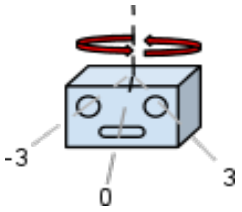
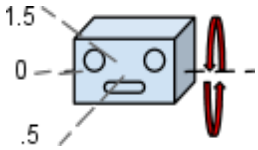
Head

head.look_at(1.0, <h1> ,<h2>)
head.wait_for()

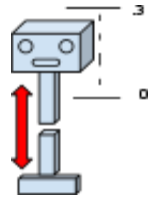
<table>
<tr>
<td><h1></td>
<td> 

head_pan_joint</td>
<td>Head- Rotate to Sides
<table>
<tr><td>Left</td><td>Cent</td><td>Right</td></tr>
<tr><td>3</td><td>0</td><td>-3</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td><h2></td>
<td> 

head_tilt_joint</td>
<td>Head Up and Down
<table>
<tr><td>Down</td><td>Cent</td><td>Up</td></tr>
<tr><td>.5</td><td>1</td><td>1.5</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

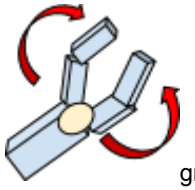
Torso

torso.set(<t1>) #Determines relative height of PR2 in meters

<table>
<tr>
<td><t1></td>
<td> 
torso_lift_joint</td>
<td>Height Grow/Shrink
<table>
<tr><td>Min</td><td>Max</td></tr>
<tr><td>0</td><td>.3</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

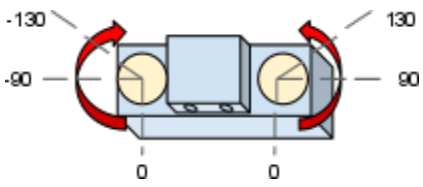
Grippers

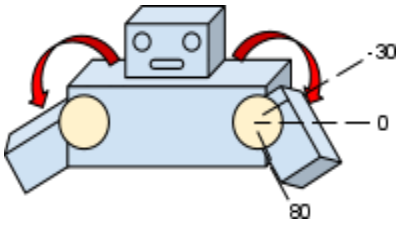
gripper.<a1>(<ARM>) #opens or closes the grippers
gripper.wait_for(<ARM>)

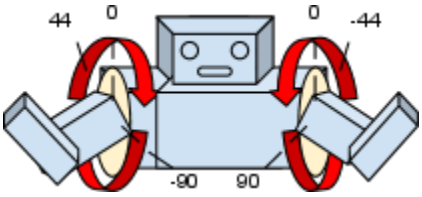
<table>
<tr>
<td><a1></td>
<td> 
gripper_joint</td>
<td>
<table>
<tr><td>to open:</td><td>to close:</td></tr>
<tr><td>rel</td><td>close</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td><ARM></td>
<td></td>
<td>
<table>
<tr><td>LEFT</td><td>RIGHT</td><td>BOTH</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

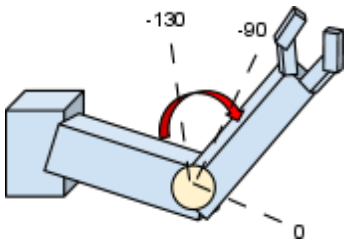
Arms

arm.move_to([<p1>,<l2>,<u3>,<e4>,<f5>,<w6>,<r7>],<ARM>)
head.wait_for() #(pan, lift, upper, elbowflex , forearm, wrist, roll)

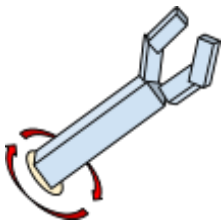
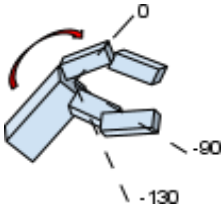
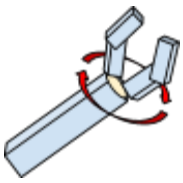
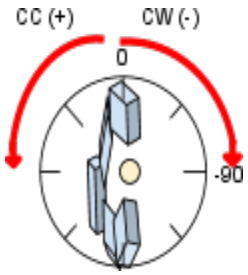
<table>
<tr>
<td><p1></td>
<td> 

shoulder_pan_joint</td>
<td>Shoulder- Forward and Back
Right
<table>
<tr><td>Back</td><td>Front</td></tr>
<tr><td>-130°</td><td>0°</td></tr>
</table>
Left
<table>
<tr><td>Back</td><td>Front</td></tr>
<tr><td>130°</td><td>0°</td></tr>
</table></td>
<td></td>
</tr>
<tr>
<td><l2></td>
<td> 

shoulder_lift_joint</td>
<td>Shoulder- Flap Up and down
<table>
<tr><td>Down</td><td>Up</td></tr>
<tr><td>80°</td><td>-30°</td></tr>
</table></td>
<td></td>
</tr>
<tr>
<td><u3></td>
<td> 

upper_arm_roll_joint</td>
<td>Right
<table>
<tr><td>Back</td><td>Front</td></tr>
<tr><td>44°</td><td>-224°</td></tr>
</table>
Left
<table>
<tr><td>Back</td><td>Front</td></tr>
<tr><td>-44°</td><td>224°</td></tr>
</table></td>
<td></td>
</tr>
<tr>
<td><e4></td>
<td> 

elbow_flex_joint</td>
<td>Arm Angle
<table>
<tr><td>Bent</td><td>Straight</td></tr>
<tr><td>-130°</td><td>0°</td></tr>
</table></td>
<td></td>
</tr>
</table>

<f5>	 forearm_roll_joint	Forearm Angle (in degrees) + Counter clockwise - Clockwise	
<w6>	 wrist_flex_joint	Wrist Angle Bent: -130° Straight: 0°	
<r7>	 wrist_roll_joint	Wrist Rotation Angle (in degrees) 	

<ARM>		LEFT | RIGHT | BOTH	

Sensors and Other Features

Wait for Gripper Slap

```
gripper.wait_for_slap(<ARM>)
```

<ARM>		LEFT | RIGHT | BOTH	

If Else Statement

```
if (gripper.determine_slap() == LEFT):
    <Insert commands here>
else:
    <Insert commands here>
```

Wait for Time (in seconds)

```
rospy.sleep(2.0)
```

Robot Speak

```
sound.say("Something")
```

Quick Tip for common Arm Direction and Mirroring

	p1	l2	u3	e4	f5	w6	r7
Right	-	+	+	-	+	-	-
Left	+	+	-	-	-	-	+
	op	s	op	s	op	s	op

Beginning of the PR2 Code

```
#!/usr/bin/env python

import roslib
roslib.load_manifest('pr2_simple_interface')
#import rospy

#rospy.init_node('steve_demo')
from pr2_simple_interface import *

start()

gripper = Gripper()
arm = RobotArm()
head = Head()
torso = Torso()
```

Code Tips:

at the beginning of a line will comment code. Commented code will not run.