Robot Operating System

Lab 1: Packages, launch files, parameters and topic remapping

1 Goals

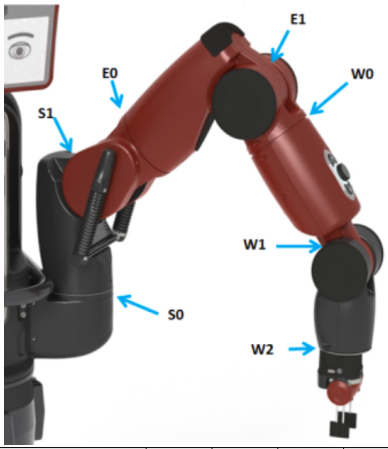
In this lab we will create a launcher that launches three nodes:

- one (`capture_key_node`) for capturing keystrokes from the keyboard and publish it in ROS.
- the other two (`move_joint_node`) that subscribe to the same type of topic published by the `capture_key_node`, moving each one a predefined articulation of the robot defined by parameter. The keys used to increment and decrement the position as well as the increment value are defined by parameters in each node `move_joint_node`.

2 Deliverables

- A text file with the answers to the questions of this sheet
- The launch files of the first task

Files should be zipped and sent by mail (G. Garcia) or through the lab upload form (O. Kermorgant).



group	1	2	3	4	5	6	7
joints (`left_` & `right_`)	`s0`	`s1`	`e0`	`e1`	`w0`	`w1`	`w2`

Figure 1: Baxter joints

3 Specification of the robot and available packages

The Baxter robot has 2×7 joints as shown in Fig. 1, the names of which are listed in the table. The goal is to have each group control 2 of the joints through the same topic.

3.1 Available packages

Two packages are included in this lab:

- `capture_key` contains a single node (`capture_key_node`) that:
  - Captures the keystrokes
  - Publishes their ASCII code on the `/key_typed` topic
  - Does not subscribe to any topic
- `move_joint` contains a single node (`move_joint_node`) that:
  - Moves the joint of a robot in position mode, incremening or decrementing it according to the key which as been typed.
  - Subscribes to:
    - `/key_hit` as topic for the incoming key strokes
    - `/robot/joint_states` for the current state variables of the robot
  - Publishes a joint command for the controlled joint, to the topic `/joint_command`
  - Has the following parameters:
    - `joint_name` to tell the joint to be controlled. This parameter is mandatory and does not have a default value.
    - `incr_key` for the increment key (default +, ASCII code 43)
    - `decr_key` for the increment key (default -, ASCII code 45)