Lab1 (Familiarization with Quanser/Simulink platform):
Pre-Lab: Look over SRV02 Workbook – QUARC manual. Students are expected to have some knowledge of Matlab and Simulink. Tutorials can be found at the Mathworks website. Links for the tutorials can be found below.

http://www.mathworks.com/academia/student_center/tutorials/slregister.html?s_cid=edu_cr_1892

http://www.mathworks.com/academia/student_center/tutorials/mltutorial_launchpad.html?confirmation_page

Lab Experiment:

1. Next, in matlab browse to folder named "Getting Started"
    i. This will be located in C:\User\Student\Documents\Matlab\SRV02
2. Open the document "**SRV02 Quick Setup Guide**.pdf" located in the folder "Getting Started," and connect the srv02, the VoltPaq, Q2USB data acquisition board and your host PC following the steps 1 and 3, given in this document. *Note: You also need a USB cable to connect the DAQ to the PC and a power cable for the amplifier, to power it up. Skip step 2, it is already done.*
    i. Instead of using the 2xRCA to 2xRCA a single RCA to RCA cable has been supplied for use in its place.
3. For step 4 of this document, open the model "**srv02_startup.mdl**" and carry out the following steps:
    i. Double-click on the "HIL Initialize" block and make sure that the board type is "**q2_usb**". Do not change any settings.
    ii. Next switch on the VoltPAQ. Make sure the Q2USB board is connected to your PC. *Also make sure that the amplifier gain toggle switch on the VoltPAQ is set to 1x and **not** 3x.*
    iii. To compile the model, click on the srv02_startup.mdl and type "Ctrl+B".
    iv. Follow the matlab outputs on the command and verify successful compilation and download to target if the following message appears at the end:
       ### Model srv02_startup has been downloaded to target 'shmem://quarc-target:1'
    v. Click on the "Connect to Target" button on the mdl file. This button is located just left of the "simulation stop time: inf" field on the mdl file.
    vi. Next click on the "Play" button, which is located just left of the "Connect to Target" button.
    vii. This should cause the serv02 to rotate in a sinusoidal manner and you should see sinusoidal tachometer, potentiometer and encoder readings on the respective scopes.

    Note that the tachometer reading shows brief durations where it is horizontal just around zero crossing. What is the possible reason for this and why do we not see such a characteristic in the potentiometer or encoder readings?

    viii. Click on the "Stop" button. A successful execution of the above steps indicates that the real-time system and the hardware are functional.
    ix. **Important:** Before closing the model, select "QUARC → Clean all …" and click "Yes" on the prompt to delete all generated code.

Post-Lab: None

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