SOFTENG 306

Project 1: Ros Simulation

User Manual

Group 1: UGBots
[Date]

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Setting up Workspace

This section of the user manual assumes that the current machine runs an Ubuntu operating system and has a working version of ROS-indigo installed. If not, please move to such a machine and follow the instructions found at

http://wiki.ros.org/indigo/Installation/Ubuntu

Cloning the project

Open the terminal and run the following command:

```
git clone https://github.com/Puhapig/UGBots_ROS.git
```

Or if you have an SSH key set up you may run this command:

```
git clone git@github.com:Puhapig/UGBots_ROS.git
```

The project folder will be located in the directory the terminal is currently on. To move this, open the file explorer to that directory and move it as preferred.

Initialise the Workspace

Open the terminal and navigate into the directory of the project, i.e */UGBots_ROS if the project folder has not been renamed. Once there, type the following command:

```
rosws init <REPO_LOCATION> <INSTALLATION_LOCATION>
```

Where Replacing <REPO_LOCATION> and <INSTALLATION_LOCATION> with the full path to the cloned repo and path to where ROS is installed on the machine respectively.

Check the project folder (UGBots_ROS) in file explorer for the following 3 files:

- setup.bash
- setup.sh
- setup.zsh

Next is setting up the bash terminal to reference the project every time it is opened. Type the following commands into the terminal, replacing <REPO_LOCATION> with the full path to the cloned repo once more:

```
echo "source <REPO_LOCATION>/setup.bash" >> ~/.bashrc


echo "export ROS_PACKAGE_PATH=$ROS_PACKAGE_PATH:<REPO_LOCATION>"
>> ~/.bashrc
```

The project should now be cloned and initialised properly. To confirm this run the following code to check for failures.

```
cd ugbots_ros

rosmake
```

Starting the Simulation

Starting the GUI

Open the file explorer and navigate into the directory of the project. Make sure the following files are present:

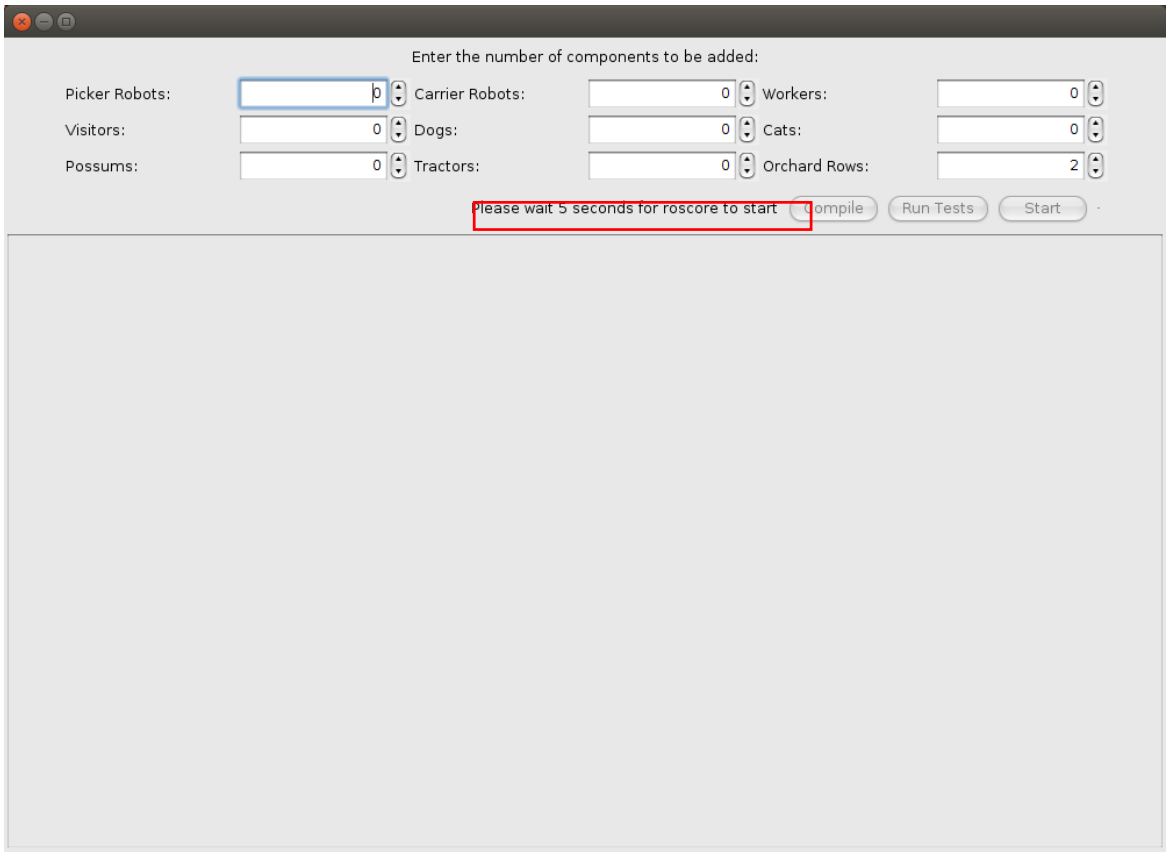
- Launcher.jar
- The folder JarResources with the following files
    - finish.bash
    - kill.bash
    - launchnodes.bash
    - runcore.bash
    - runmake.bash
    - runtests.bash
    - runtopic.bash
    - runworld.bash
    - writeWorld.bash

If not, they can be found on the repo.

Open the terminal and navigate into the directory of the project. Run the jar file inside by typing the following command:

```
java –jar Launcher.jar
```

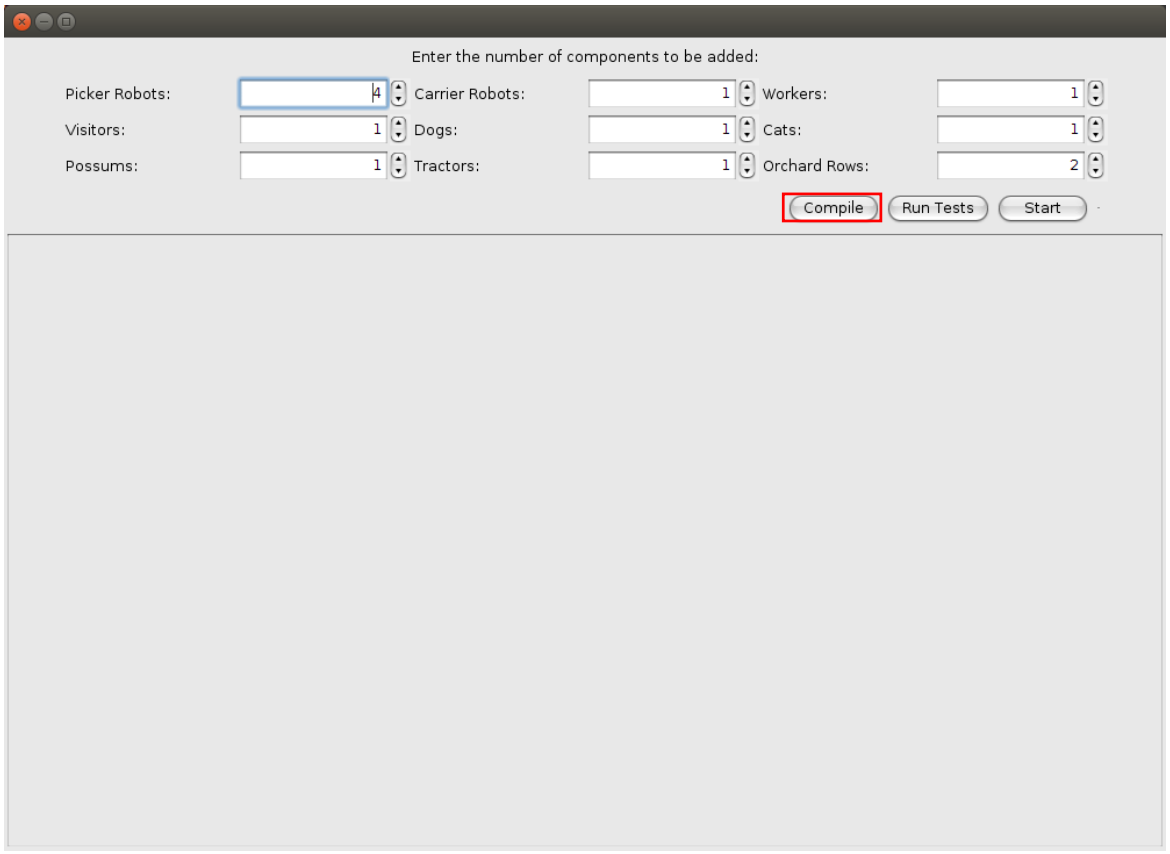
The GUI will launch but will be inactive for 5 seconds as it is waiting for roscore.



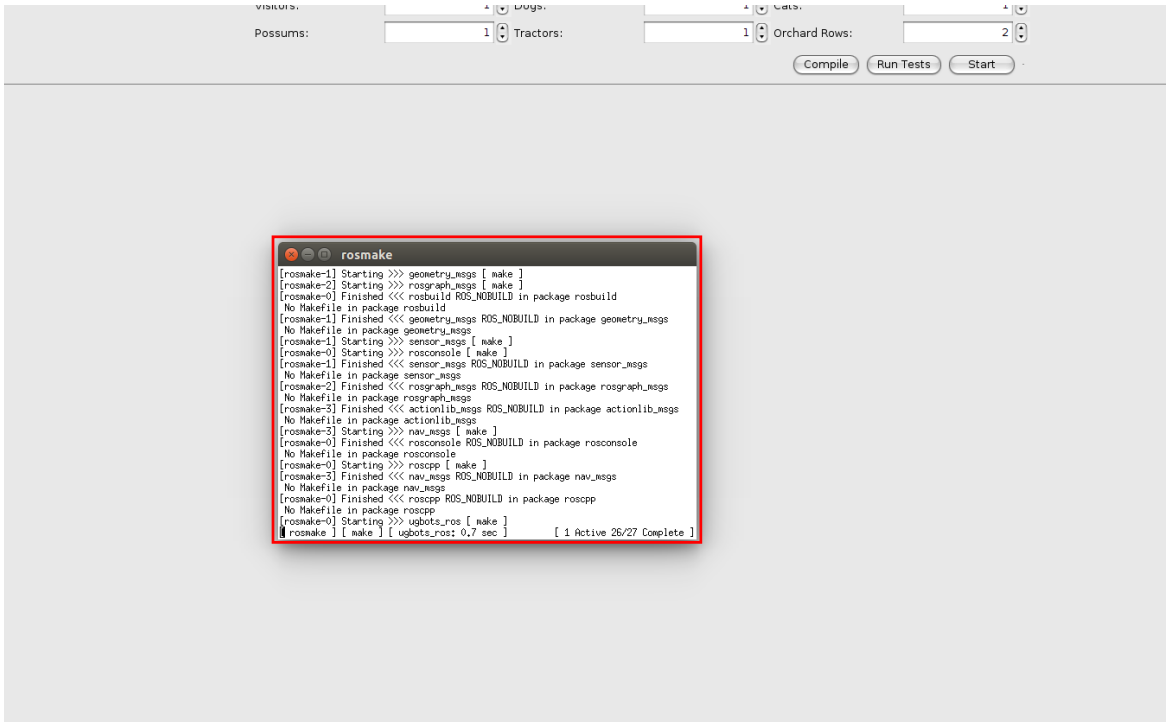
You may, however, change the desired number of each element to be shown in the when it starts.

Compiling the project

Before running, check to see if the code is working well. There is a compile button present on the GUI which will do this. This may take some time if it is the first time.

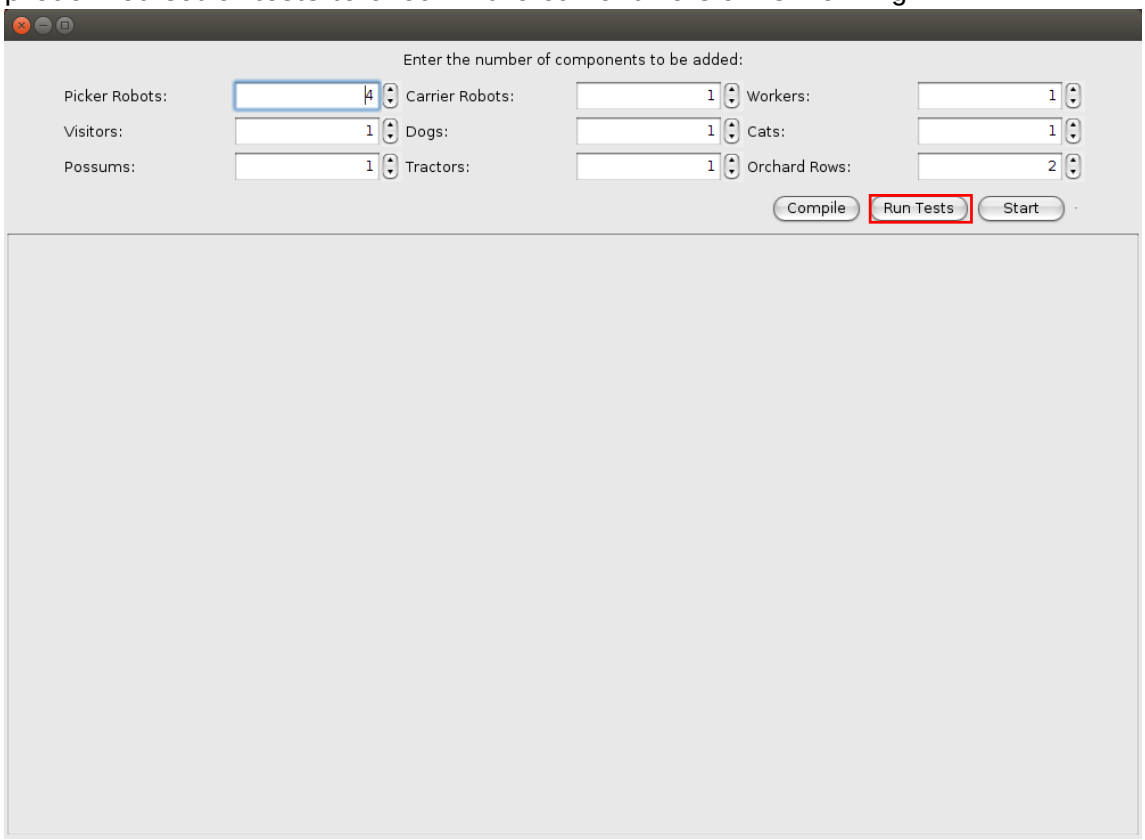


Upon clicking, a new terminal will open to execute rosmake. Closing this terminal needs to be done manually. This was made so for debugging purposes.

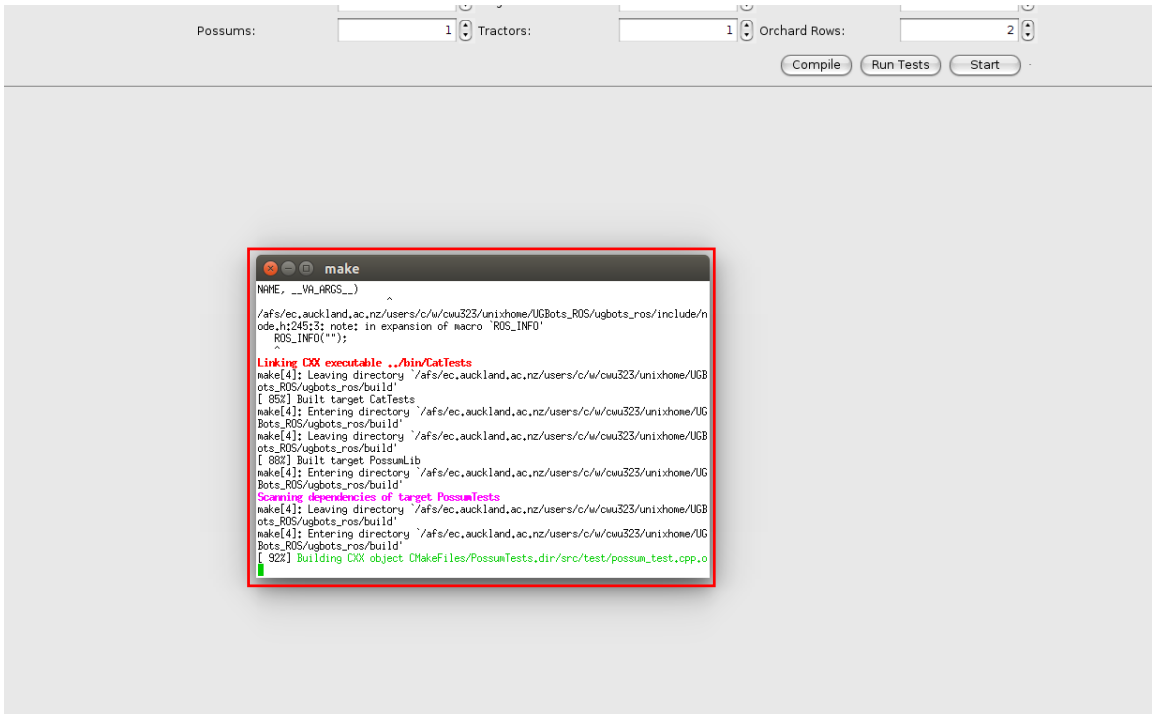


Testing

The GUI also comes with a testing functionality. The Run Tests button runs a predefined set of tests to check if the current version is working.

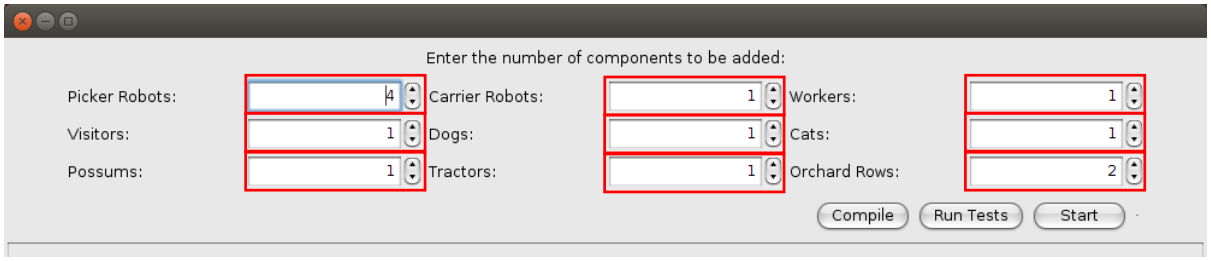


This too will open a new terminal to execute make tests and must be closed manually.

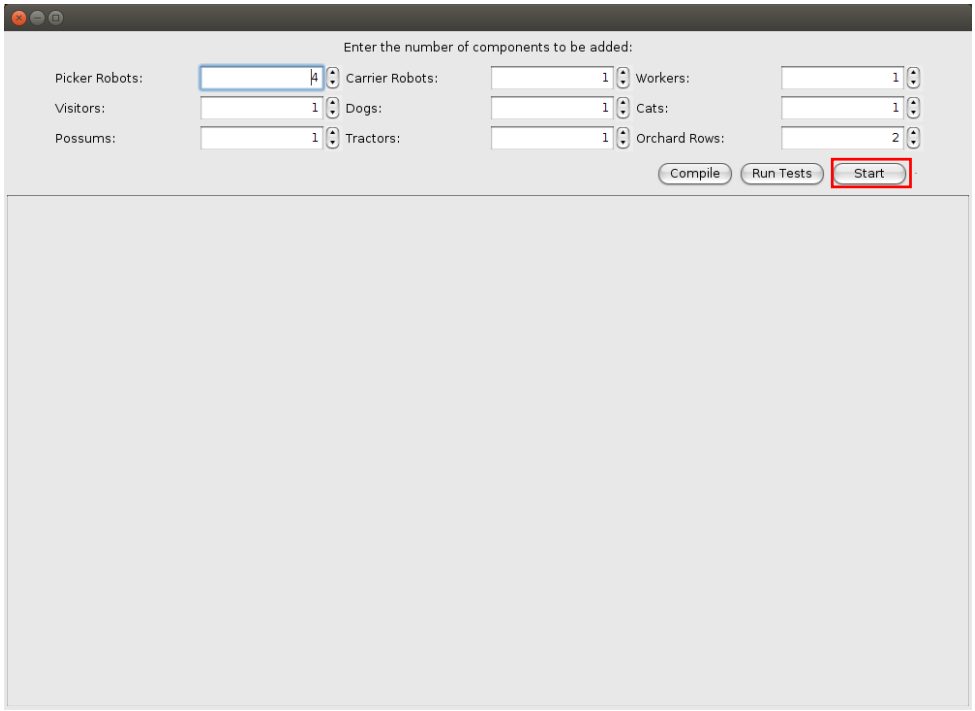


Starting Simulation

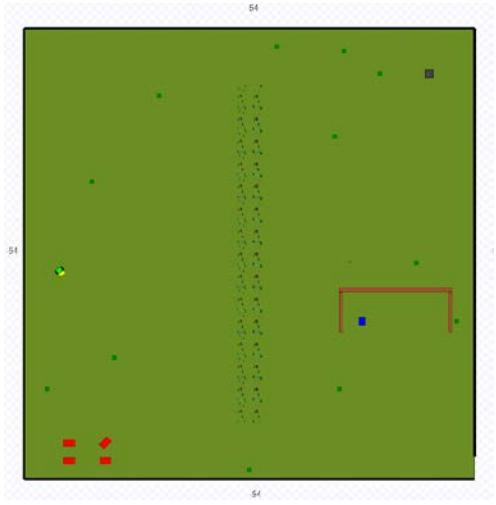
Edit the number of each component you wish to simulate by using the spinner boxes.



Click the start button to launch the world.



This will launch the world using stage_ros.

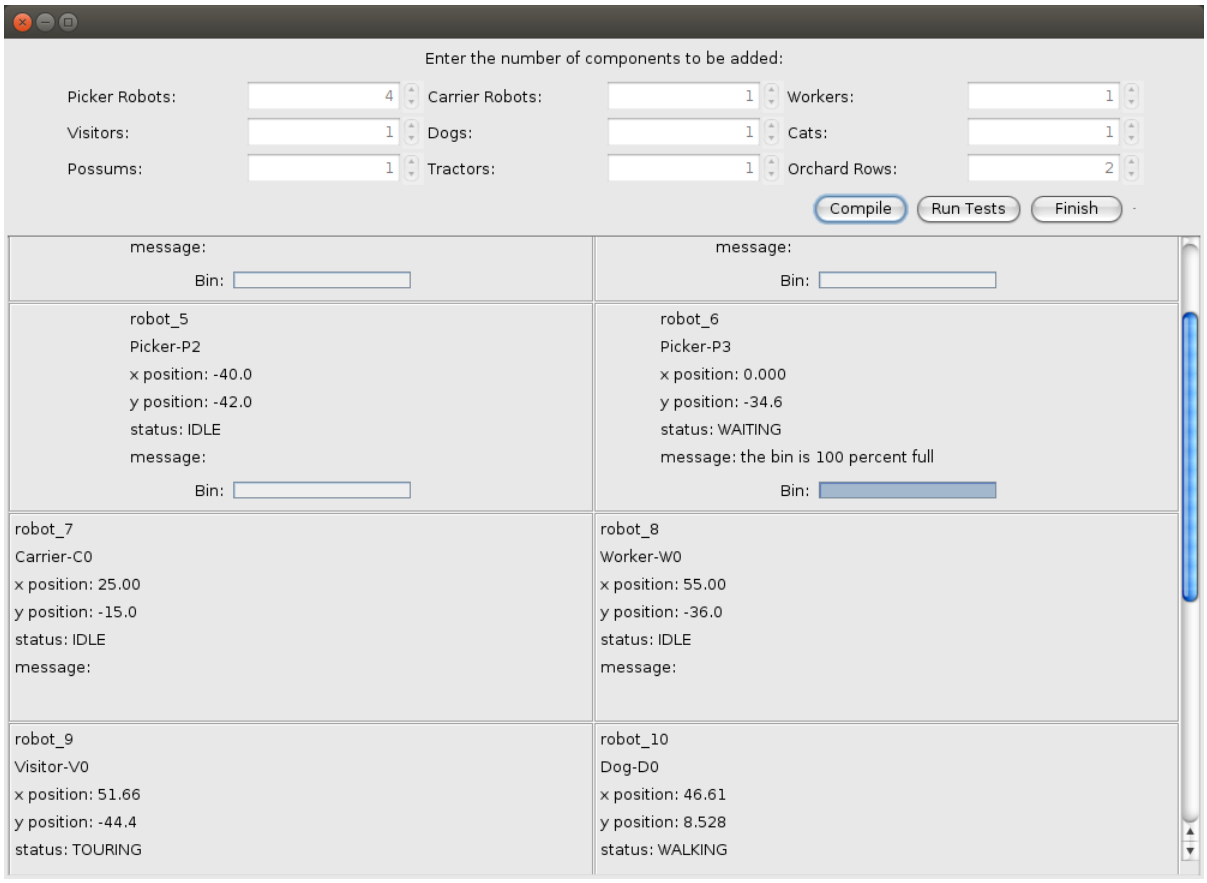


This is a version of the world displayed on the right. The models shown below will be shown in greater detail later in the manual.

Nodes may appear to be inactive for the first minute if this is the first time running or if compile was never pushed.

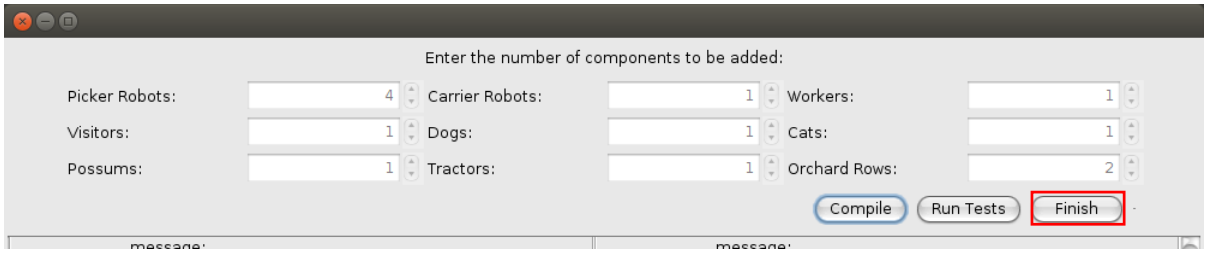
Viewing Status of Each Node

Once nodes start moving, basic information regarding each node will be displayed and updated on the GUI.



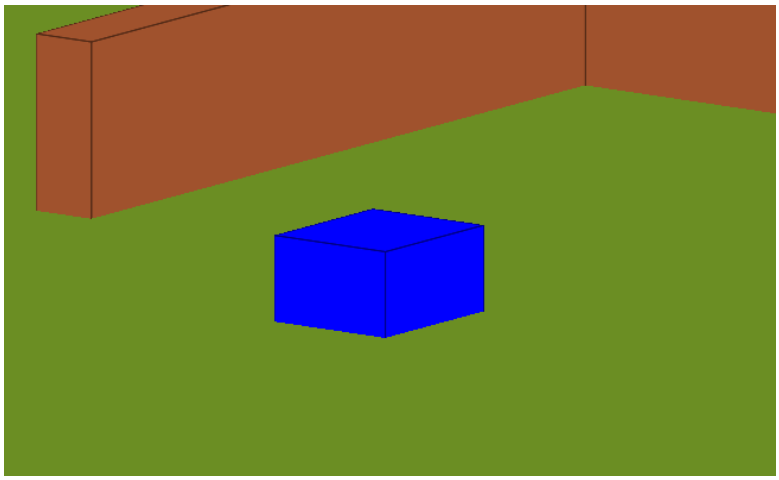
Closing the Simulation

Close the simulation by exiting the window, ensuring to NOT save the world. Alternatively, go to the Launcher GUI and click finish. This will automatically close all related processes.

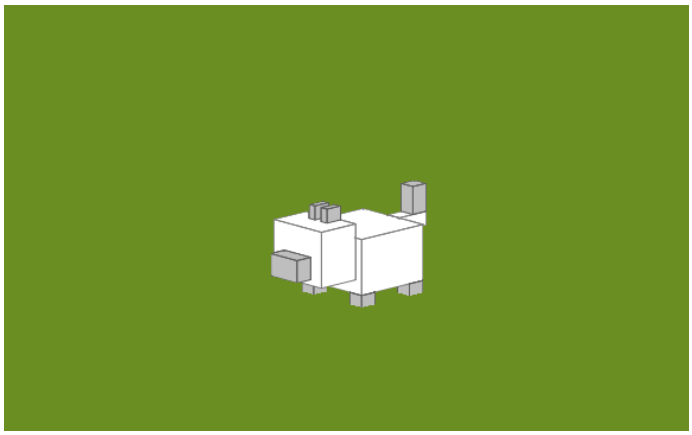


Models in the World

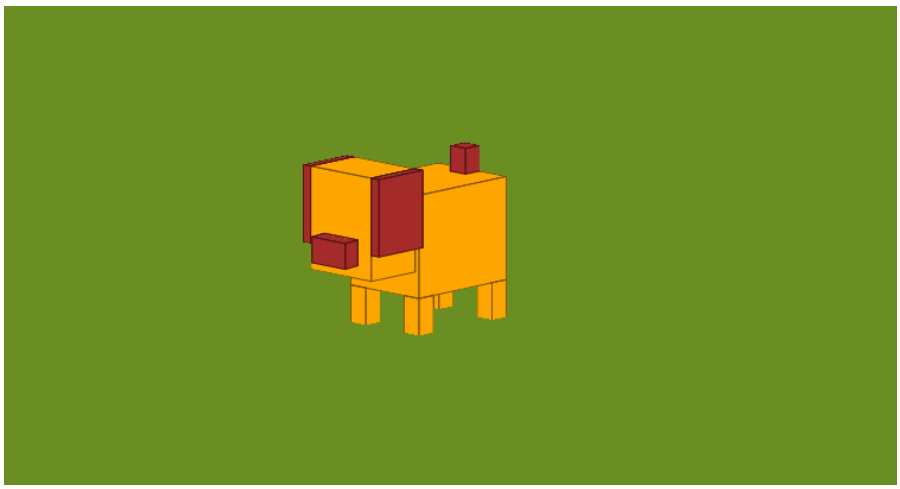
Carrier (Blue) And Picker (Red)



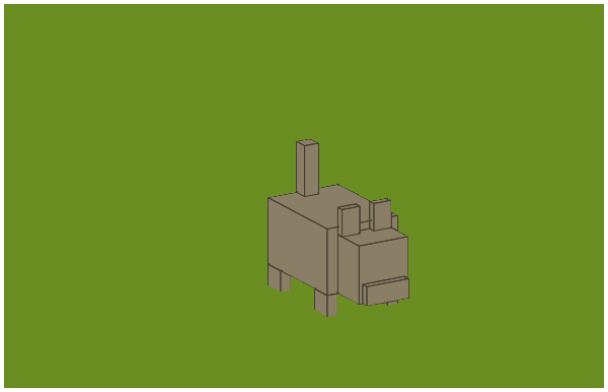
Cat



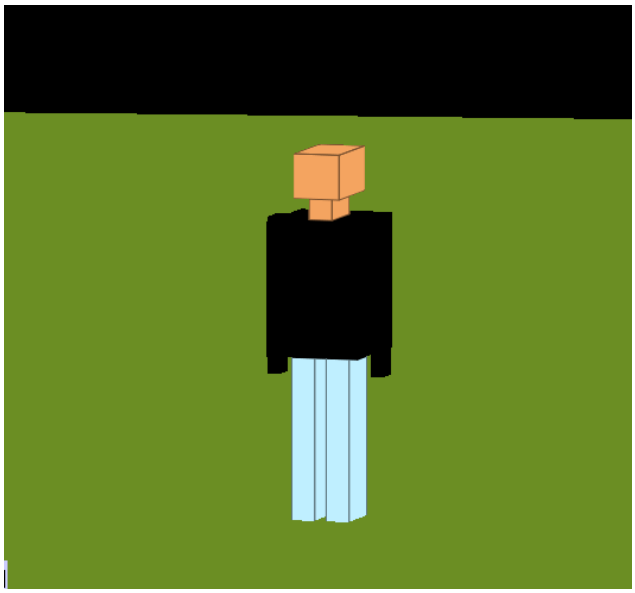
Dog



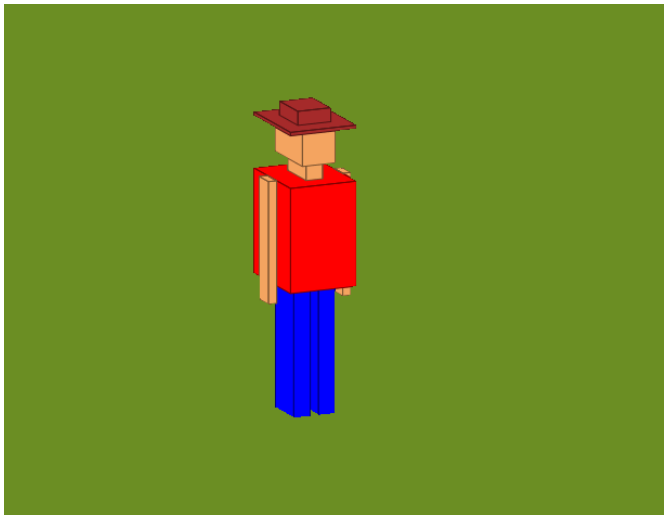
Possum



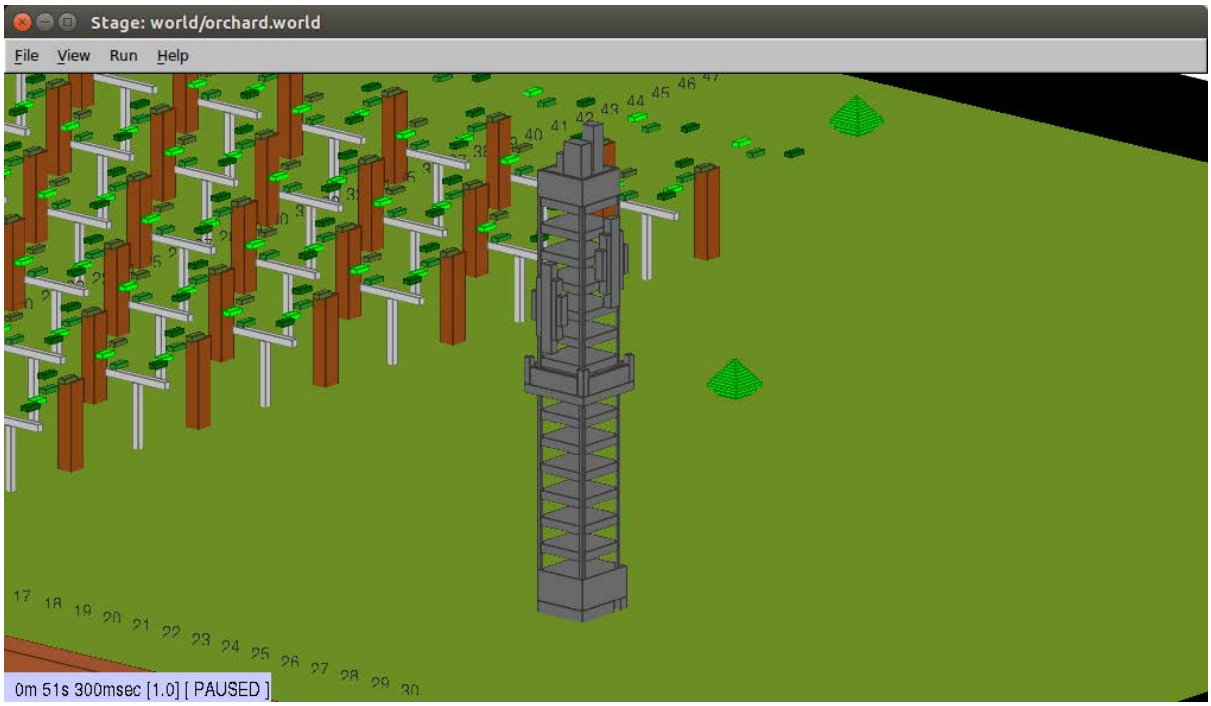
Visitor



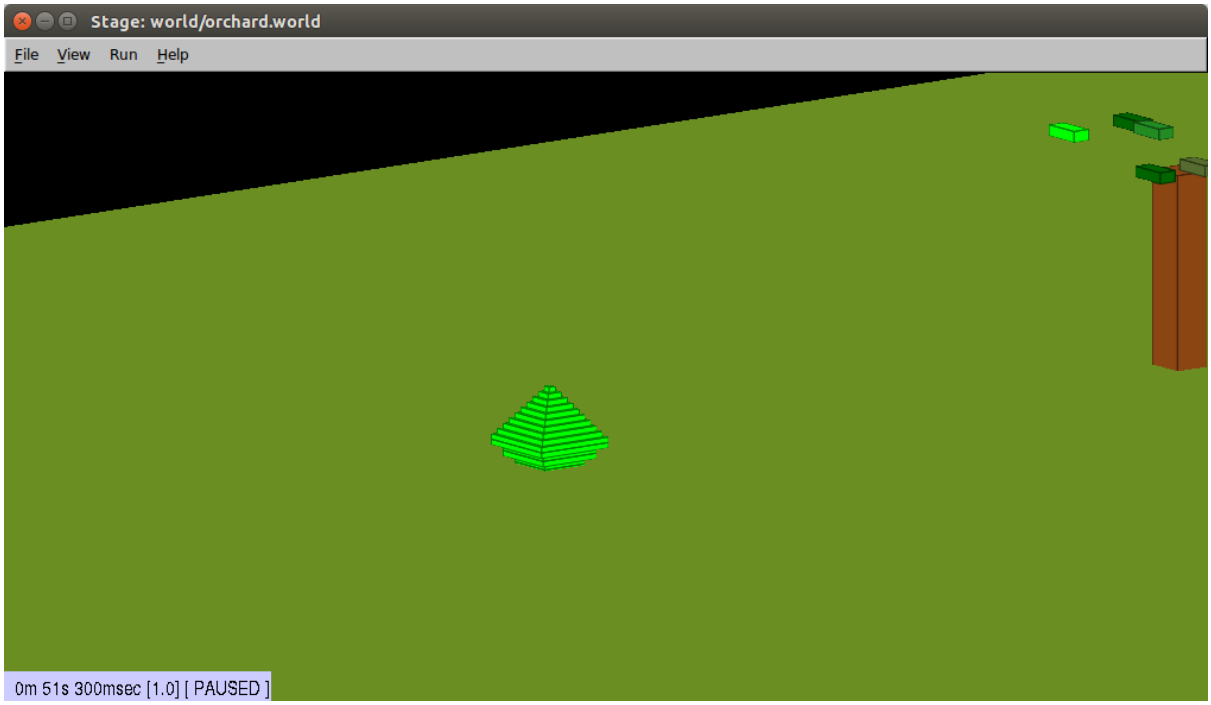
Worker



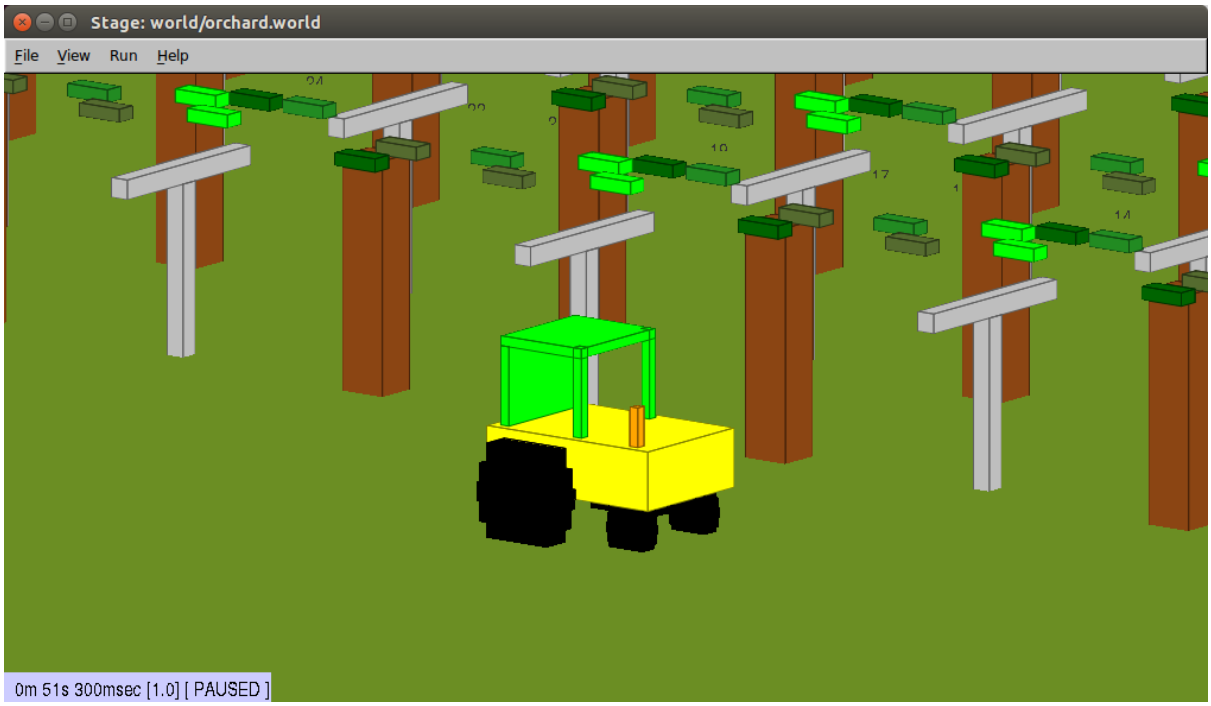
Command Center



Shrubs



Tractor


Stage: world/orchard.world
File View Run Help
0m 51s 300msec [1.0] [PAUSED]