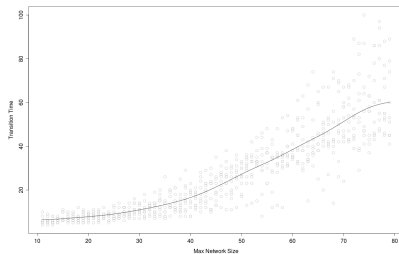
(a) Original Paper



The (kind of) good



(a) Original Paper



The really bad

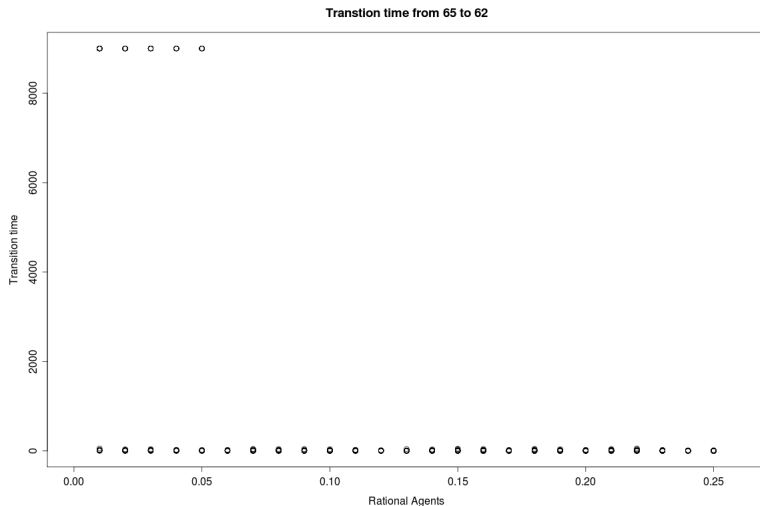


Figure: Weird dynamics

The weird

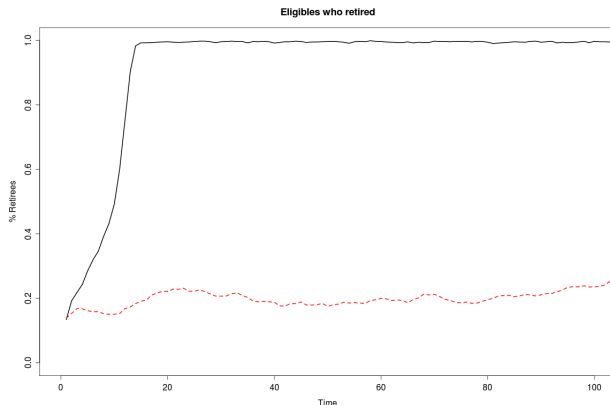


Figure: The black line is the simulation with strict threshold, the red line is without

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The Advantages of Java

- Can use premade data structures
- Can use premade modelling structures
- Object-oriented programming!

Amateur Perspective

- Never write twice

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- Small meaningful functions

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- Implementation Hiding

Amateur Perspective

- Never write twice
- Small meaningful functions
- Implementation Hiding ... sort of

- Three types of agents

Agent Type

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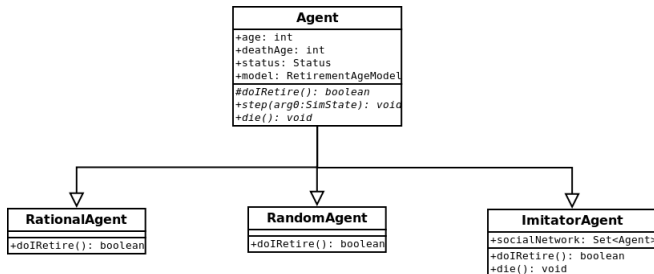
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- Keep them as a class

Agent Type

- Three types of agents
 - ▶ Rational
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- Keep them as a class
- Instantiate them in proportion

It's UML Time!



- Interface vs Abstract Class

- Interface vs Abstract Class

```
public void step(SimState arg0) {  
  
    age++;  
  
    if (age >= deathAge)  
        this.die();  
  
    else if (status == Status.WORKING)  
        status = doRetire();  
}
```


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- ImitatorAgent extends *die()*
- All we need to do is schedule them.

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The Garbage Collector

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- Automatically: unlinked objects

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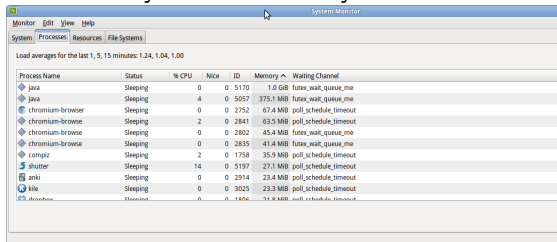
- It “automatically” destroys unused objects
- Automatically: unlinked objects
- Cannot be done manually

Delete agents

- Do we really need to destroy them?

Delete agents

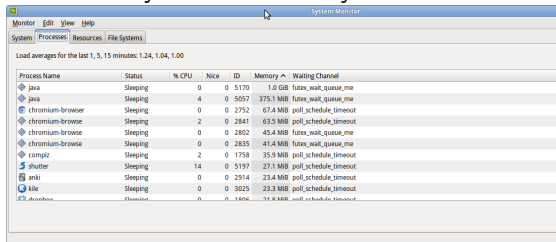
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java	Sleeping	0	0	5170	1.0 GiB	futex_wait_queue_me
java	Sleeping	4	0	5057	375.1 MiB	futex_wait_queue_me
chromium-browser	Sleeping	0	0	2752	67.4 MiB	poll_schedule_timeout
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anki	Sleeping	0	0	2914	23.4 MiB	poll_schedule_timeout
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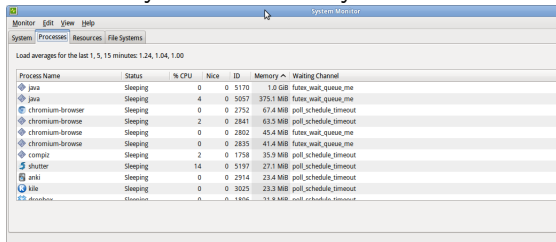


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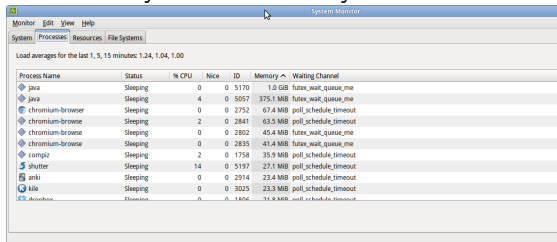


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System Monitor

Monitor Edit View Help

System Processes Resources File Systems

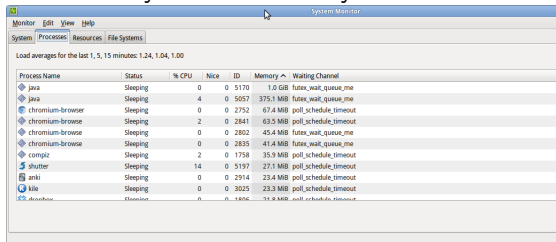
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- Heap

How to remove a repeating steppable from the heap

- Make the array steppable instead

How to remove a repeating steppable from the heap

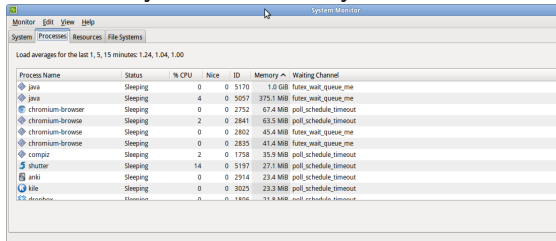
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- Use Stoppable

How to remove a repeating steppable from the heap

- Make the array steppable instead
- Use Stoppable
- **public** *Stoppable scheduleRepeating(Steppable agent)*

Delete agents 2

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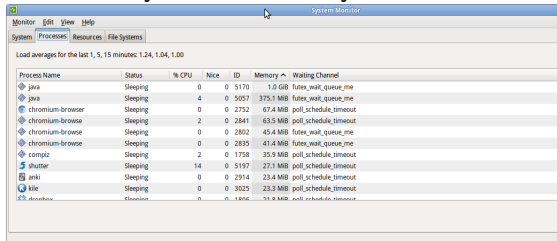


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- A set of Agents

Social Network

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- These are references to your friends

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- As long as one of your friend is alive (or a friend of that friend...) you will not be recycled

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- As long as one of your friend is alive (or a friend of that friend...) you will not be recycled
- This created enormous slowdowns, even after fixing for the other two
- Morale: Garbage collector thinks you are smarter than you are