Robot Programming Lab #3 User Frame JD Jones

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Point Value = \_\_\_\_\_\_\_\_\_/100 points

In this lab you will be creating a User frame. A user frame is best defined as the environment the robot is working in. In other words, you the programmer are telling the robot what direction X, Y and Z are. The world frame uses the base of the robot to determine X, Y and Z directions. When you program a user frame you are defining X, Y and Z. You might ask why do I need to do this. It will come into play when you start doing offsets in your program. See the pictures below for a brief explanation.

**World Mode**



**User Mode**



**Positions you need to teach for 3 point method.**



Create a User Frame to a new X, Y and Z direction.

To program the User frame. You will use something with a 90 degree angle. You will teach the User frame in the 3 point method. The User frame is much easier to program than the tool frame. What you are doing is creating an X, Y and Z directions.

**Before you start programming the user frame make sure your ACTIVE user frame is the user frame you are programming.** To check this press SHIFT and COORD. A little yellow window in the top right of the screen will pop up. It will say,

Tool #

Jog #

User #

To change it move the cursor to USER and press the number on the tp for the frame you are going to program. The screen will automatically disappear. Verify you made the correct selection by bringing up the yellow screen. Now you should be ready to program.

On the teach pendant

Press Menu

Setup

Frames

If the top left doesn’t say User Frame then press other (F3)

Choose User.

The screen should say User Frame on the top left. Move the cursor to the User frame given to you by the instructor. PLEASE DON’T CHANGE ANY OTHER USER FRAMES. Press detail or enter to go into programming the frame.

You should have a screen with comment, origin, X direction and Y direction. If not choose method and select 3 point method. Modify the comment by having the cursor on it and press enter. Now the F keys will give you letters of the alphabet. Put in a description for the User frame. For example, pallet or Johnny’s way.

Look at the second pallet above. This should help you for the origin, X and Y direction.

1) Move your cursor to origin point. Move the robot directly above the point. Make sure the tool is vertical as possible by visual inspection. Record (F5) this position. The bottom of the screen should say point recorded.

2) Move your cursor to X direction. Move the robot 90 degrees in what you want to be the X direction and 90 degrees from the origin. Have the tool 90 degrees to the point. Record (F5) this position. The bottom of the screen should say point recorded.

3) Move your cursor to Y direction. Move the robot 90 degrees in what you want the Y direction and 90 degrees from the ORIGIN. Record (F5) this position. The bottom of the screen should say something about new calculations.

Now move the robot to the origin. Change the robot mode to User. Hint: You have been moving the robot in joint and world and tool up until this point.

Move the robot in the X direction. The robot should move in a straight line on the NEW X axis you just created. Be ready to explain the difference between world and user modes when the robot moves.

Figure out what all the calculations are for the User frame. All would include X, Y, Z, W, P and R. Write down those values.

User frame number \_\_\_\_\_\_\_\_\_

X \_\_\_\_\_\_ Y\_\_\_\_\_\_\_\_ Z\_\_\_\_\_\_\_\_\_

W\_\_\_\_\_\_ P\_\_\_\_\_\_\_\_ R\_\_\_\_\_\_\_\_\_

Be ready to demonstrate the following to the instructor.

Points for

A) Change the mode from joint, world, tool and user and verbally explain the difference between all of them. 20 pts

B) Explain the difference between Tool and User Frame. 15 pts

C) Be able to show the ACTIVE User frame (little yellow window). 5 pts

D) Programming the User frame. 40 pts

E) Changing the comment of the User frame. 10 pts

F) Figuring out how to see all 6 tool frame values. 10 pts

G) Writing down the User frame values. 10 pts

INSTRUCTOR’S INITIAL\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_