Lab 2 LabVolts Robot Remote Control

Objective: to learn and practice how to operate the robotic arm remote control interface to accomplish basic tasks.

Equipment:

- Robotic arm system and platform
- Acrylic glass cubes
- Webcam(s)
- Computer with remote control system and user interface as server
- A client computer to operate the system remotely

Work in a team of 2 or 3.

Task 1

Initialize the robotic system and get familiar with the control interface.

Procedures:

Step 1: go to http://18.14.19.04/login.php and login with username "Tom" and password "Mary".

Step 2: Click "login" button at the center bottom portion of the window.

Step 3: Robot will move to its HOME positions.

Step 4: Click "Start the robot!"

Step 5: Use the virtual pendant on the screen to move each axis of the robot.

You can set the speed between 1 (slowest) and 5 (fastest) with the speed settings on the right bottom corner.

You can also record the position and play it back.

Answer the following questions:

1. Does it be able to reach the cube placed on the work surface? _____
2. When playing back, how multiple joints move? Together or separately?

Task 2

Identify all the joints of the robot and explore their limits as well as the work envelope of the robot.

Procedures:

Using the web interface to move each joint until it reaches the limit, or reach other obscure (such as ground surface).

Answer the following questions:

How far can each joint reach? (In term of angle or distance)

Joints: Base / Shoulder / Elbow / Wrist / Wrist twisting / Gripper

(Just get a rough idea, don't go extreme distance!)

Task 3

Basic operation of the robotic system: use the web interface to control the robotic arm, and pick up a cube.

Procedures:

Step 0: if the robot is not initialized, repeat Task 1.

Step 1: If the gripper is not open, open the gripper by click on "1 Grip+" multiple times.

Step 2: Move shoulder, arm and base in sequence to reach the left side of the platform.

Step 3: Pick up the left cube and move around.

Step 4: Open the gripper and gently drop the cube (move the arm closer to the floor first).

Step 5: Press "Exit" and then "Log out".

Answer the following questions:

1. How long does it take? _____
2. What's the major difficulty when doing this task?

Task 4

Finish the survey at https://www.surveymonkey.com/r/VSGGFSD (case-sensitive).