Task 2: Installing and run the package Arduino robot arm on ROS system

Step 1: Installing the package " arduino_robot_arm "

Step 2: Follow the following steps

1- Add the "arduino_robot_arm" package to "src" folder

2- Write on terminal of Ubuntu the following commands:

- cd ~/catkin_ws/src
- sudo apt install git
- git clone **https://github.com/smartmethods/arduino_robot_arm**

3- Install all the dependencies by writing the following commands:

- cd ~/catkin_ws
- rosdep install --from-paths src --ignore-src -r -y
- sudo apt-get install ros-melodic-moveit
- sudo apt-get install ros-melodic-joint-state-publisher ros-melodic-joint-state-publisher-gui
- sudo apt-get install ros-melodic-gazebo-ros-control joint-state-publisher
- sudo apt-get install ros-melodic-ros-controllers ros-melodic-ros-cont

4- Close the terminal.

Step 3: Installing Arduino IDE in Ubuntu by the following steps:

1- Install Arduino IDE in Ubuntu:

https://www.arduino.cc/en/software

2- Run, then write in terminal the following command:

sudo ./install.sh after unzipping the folder

3- Launch the **Arduino IDE**

4- Install the **Arduino package** and **Ros library** by:

http://wiki.ros.org/rosserial_arduino/Tutorials/Arduino%20IDE%20Setup

5- change the port permission before uploading the Arduino code

$ sudo chmod 777 /dev/ttyUSB0

Step 4: Install **rosserial** for Arduino by running following commands on terminal:

- sudo apt-get install ros-indigo-rosserial-arduino
- sudo apt-get install ros-indigo-rosserial

Step 5: Install **ros_lib** library in Arduino ID by creates directory, running following commands on terminal:

- *cd/libraries*
- *rm -rf ros_lib*
- *rosrun rosserial_arduino make_libraries.py .*
- Then Run

Step 6: Run code in Arduino ID

https://github.com/smartmethods/arduino_robot_arm/blob/main/arduino_code/arduino_code.ino

1- Run Rviz by this command: **$ roslaunch robot_arm_pkg check_motors.launch**

2- Controlling the robot arm by Moveit and kinematics and run by this command: **$ roslaunch moveit_pkg demo.launch**

Reference of code: **smart-methods-arduino_robot_arm**