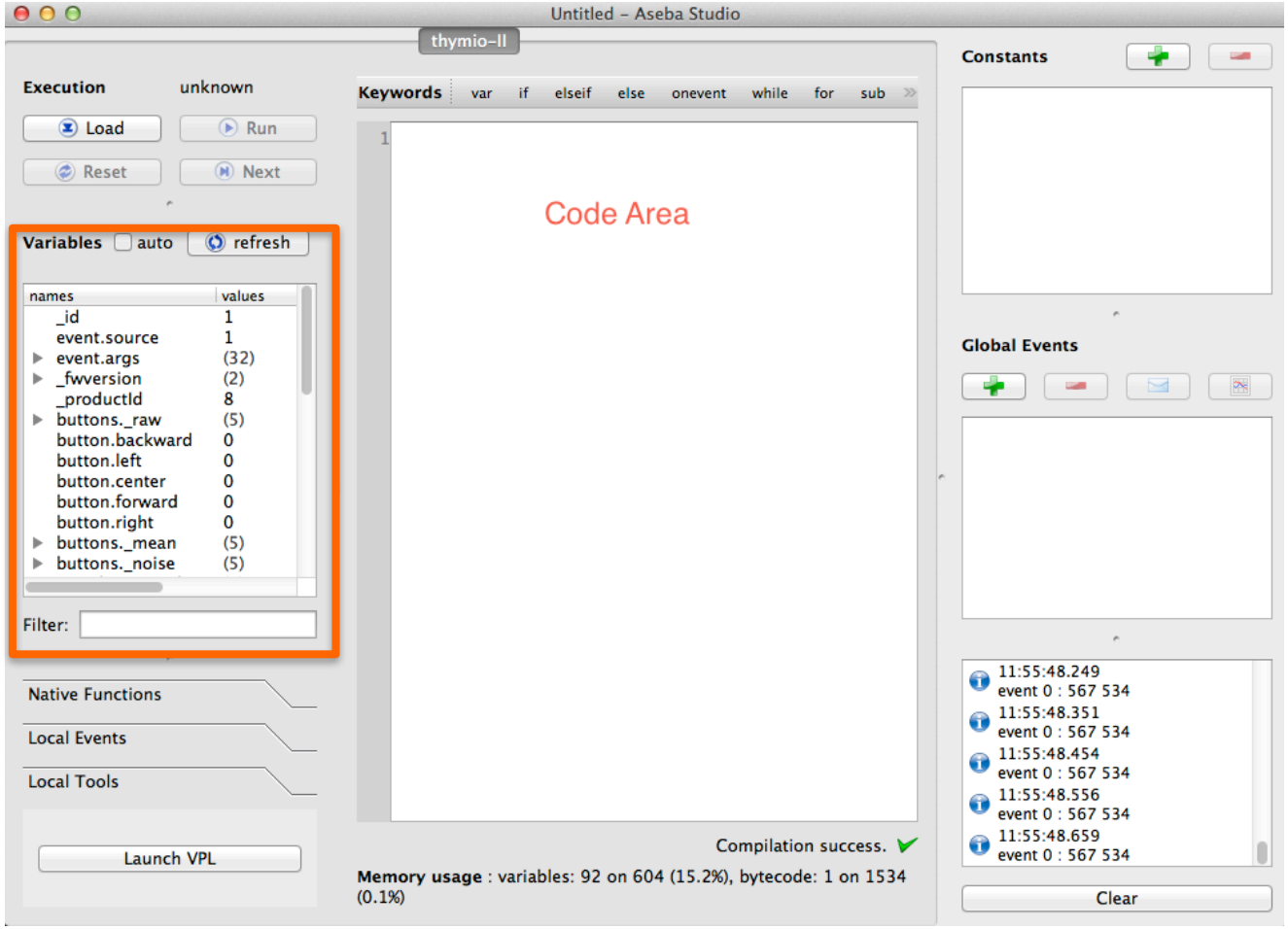
CSCI 1108
Introduction to
Experimental Robotics

Software environments for robotics
and
Simulator

Aseba Studio



https://aseba.wikidot.com/en:thymioapi

Android™ Based Robotics

Nicolas Oros, Jeffrey Kritchmar

https://youtu.be/2czndpV6pWw

Robotics Software Environments

- Ubuntu (Unix OS)

- ROS (Robot Operating System)
  www.ros.org
  Subscription architecture, wide range of services, many robots have ROS nodes

- OpenCV (Open Computer Vision)
  opencv.org

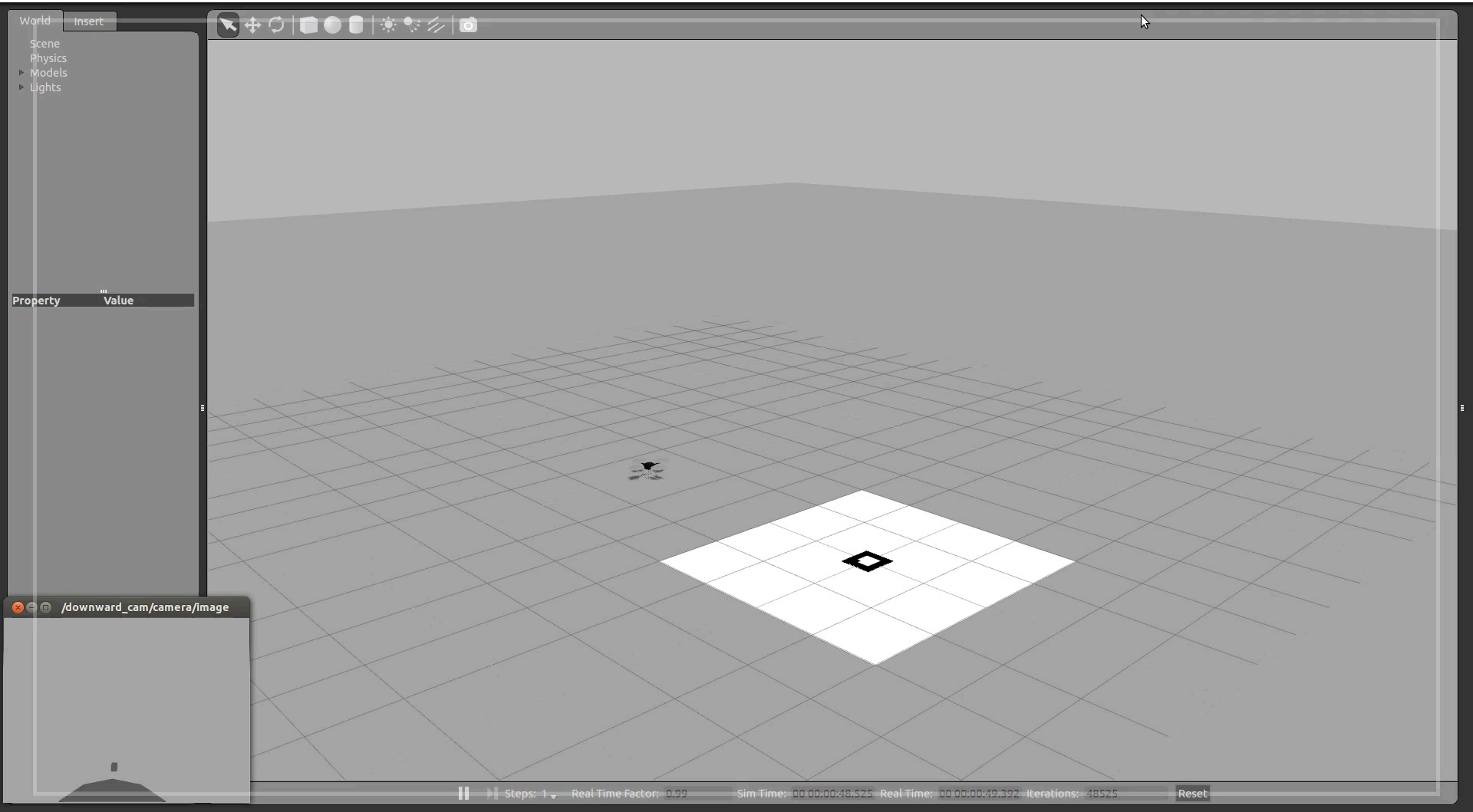
  Most commonly computer vision package

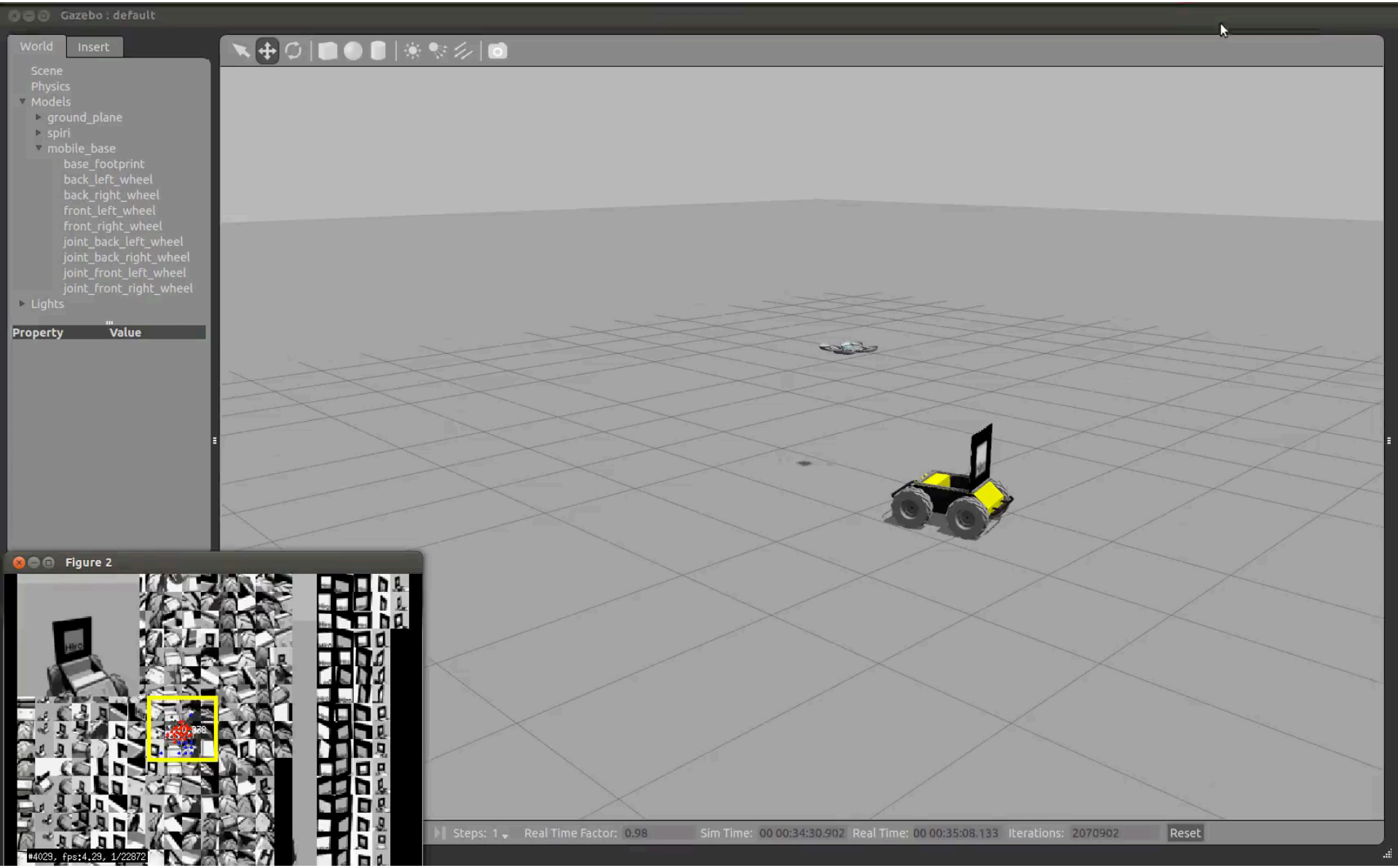
Robotics Simulators

- Physical robots have traditionally been expensive and often require careful handling (safety)
- A common way in robotics is therefore to use programs that simulate the physical behaviour of a robot.
- Simulators are useful for initial development, but roboticists always stress their limitations

Example of open source simulator

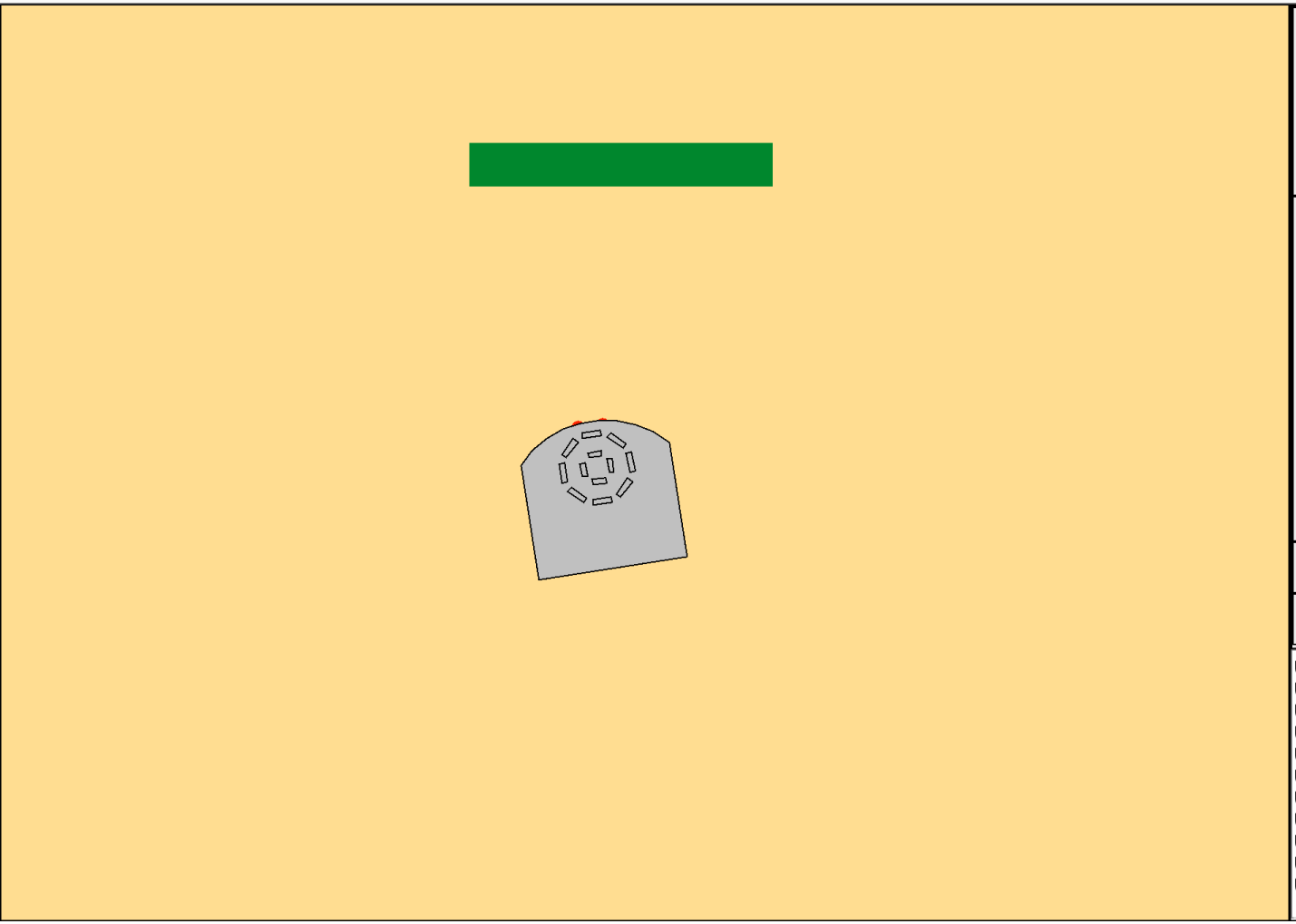
GAZEBO




Gazebo : default
World
Insert
Scene
Physics
Models
ground_plane
spiri
mobile_base
base_footprint
back_left_wheel
back_right_wheel
front_left_wheel
front_right_wheel
joint_back_left_wheel
joint_back_right_wheel
joint_front_left_wheel
joint_front_right_wheel
Lights
Property
Value
Figure 2
#4029, fps:4.29, 1/22872
Steps: 1
Real Time Factor: 0.98
Sim Time: 00 00:34:30.902
Real Time: 00 00:35:08.133
Iterations: 2070902
Reset

Hammer [modified]

File Edit



Host: localhost Proxy

ID: 1 Passwd: 0 0

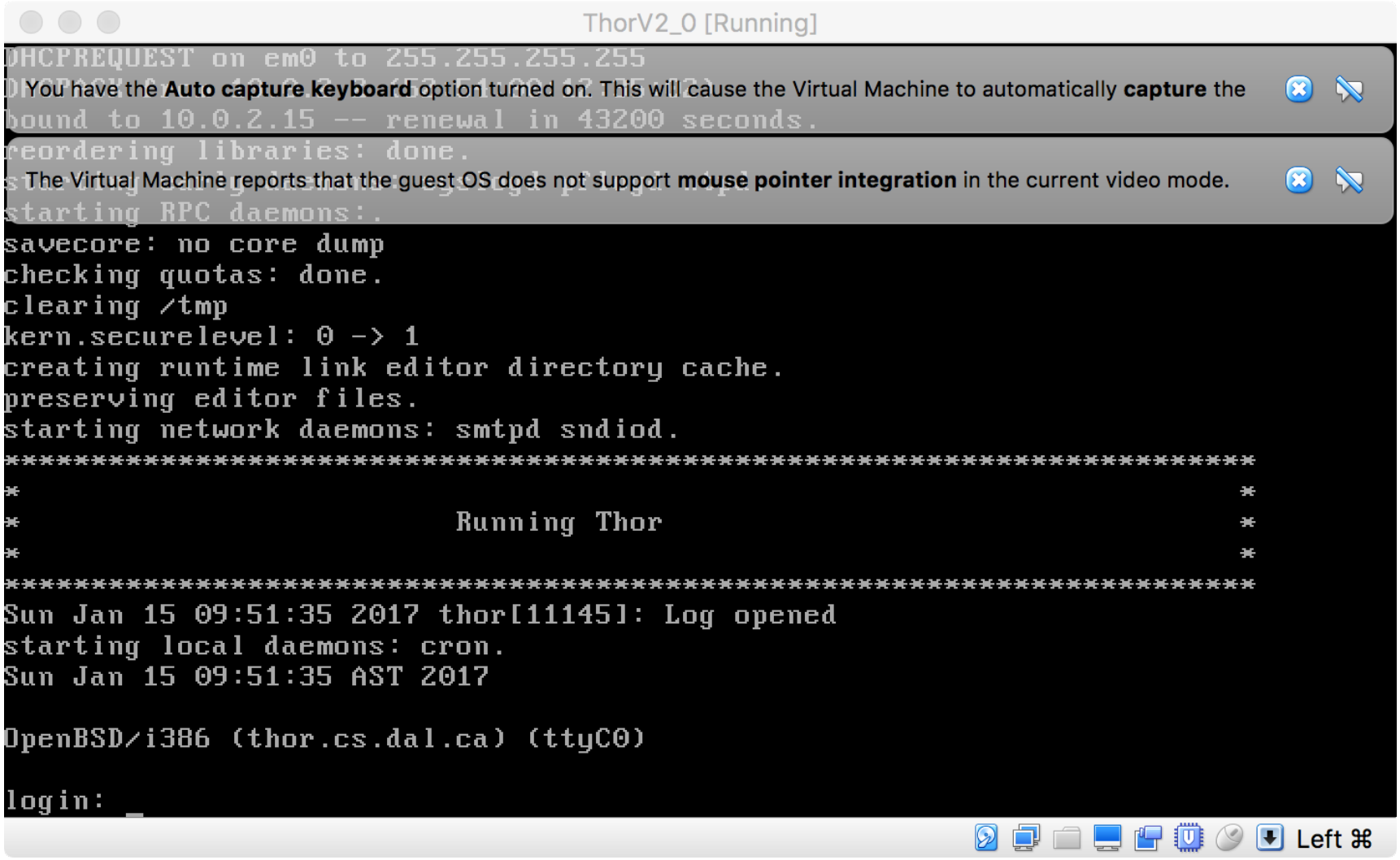
Connect Status: Not Connected

+ Advanced

Arena: Length 2000 Width 1000

Robot: X 445 Y 616 Dir -9

Updates received: 12800
Updates received: 12900
Updates received: 13000
Updates received: 13100
Updates received: 13200
Updates received: 13300
Updates received: 13400
Updates received: 13500
Updates received: 13600
Updates received: 13700
Updates received: 13800


ThorV2_0 [Running]
DHCPREQUEST on em0 to 255.255.255.255
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to automatically capture the
bound to 10.0.2.15 -- renewal in 43200 seconds.
reordering libraries: done.
The Virtual Machine reports that the guest OS does not support mouse pointer integration in the current video mode.
starting RPC daemons:.
savecore: no core dump
checking quotas: done.
clearing /tmp
kern.securelevel: 0 -> 1
creating runtime link editor directory cache.
preserving editor files.
starting network daemons: smtpd sndiod.
****
*
*
Running Thor
*
*
****
Sun Jan 15 09:51:35 2017 thor[11145]: Log opened
starting local daemons: cron.
Sun Jan 15 09:51:35 AST 2017
OpenBSD/i386 (thor.cs.dal.ca) (ttyC0)
login: _
Left ⌘

```
var a = 0
var i = 3

for i in 1:3 do
    a=a+i
end
```