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**This tutorial describes how to use Sawyer with Gazebo the standard Physics Simulator for ROS.**



[Please visit the Gazebo Tutorials homepage for more information about the Physics simulator](#)

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## Installation/Prerequisites

- Make sure you have followed the [Workstation Setup](#) tutorial before beginning this section. Sawyer Gazebo is **only** available for **Ubuntu 16.04, ROS Kinetic, and Gazebo 7**.
- Ensure the following software packages are installed:

☒ ☐ ROS Kinetic

```
$ sudo apt-get install gazebo7 ros-kinetic-qt-build ros-kinetic-gazebo-ros-control ros-kinetic-gazebo-ros-pkgs ros-kinetic-ros-control ros-kinetic-control-to
```

## Sawyer Simulator Installation

☒ ☐ ROS Kinetic

- From your catkin workspace where the SDK resides, use wstool to install and update:

### Install sawyer\_simulator

```
$ mkdir -p ~/ros_ws/src
$ cd ~/ros_ws/src
$ git clone https://github.com/RethinkRobotics/sawyer_simulator.git
$ cd ~/ros_ws/src
$ wstool init .
$ wstool merge sawyer_simulator/sawyer_simulator.rosinstall
$ wstool update
```

**IMPORTANT:** Make sure all simulator repositories update to their proper branch.

### Build Source

```
$ source /opt/ros/kinetic/setup.bash
$ cd ~/ros_ws
$ catkin_make
```

### Simulation

- The intera.sh shell has a special hook of `*sim*` for Simulation. Run the Intera shell script with sim specified:

```
$ ./intera.sh sim
```

- Start simulation with controllers:

```
$ roslaunch sawyer_gazebo sawyer_world.launch
```

## Smoke Test

Check if the simulator was installed and launched successfully by typing the following commands:

```
$ rosnode list
```

This should list the nodes as [here](#).

```
$ rostopic list
```

This should list the topics as [here](#).

```
$ rostopic echo /robot/state
```

By default, the following messages should be displayed at 100 HZ.

```
enabled: False
stopped: False
error: False
estop_button: 0
estop_source: 0
---
```

## Run SDK Examples

- Start Joint Torque Springs example:

```
$ ./intera.sh sim
$ roslaunch sawyer_gazebo sawyer_world.launch
*in a new terminal*
$ ./intera.sh sim
$ rosrn intera_examples joint_torque_springs.py
```

- Or, Start Simulated Pick and Place example:

```
$ ./intera.sh sim  
$ roslaunch sawyer_sim_examples sawyer_pick_and_place_demo.launch
```

For additional information on the interfaces that are implemented with this release, visit the [Simulator API](#) page.

## Troubleshooting

- Please refer to the troubleshooting page [Gazebo Troubleshooting](#)

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